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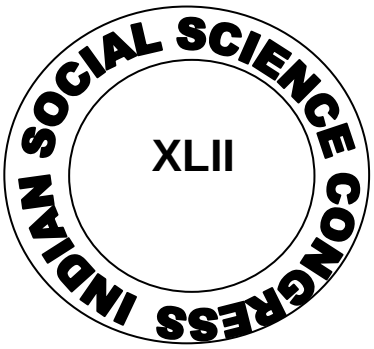

HUMAN FUTURE IN DIGITAL ERA

Edited

BY

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The Executive Council of the Indian Social Science Academy (ISSA) and its President, Prof. Binod C. Agrawal entrusted the task of editing and publishing the papers received for presentation at the XLII Indian Social Science Congress. We have tried to do our best in the given conditions. We express our deep gratitude and thanks to the Executive Council and the President.

We thank all those who responded to our comments and mailed their revised papers. We have followed the broad policy of the Indian Social Science Academy which encourages scientists of all disciplines to learn from each other in order to improve quality of education and research in our universities, colleges and research institutes. Only few papers have been rejected.

Although we have tried our best to minimize spelling and syntax errors, yet readers might find some errors. It is also possible that some accepted papers have been left out. We apologies for it.

Prof. Ashok Jain, the Former Director of NISTADS made tremendous contribution to the formulation of issues, and objectives given in the note on 'Human Future in Digital Era'. We express our special thanks to him. We also thank all other members of NAAC for their contributions.

We express our gratitude and thanks to Prof. P. Goswami, Director, NISTADS, Prof. Sujit Bhattacharya, NISTADS, Prof. N. Sambasiva Rao, Prof. Kesab Das, Prof. Sandeep Kumar, Dr. Mani Ram Singh and Dr. Shashi Kumar for organizing the pre-XLII ISSC symposia at New Delhi, Visakhapatnam, Ahmedabad and Lucknow. Their acts, we are sure shall be constant source of inspirations to all of us and all those wish to build new science and technology in India.

Though till date we have not received any communication from UGC, ICSSR and MHRD (NIEPA) on our request for grant for XLII Indian Social Science Congress, yet we wish to thank them in anticipation of their contribution of their continued financial support to the Indian Social Science Academy in its tireless and selfless pursuit of indigenous science of Nature-Human-Society.

Task of editing, typing and printing is stupendous. It was managed by Sri Abhishek Kumar, Sri Vinod Chandra Pandey, Sri Rakesh Mani Tripathi, Sri Nitin Kumar Pandey and Sri Santosh Kumar and Sri R. Joseph looked after the works related to handling of papers and correspondence till October 31, 2018. He suffered serious injury in his leg on November 1, 2018. This created crisis. However, our young friends have tried their best to retrieve the situation. Sri R. Joseph has been a great help to the Indian Social Science Academy during last 10 years. It is no longer possible to find a match for him. We express our deep sense of gratitude to him and wish him longer healthier life. We thank all our young friends, Sri Abhishek Kumar, Sri Vinod Chandra Pandey, Sri Rakesh Mani Tripathi, Sri Nitin Kumar Pandey and Sri Santosh Kumar profusely. All of them have worked hard for long hours, even on holidays with great devotion.

We also thank Sri Nirmal Chandra Agrawal for printing within a week.

This volume is result of collective works with devotion. Postponement of XLII Indian Social Science Congress following Banaras Hindu University's withdrawal on November 02, 2018 had created crisis. Reannouncement of its holding between December 27-31, 2018 at KIIT University, Bhubaneswar increased huge pressure. However, collective functioning enabled us to produce this volume.

Editors

N. P. Chaubey
D. M. Diwakar
Sasmita Samanta
Bisva Bandita Kar
And
Bansidhar Mulia

Date: December 15, 2018
Place: Allahabad

PREFACE

Indian Social Science Academy (ISSA) resolved to focus deliberations of the 42nd Indian Social Science Congress on **'Human Future in Digital Era'.** This is unique in the world of science as till date none of the other Science Academies or other science bodies/associations world over have thought fit to deliberate upon it. ISSA formulated issues involved in '**Human Future in Digital Era'** through wide range of consultations among the members of the National Academic Advisory Committee (NAAC), Executive Council, Member Scientists and Vice-Chancellors/Directors. It prepared, printed and circulated a note on 'Human Future in Digital Era' to all universities, colleges, research institutes, laboratories, social activists, policy planners, philosophers, thinkers and invited them to contribute papers and participate in the XLII Indian Social Science Congress. It nominated scientists representing diverse dicipliines as the Chairpersons and Conveners of 28 subjects Research Committees and 21 interdisciplinary Thematic Panels. It planned 12 National/International Seminars/Symposia/Workshops/Colloquia on almost all major issues related to 'Human Future in Digital Era'. The plan, was, indeed, of great scientific and historic value if implemented in toto. Even though, Indian Social Science Academy did not have necessary financial resources, yet it made brave attempt. Over 10,000 invitation letters were mailed.

Banaras Hindu University, which is supposedly the greatest University of India in terms of its vast resources and having all Departments/Institutions covering all branches of Knowledge/Science of Nature-Human-Society and, which had played vital role in formation and growth of Indian Social Science Academy and Indian Social Science Congress, offered its active support and hospitality. This was, indeed, very encouraging. However, things did not move forward as expected. It became clear that the Professor appointed as the Local Organizing Secretary by the Vice-Chancellor of Banaras Hindu University was incompetent and non-cooperative. The Vice-Chancellor could not make appropriate replacement. This created crisis and the crisis deepened on October 30, 2018. Finally, the XLII Indian Social Science Congress had to be postponed.

Exploration for a new host began on November 05, 2018. Several Universities offered to host the XLII Indian Social Science Congress. First formal invitation came from Kalinga Institute of Industrial Technology on November 16, 2018. What was a pleasant surprise was that the Kalinga Institute of Industrial Technology offered to bear the cost of travel of resource persons in the event of UGC refusing to honour its commitment. The Executive Council considered the invitation from Kalinga Institute of Industrial Technology at its emergent meeting on November 18, 2018 and resolved to accept it unanimously. December 27-31, 2018 was fixed for the XLII Indian Social Science Congress. First postponement and then new announcement of holding the XLII Indian Social Science Congress within an interval of two weeks created all kinds of organizational and academic problems. Many of those who had commited for December 15-19, 2018 withdrew. New chairpersons have to mobilize and write their own papers within a week, which was not possible. Nevertheless whatever was possible within the given situation has been done. Obviously, the results may not be highly satisfying.

Despite all these 4 pre-congress symposia were held. First was held on October 11, 2018 at National Institute of Science Technology Development Studies, New Delhi. Second was held on October 31, 2018 at Andhra University, Visakhapatnam. Third was held on December 07, 2018 at GLS University, Ahmedabad. Fourth was held on December 11, 2018 at State Takmeel-Ut-Tib (Unani Medical College) Lucknow. It was organized by U. P. Social Science Academy. All were largely attended.

As for as possible most of the papers have been accommodated even when quality of many of them were not in consonance with the parameters of scientific research. However, about 50 papers had to be rejected. This volume contains 324 papers. Papers are still being received and such papers will be printed after the XLII Indian Social Science Congress is over.

A careful reading of papers published in this volume would show that a new science is emerging. This new science may be termed as 'Virtual Science'. Digital Technology has done two things. One, it has created a virtual world and two, it has obliterated the distinction between real world and virtual (unreal) world. It is akin to Adi

Shankadya's famous declaration 'God is real, the world is unreal' (Brahm Satyam, Jagan Mithya'). Internet, googles etc all are new sources of research. Distinction between information and knowledge has either disappeared or is on the verge of disappearing. The conflict between science of real world and the science of virtual world is emerging, though at the moment it is not apparent. Reading of plenary papers, special public lectures and chairperson's addresses and some of the symposia/seminars will make it obvious.

Digital Technology is virtuous on several counts. Its power of centralisation/concentration enables small numbers of rich people to be masters of the economic, political, cultural resources of the world and gives them unlimited powers of destruction of all species of life, particularly humans. Beauty is those affected by it do not comprehend it. It takes away the bread and butter of over 600 billion people through variety of routes on Planet Earth. A high order of alienation among people produced by Digital Technology causes breakdown of social bonds, group norms, social ethics and growth of high order of immorality, rapes, murders and violence. Psychological disorder multiplies. Unscrupulous social forces take the centre stage in the societies and the countries. Process of destruction of democracy and democratic institutions begin. Biometric and Aadhar Cards become new chains of slavery. Schools, colleges and universities start collapsing under the weight of digital technology led teacherless class. The whole world is stored in clouds.

Question is: What is the future of human in digital era'? Though answer is obvious, yet it would be ideal to wait, watch and explore. The deliberations of the XLII Indian Social Science Congress, it is hoped, will offer rich food for thought.

It is a pity that India continues depending on imported digital technology despite having huge S&T infrastructure.

It may be noted that the facts presented and views expressed in the papers of this volume are those of their authors and the respective authors are solely responsible for the same and, neither the editors nor the Indian Social Science Academy nor Kalinga Institute of Industrial Technology are in any way responsible for it.

Editors

N. P. Chaubey
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Sasmita Samanta
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Date: December 15, 2018
Place: Allahabad

WHY SCIENCE IS SOCIAL?

What is science? Science is knowledge, objective knowledge of an object(s)/ a thing(s). Objective means relating to an object or a thing? What is an object or a thing? That which exists independent of human's will is an object or a thing. An object/or a thing can be solid, liquid or gaseous. It can be inanimate/non-living or animate/living. A term matter is used to describe all forms of objectes/things. So science is objective knowledge of matter, both, living and non-living.

What is knowledge ? knowledge is answer(s) to questions what? How? And why? of/about a thing/object /matter. All humans ask following questions whenever they come across an object/or a thing:

1. What is it?
2. How is it?
3. Why is it?

Their answers to the three questions constitutes knowledge. Their answers can be correct or incorrect. Correct answers constitute objective knowledge and/incorrect answers define lack of knowledge or ignorance.

Here it is necessary to remember that *knowledge-in-itself*, be it objective or subjective is not the object or *thing-in itself*. That is to say, knowledge is not synonymous to object/thing/or matter. So knowledge is colourless, odourless, weightless, sizeless and shapeless whereas a thing/an object does have colour, weight, size, shape, odour etc. Nevertheless connection between knowledge and object/thing/matter is vital for without it humans cannot build their appropriate relations with it and in the absence of it their survival and growth will become impossible. To be precise science is a mirror of the object/thing to which it is related. Science is concrete as well as abstract.

Science as objective knowledge enables humans to establish their connections with the world in which they live.

Question anises: How do humans acquire objective knowledge of the world in which they live? Answer to it, though looks simple, is actually complex. All humans including non-humans are equipped with sensory-motor mechanism in their bodies (eyes, ears, nose, tongue, skin). Sensory-motor-based knowledge about or of a thing/an object is called 'perception' or 'perceptual knowledge'. Now there is a vast literature on 'perception' or 'perceptual knowledge' in modern psychology. A new branch of science termed 'Cognitive science' is being pursued and propagated in modern science. What the vast literature on 'perception' or 'cognition' shows is that it is less than objective or accurate perhaps because of limited capacity of sensory-motor mechanism. Also, it is susceptible to social influence. This is clear from the literature on 'social perception'. So the humans had to find ways and means to correct the errors and limitations of perception-based knowledge of objects/things. Initially each perception led them to act and in turn each act enabled them to correct their perception. Thus *Perception-Action-Perception-Action* formed the chain for correction in perceptual knowledge. In history of science knowledge is often described as ethno-science. With passage of time humans and their societies grew and in the process ethno-science grew into science. Humans learnt to act in cooperation with each other and share the fruits of their labour together. The collective mental and physical labour led them to discover methods capable of improving their perceptual knowledge. The collective mental and physical labour for understanding the object(s)/thing(s)/matter/produced what is known as science. This can be well understood or well appreciated only through the study of history and philosophy of science since the days of primitive man. But it can also be understood by looking at the modern science which is highly socially organized. Like factory workers thousands of scientists work together in laboratories/research institutes all over the world today.

What is social? An act or result of an act involving two or more than two individuals is called social. Since science is produced by two or more than two individuals, it is social. In other words basic character of science is *social*. What does it mean?

It means that very notion of *science is social*. It means the notions of verifiability, repeatability, reliability, validity, precision, exactness, isomorphism, measurement, methods, hypothesis, inference and theory are social notions. It means there is close connection between society and science and between social conditions and science. As humans and their societies develop so does science. It also means that proclivity of all humans to social influence and their inability to free themselves wholly from the social and personal prejudices tend to influence objectivity of science. It means science is 'primitive' to some extent and 'precious' to large extent. It is 'primitive' to some extent because it is never cent percent objective. It is, 'precious' to a large extent because there is no other system of better objective knowledge.

What is its implication? It implies that the division of science between science and social science is no longer correct. Today there is no dichotomy between Nature, humans and society or between living matter and non-living matter. Through long and arduous pursuits humans discovered their origin and connections with Nature. Today the term Nature conotes all non-living and living objects including humans and their societies. The 18th century notion of Nature and science or basic science is no longer a valid notion. It might be convenient to fragment science into various subcategories for the sake of study, but it will not serve its social purpose if it is not put together. Science of Nature, therefore, is necessary for modern humans and their societies. Science of Humans and their societies is integral to the science of Nature.

It also means that science is never eternal or static. All objects/things are in constant motion. Since all objects/things keep on changing so does their science. Also, each object is divisible into two because of mutually opposite attributes inherent in it. That is to say, nature of nature, be it non-living or living is dialectical. There is nothing like linearity in Nature. Science, therefore, is dialectical and not linear.

The need for verification and repetition makes science authority free. There is no place for authority in science. Any one and every one enjoys the right to challenge science. Democracy, therefore, is necessary for science. Science grows in democratic conditions and dies in undemocratic or authoritarian conditions.

[Critical comments on this note are most welcome. Those who think science is not social are invited to put their thoughts in writing and send to the General Secretary, Indian Social Science Academy (E-mail-issaald@gmail.com)]

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XLII INDIAN SOCIAL SCIENCE CONGRESS

A NOTE ON

FOCAL THEME

HUMAN FUTURE IN DIGITAL ERA

0100 PREAMBLE

Indian Social Science Academy (ISSA) and Banaras Hindu University propose to focus deliberations of the 42nd Indian Social Science Congress on 'Human Future in Digital Era' with a view to exploring the impact of information and communication technology-based massive digitisation of the world on future condition of humans.

0201 CONTEXT

We stand on the brink of a technological revolution that is fundamentally altering the way we work, communicate (television, face-books, WhatsApp, websites, internet, mobile...) and, indeed, the way we live. We do not yet know just how it will unfold, but what we do know is that in its scale, scope, and complexity, the emerging technological transformation is going to be very different from transformations experienced by society during the First, Second and Third industrial revolutions.

The First industrial revolution used steam power to mechanise production, the Second, electric power to create mass production, the Third, electronics and communication technologies based digitisation of machine functions leading to automated production. Impact of these transformations on health, life styles, employment, environment, culturally configured human skills, to migration and globalisation have been discussed and debated.

The speed of current breakthroughs has no historical precedent. Today's transformations are not linear extrapolation or prolongation of the Third Industrial Revolution but rather beginning of a distinct Fourth Industrial revolution. The Fourth industrial revolution is building on digitisation of not only functions of mechanical systems but of human behaviour too. The enhanced technological capabilities of processing digitised data of large number of mechanical systems and humans with speed enables configuring a variety of systems/products that combine humans with machines to cater to both perceived and created requirements of targeted segments of society. The digitisation is, thus, leading to a Digital Age characterized by a fusion of technologies that is blurring the lines between the physical, digital, and biological spheres.

This Digital Age is heralding changes that cover in scope and depth the systems of production, management, governance, interaction between people and, indeed, almost all facets of our living on the planet earth.

The question is to what extent and how is this Digital transformation addressing problems of basic needs of hunger, education, health and employment for all?

Are critical problems of developmental of rising income inequalities where few persons have as much as half of the total wealth of all the inhabitants of the planet or the problems of climate change and sustainability threatening the very existence of humans on earth on the agenda of agents and agencies steering digitisation? Does the agenda envisage a more democratic and cultured world?

These are some of the issues arising out of the emerging technological revolution that the 42nd Indian Social Science Congress on 'Human Future in Digital Era' aims to dialogue and discuss comprehensively integrating technological, social, political, economic and policy perspectives amongst stakeholders of the global community , from the public and private sectors to academia and civil society.

0202 INDIAN CONTEXT

In recent years Digitisation has also emerged an important and integral part of the development agenda of Sovereign Socialist Secular Democratic Republic of India; **'Digital India'** is an enthusiastic rhetoric of the present Government.

Historically, Digitisation in India entered in the ninety fifties, like in the western countries, through scientific research requirements in areas like nuclear physics and cosmic rays. Observations by electronic devices in these areas gave digital data that required processing and analysis or computation. In India Tata Institute of Fundamental Research (TIFR) was engaged in cosmic ray and nuclear physics. Homi Bhabha supported by Nehruvian thrust on science, nucleated a team to work on digital and computer technology. By 1959, the team succeeded in bringing out a functional computer christened by Nehru in 1962 as TIFR Automatic Calculator (TIFRAC); a first generation machine using vacuum tubes, germanium diodes and resistors. Over 50 organisations including research laboratories, universities, and government agencies regularly used the machine for research purposes.

By 1960s, however, in industrialised countries more advanced computers with faster online processing speeds using new computer languages had been developed. Although TIFR and its public sector partner Electronics Corporation of India Limited (ECIL) did further work on a model more advanced than TIFRAC, in the absence of supporting electronic component fabrication facilities in India, they could not keep pace with the advancement taking place abroad. However, perusing policy of developing indigenous research capabilities, in 1963 IIT Kanpur for research work got an IBM 360 machine under the Indo- American aid programme through personal efforts of Nehru. Also, P.C. Mahalanabis, for performing statistical calculations for planning commission, got an imported Hollieth Computer at Indian Statistical Institute (ISI). Indeed, ISI in collaboration with Jadavpur University did come up with a transistor based computer which was specifically used for research purposes.

Computer and digitisation expertise had got seeded in India

Towards the end of 1960s computers had entered a marketable product at the hands of companies in US, and Europe. In early 1970s IBM of US, enthused by its experience of introducing computers in few Indian academic institutions, decided to get a market foothold in India. It proposed introduction of computers in large and expanding non- strategic areas such as railways reservation to GOI. The then Indira Gandhi's government committed to a policy of establishing a strong indigenous base in emerging areas of S & T apprehending expansion of IBM may thwart the progress of indigenous programme of computer development, set up an 'Electronics Committee' headed by Vikram Sarabhai to examine IBMs proposal in detail. The examination revealed that IBMs proposal essentially was to install its old machines in India and earn by refurbishing and leasing them out at inflated rates to government departments; the cover story of IBM, however, was that it wanted to help India gradually build computer capabilities.

The growing importance of electronics was recognised and a separate Department of Electronics (DOE) and Electronics Commission were established to give thrust to indigenous development of all areas of electronics including computers. DOE initiated a parliamentary enquiry committee to examine the working of IBM in India. The Committee rejecting IBM's proposal asked DOE to establish a public sector undertaking 'Computer Maintenance Corporation' (CMC), through which IBM's team had to maintain its installed computers In India. Caught in its own game, IBM got a clear signal that a strong market foothold in India was difficult. Finally, in 1977 during the Janata Government, George Fernandes invoked Foreign Exchange Regulation Act (FERA), the conditions of which were such that IBM decided to wind up its operations in India.

By end of 1970s facilitated by 'digitisation', convergence of hitherto separate computer and telecommunication technologies had been realised. Multinational Companies in US, Japan and Europe started making and selling digital electronic switches for telephone exchanges as faster substitute of hitherto used slow and cumbersome electro-mechanical switches. They had established a monopoly position in it.

India also wanted to shift from electro-mechanical to digital switching system to meet the fast growing demand for telephones. A lot of marketing pressure was put by multinational on India's Department of Telecommunications (DOT) to buy their property new digital switching system. Under the circumstances GOI asked Department of Electronics and DOT to jointly establish a Centre for Development of Telecommunication(C-DOT) with development of electronic switching as one of its mandate. It is around this time (1984) that NRI Sam Pitroda with established credentials in the communication technology living in US while on a visit to India for attending a Conference, impressed by digital and computer expertise available in India, presented a plan of making digital switching system in India to Indira Gandhi and her cabinet colleagues. Pitroda's suggested digital switch, unlike those of multinationals meant to work in clean air-conditioned environment, promised to work in dusty and hot rural environment. Impressed by the presentation and sensing the possibility of making telephone accessible to both rural and urban populations through indigenous technology, Prime Minister invited Sam Pitroda and extended him a grant to head to an independent project at C-DOT for indigenously making digital switches. As a result, digital switching system that could work in dusty and hot rural and urban environment were not only developed but under one of the technology missions of Rajiv Gandhi (the young PM after the death of Indira Gandhi) , C-DOT delivered 60 million lines through Public Call Offices (PCOs) leading to an exponential growth of the telecom services. For the first time since independence telephone communication was brought within walking distance of a large cross section of India's population. To give further push to digitisation and computerisation, Rajiv Gandhi in 1984 established Telecom Commission, the country's highest telecom policymaking body and made Pitroda's Chief technology advisor to PM its first chairperson. Centre for Development of Advanced Computers (C-DAC) was also established. A Computer Policy was formulated that allowed import of computers for developing and exporting software. It is during this time that in response to a ban imposed by US government on its CRAY company to supply its supercomputer to India (required for weather forecasting purposes) , C-DAC came out with its own supercomputer Param.

By now a good indigenous base in digitisation technology had been created in India. Here it may be noted that Mrs. Indira Gandhi, the Prime Minister of India, had refused USA's pressure for computerisation of Indian Railways in 1984.

In 1991, however, Indian economy under Narasimha Rao and Manmohan Singh had started opening The government further eased controls on import of computers and allowed the import of fully assembled motherboards with processors, the core of a computer with connected chips. Locally made peripheral components could then be added to it to assemble a computer system. Although duty had to be paid for import of motherboard, overall there was a net reduction in the price of computers.

With wider availability of computers, in 1995, the then public sector monopoly Videsh Sanchar Nigam Limited launched India's first internet service for public access. The country saw a mushrooming of internet cafes.

In 1998, global multimillion computer industry was caught in an unexpected lack of foresight of the coming year 2000. It had failed to anticipate that the practice of keeping only two empty places in the memory to specify a year (to save memory space) could lead to systems breaking down when January 1, 2000 dawned, known as 'Y2K' problem . The task of trawling through millions of lines of installed computer code to correct the Y2K fault was not only tedious but time consuming. 'Y2K was like godsend for India's software capabilities using which Indian firms had quickly developed methods of debugging computers programmed to use only two digits to signify the year. India's earnings through export of software companies rose exponentially and ever since have continued to grow.

With expansion of telecommunication and internet usage entry of mobile phones followed and by now have widely penetrated in India.

Building on the evolved digital infrastructure, government, national and multinational companies, non-government organisations have started using it some for welfare and some for commercial purposes.

In a sense India is at a stage where it has some expertise in digital technology as also appears to be taking a step forward to enter the Digital age.

0300 OBJECTIVES

The proposed deliberations, on 'Human Future in Digital Era' seek to achieve following objectives:

0301. To comprehand the science of digital technology/Information Technology.
0302. To determine status of development of digital technology in India.
0303. To explore the connections between digital technology and production & distribution.
0304. To investigate connection between digital technology and employment.
0305. To find out association between digital technology and education.
0306. To assess impact of digital technology on learning and creativity,
0307. To evaluate impact of digital technology on health of the general public.
0308. To determine the impact digital technology on social cohesion, peace, conflict, violence, rapes and murders.
0309. To ascertain secularising and/or communalising effects of digital technology.
0310. To investigate relationship between digital technology and bio-diversity including ecology and environment.
0311. To assess power of digital technology in stopping extinction of species and saving the world from extinction.
0312. To determine the power of digital technology in making the future of human better, safer and secure.
0313. To determine the power of digital technology for promoting slavery and destroying democracy.
0314. To investigate effects of Digital Technology/Information Teachnology/robotics on human personalities and human behaviour.
0315 To explore effects of **'Information overload'** on human thoughts, creativity and behaviour.
0316 Any other relevant to the understanding of the need, relevance and validity of Digital/Information Technology/Robotics..

401 ISSUES FOR DIALOGUE AND DISCUSSION

Taking note of the above context the following are some of the issues that require concerted consideration and discussion:

1. The extent to which indigenous technological base of India has improved? Is India today self-reliant in Digital Technology?
2. Has India's dependence on foreign S & T declined substantially?
3. Is dependence of Indian industries on imported technology increased or decreased?
4. What aspects of India's socio-economic development are on the computerisation and digitisation agenda and details thereof:
   - Employment for all able persons?
   - Redress problems of hunger and disease?
   - Agriculture Productivity and farmers welfare?
5. Will digitisation upgrade or degrade skills of Indian youth and artisans?

In order to seek valid answers to all these and many more questions scientists need to keep the following four major questions in view:

- What was India before introduction of computer or digital technology?
- What is India today?
- What will India be tomorrow?
- What India ought to be?

0402 NEW PHRASES/BUZZWORDS

While dialoguing on above questions we need to pay due attention to some of the following new phrases/buzzwords commonly found in the rhetoric being communicated to us by digital media 24 x 7 .

Silicon Valley, Knowledge Society, Global Village, Virtual World, Information Revolution, Amazon, Flipkart, Google, Aadhar card, A.T.M., Paytm, E-governance, E-commerce, Smart Phone, Smart Town, Cyber Crime, Tele-medicine, Cashless Economy, Skill development, Make-in-India, Sting Operation, Net Neutrality, Selfie, Video, Internet Chat,

0500 WIDER PRESPECTIVE

What is true for India may be true for all other Asian, African and Latin American countries. It would enrich the proposed deliberations if scientists from these countries including USA, Canada, Europe and Australia contribute their research papers and participate in the deliberations.

Indian Social Science Academy and Banaras Hindu University, therefore, propose to focus the deliberations of the 42nd Indian Social Science Congress on 'Human Future in Digital Era'. It invites all scientists, technologists, philosophers, social activists, policy planners and the General public to put forward resuslts of their research/thinking at the 42nd Indian Social Science Congress. All the science academies of today's world are cordially invited.

0600 MAJOR THEMES

Following may be considered as major sub-themes of the focul theme 'Human Future In Digital Era':

0501. Science and Technology of Digital Era.
0502. Politics and political implication of Digital Era.
0503. Connection between digital technology and economy.
0504. Impact of digital technology on employment and generation of new job opportunities.
0505. Impact of digital technology on Peoples Health.
0506. Impact of digital technology on education, learning and research.
0507. Impact of digital technology on removal of poverty and large scale undernourishment/malnourishment.
0508. Digital Technology, social cohesion, social alienation and social violence.
0509. Biodiversity, ecology global warming and digital technology.
0510. Social Justice, crimes and digital technology.
0511. Digital technology, Democracy and the new forms of slavery.
0512. Role of digital technology in conflicts and war.
0513. Information over load And Human Behaviour.
0514 Virtual Learning And Real Learning
0515 e-governance and law-And-order.

0700 Seminars/Symposia/Colloquia/ Workshops Themes

(a) International

(I) Science of Real World vs Scienc3e of Virtual World.
(II) Impact of digitalisation/information technology on World Economy and Peoples Economic conditions.
(III) Centralising power of digital technology and sustainability of the Human on Planet Earth.
(IV) Nuclearisation and Annihilation of Human.
(V) Third World War

(b) National

(I) Status of indigenous Science and Technology.
(II) Status of Indigenous Digital Science and Technology.
(III) Impact of digital/information technology on Indian Economy.
(IV) Impact of digital/information Technology on Indian Agriculture.

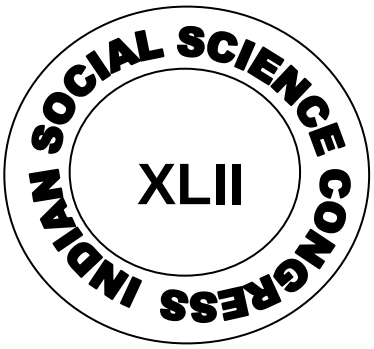
(V) Impact of digital Technology on Peoples quality of life and health.
(VI) Impact of digital/information technology on School and University Education.
(VII) Digital Technology and Social Alienation.
(VIII) Digital Technology/Information Technology and Social Violence (rapes, murders).
(IX) Digital Technology/Information Technology Democracy and Human Rights.
(X) Impact of Digital/information technology on family, community, Society and Culture.
(XI) E-commerce, e-trading, GST, and Corporate Capital.
(XII) Secularising/Communalising Effects of Digital/Information Technology.
(XIII) Cyber Crimes, Net-networking and call drop.
(XIV) Impact of digital technology on labour.
(XV) Information Technology And Social Revolution.

(c) Special Workshops Colloquia

(I) Relevance and validity of selective approach to University Education.
(II) Funding of Research and Development.
(III) Teacher-less class and Classless Teacher.
(IV) Privatisation/corporatisation of Education.
(V) Dynamics of rising unemployment under neoliberal economy.

APPROACH

The proposed deliberations on **'Human Future In Digital Era'** call for intra, inter and multi disciplinary objective, dispassionate and non-political approach. Twenty Eight Subjects Research Committees, 21 interdisciplinary Thematic Panels, 8 plenaries, several international and national seminars/symposia/workshops/colloquia, special and public lectures by eminent scientists shall, therefore, deliberate upon all aspects of the focal theme **'Human Future In Digital Era'**, synthesis of the results of deliberations will be done by Task Force of the XLII Indian Social Science Congress.



PART I

PLENARY PAPERS

ON

HUMAN FUTURE IN DIGITAL ERA

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HUMAN FUTURE IN DIGITAL ERA

0104001 GHASKADBI, SURENDRA (Developmental Biology Group, MACS-Agharkar Research Institute, Pune). EVOLUTIONARY BIOLOGY IN THE DIGITAL ERA: IMPLICATIONS FOR CONSERVATION OF ECOLOGY AND BIODIVERSITY

Understanding how animals, plants, fungi, bacteria, viruses, etc., came into being has interested and engaged naturalists and scientists since time immemorial. Insights into biological evolution not only satisfy scientific curiosity of how organisms including us humans evolved and diversified but can also be of practical value to understand interrelationships between various biological entities. Having such knowledge is essential for effectively managing ecology and preserving biodiversity.

Huge boost to this field of biology was provided by a combination of two overlapping discoveries, DNA recombinant technology and advances in computational science, the former being the beneficiary of the latter. Great strides were made in recombinant DNA technology since the early seventies; this continues till date as every once in a while newer and more powerful tools are developed and deployed. This is largely made possible by advancements in computational science. The digital era has given us a new branch of science: bioinformatics, which is a child of the marriage between biological and computational sciences.

Among other things, the rise of recombinant DNA technology and bioinformatics has revealed similarities and dissimilarities between the genomes of various organisms. This allows one to predict, fairly confidently, relationships between organisms which in some cases can be validated with fossil records. It further makes it possible to understand the genesis of the variety in form and shape of organisms. It is now clear that the 'genetic tool kit', the assemblage of genes that is required to build multicellular organisms, such as, a jelly fish, a worm, an insect, a dog, a giraffe, and you or me, evolved only once and is responsible for the biodiversity which existed in the past and which exists today.

In my talk, using as much non-technical language as possible, I will touch upon the scientific advances that allow us (a) to predict how organisms evolve and diverge, (b) to study relationships amongst themselves, and (c) to decipher how an organism interacts with its environment. I will use parts of our own work on a variety of organisms from hydra to frogs and chickens to illustrate some of these points. In many cases it is possible to employ this knowledge to design effective strategies for understanding nature and conserving biodiversity.

0104002 LAKHOTIA, SUBHASH C (Department of Zoology, Banaras Hindu University, Varanasi). DIGITAL; TECHNOLOGY AND AMBITIONS OF CATAPULATING EDUCATION, LEARNING AND RESEARCH IN INDIA TO INTERNATIONALLY COMPETITIVE LEVELS

Internet and digital technologies have unleashed unprecedented speed and power for sharing new information across the globe in real time. This has generated great hopes about improving the learning outcomes even in remote places. In view of the perceived potential of digital technology in providing quality education at a mass scale in densely populated countries like India, many governmental and non-governmental agencies have significantly invested in facilitating digital mode of education through promotion of ‘smart’ class rooms and open digital learning modules. While their potentials are undeniable, there are many limitations of digital education especially in India. Therefore, excessive reliance on digital technology may actually have negative impact on the learning output. The digital education cannot replace a human teacher. It should be used only as a supplement to the conventional classroom in synergy with other social efforts to generate appropriately qualified citizen. Education is

not just acquisition of information or technical skill but is expected to deepen the insight, widen the horizon and create a meaningful outlook of a citizen. Technology must be used to serve humanity's purpose rather than dictate human lives.

Introduction

The unprecedented rapid advances in digital technology and its consequences on lives of *Homo sapiens*, the creator of such technologies, are indeed awe-inspiring. These technologies seem to have touched every human being. As the power of technologies improves, our efforts to understand the mysteries of nature also become increasingly more effective. As our understanding of nature and its forces deepens, society expects that quality of life would also improve through alleviation of various sufferings and by providing simpler ways of accomplishing diverse tasks.

Internet or world-wide-web provides a remarkably fast and efficient system of communication throughout the globe. The development of technologies that permit digitalization of any kind of information made it possible to share the same across the internet in real time or make it available to desiring users at their convenient time and place. The internet and digital revolution have virtually removed geographical barriers and distances and this has, as may be expected, greatly influenced fields of education, learning and research. Considering the many potential advantages of internet in sharing knowledge, it is widely expected that the digital mode of education would not only provide education to all but also make state of the art information in any discipline available to all irrespective of their location in the world.

The present discourse between scientists, technologists and social scientists provides a remarkable opportunity to discuss the impact of digital technology on education, learning and research and to assess the social implications of the ongoing transformation in education and pedagogy, especially in the Indian context. My feeling is that the current excitement that digital technology and 'smart' classrooms would transform the present dismal state of our education at every level into an internationally competitive one is more a hype than reality.

What is education?

Every living organism 'learns', and such 'learning' is essential not only for survival of the individual but also for the species. The 'learning' can affect either life of the given individual and disappear with its death or may have a more profound effect in shaping future of the species as a whole because of various life processes dependent upon principles of Genetics and Epigenetics and the over-arching hand of natural selection. Learning can be passive, i.e., unconscious learning through experience or by conscious or unconscious imitation of those higher in hierarchy. Repetitive learning that occurs generation after generation can become fixed through natural selection as instinctive/innate behavior. Education provides an active learning forum, and generally refers to a two way process involving close interactions between a teacher and a learner. In many animals, including humans, education provides a means to pass on what is learnt by an individual during its life-time to the next generation. The human species makes use of such an active process much more extensively because this species also developed very sophisticated spoken languages and written scripts. The language and scripts ensure that the learner's source of education is no more limited to learning from the experiences directly gained by the individual educator since he/she can collate information and knowledge from multiple sources, including those that no longer exist. Consequently, every generation of learners and educators have more and more to learn and teach, respectively. Thus every new generation stands on 'shoulders of giants' and consequently, becomes more knowledgeable than the previous one.

The social nature of human species and the evolution of various social norms have added layers of complexities in the process of education. Education needs to be distinguished fem information. Information itself is not a 'commodity' which can be physically transferred from one brain to another. Shri Aurobindo outlined the three basic principles of education as follows: i) nothing can be taught – the teacher is not an instructor or task-master, he is helper and a guide; ii) the mind has to be consulted in its own growth – the idea of hammering the child into the shape desired by the parent or the teacher is barbarous and ignorant superstition and, iii) work from the near to the far, from that which is to that which shall be. Education is thus much more than information as it involves a

bidirectional interaction between the educator/teacher and the learner, and aims at developing the unique potentialities of the individual's special talents. *In terms of social goals, education fulfils two objectives, i.e., preparing an individual for a vocation and for citizenship in a democratic social community*.

Evolving modes of imparting education

The formats of teaching-learning process have remained dynamic and have shaped the social structures of communities throughout the history of human civilization. The *Gurukulas* following the *Guru-Shishya-parampara* were the traditional places of learning in ancient and historical times in India. This mode continues even today, to a limited extent at least, in some disciplines, e.g., music. A somewhat similar practice of apprenticeship was in vogue in Europe prior to the Industrial revolution where the learner would be trained in a given vocation by elder members of the family or some other expert (Collins and Halverson, 2009). Continuation of family business or vocation in India also involves apprenticeship. Pedagogically, the *Guru-Shishya-parampara* and apprenticeship involve observation, coaching, and practice through interactions between a teacher and one or a few disciple/s. This provides adequate individual attention. The *Gurukulas* were individual centric but unorganized centres for primary education. With progress of time, they also led to development of a college like Taxila (Kumar, 2016). Later under the Buddhist traditions, *Mahaviharas* like that at Nalanda came into existence where a large number of students, unlike the individual oriented training in the *Gurukula,* received common training in large classrooms (Kumar, 2016). The western society also developed institutionalized schools and colleges which became more pervasive in the wake of industrial revolution. With the decline of Nalanda, centres of common mass education system do not seem to have flourished in India but informal education and conventional *Guru-Shishya-parampara* continued. It was during the British rule that the European style universities, colleges and schools were setup for mass education in India, initially at a few places, but soon across the country and this expansion has continued. A major difference between mode of lerning in the *Gurukula* or apprenticeship training/education and that in schools/colleges etc is that the former is individual oriented while the latter addresses the needs of average students, and therefore, often misses the personalized needs of individual student (Aguilar, 2018).

With the advent of computers and the internet in recent decades, the world of education has undergone a parallel and massive transformation (Aguilar, 2018; Collins and Halverson, 2009; Davies *et al.*, 2017; Kalolo, 2018; McCall *et al.*, 2018; Paul and Lal, 2018; Tripathi, 2002). Internet transformed closed systems into open systems because it is not controlled by anyone nation or group or any such entity. It has potentially provided universal access to information placed on the internet, the quantum of which is increasing at an unprecedented speed, to anyone without any geographical or political or cultural boundaries. Such open access to information has made it possible that besides the common learning in institutional frameworks, individuals can learn independent of teachers. This feature is considered to compensate for the lack of personalized training in the conventional classroom settings (Aguilar, 2018). The new technologies are letting adults or aged learn, what they could not learn in schools, through Wikipedia and other open digital learning platforms, while children are learning their subjects as well as complex video games and those involved in specialized professions interact with challenging situations through simulations to get trained to handle real-life conditions, and so on. The learning opportunities presented by the new digital technologies are now challenging the traditional schools and colleges because they enable people of all ages to pursue learning on their own terms at "homes, libraries, Internet cafes, and workplaces, where they can decide what they want to learn, when they want to learn, and how they want to learn" (Collins and Halverson, 2009). In parallel with developments in computer-related technologies, the conventional classrooms have changed to "smart" classrooms equipped with various audio-visual and internet enabled gadgets that can retrieve and ensemble diverse information as stand-alone 'knowledge' packets. Depending upon their being 'open-access' or requiring subscription/membership, they can, in principle, be accessed by anyone or by authorized individuals from anywhere. Expansion of the availability of internet and evolution of newer and powerful technologies has led to development of numerous formal and informal sources of 'learning', within as well as outside the typical classrooms. The MOOCs (Massive Online Open Courses) and other open digital platforms provide world-wide virtual classrooms (Colucci *et al.*, 2017). The digital learning can be formal (as in 'Open Universities' or online courses) or informal, which can be achieved at one's own pace and desire in area/s of one's own interest.

Digital Learning Initiatives in India

The "Digital India" action plan initiated in 2015 is directed to provide means of seamless internet connectivity across the nation to provide rapid growth in all areas of society (Ray, 2018). This would also help in free digital learning. Following the National Knowledge Network Project, various courses have been launched as Open Educational Resources. The SWAYAM (Study Webs of Active Learning for Young Aspiring Minds) programme has been introduced under which well-known teachers from recognized institutions offer online courses to residents in India (https://swayam.gov.in/about). The SWAYAM has several coordinating agencies like NPTEL for engineering, UGC for post-graduation, CEC (Consortium for Educational Communication) for under-graduates, NCERT and NIOS for school students, IGNOU for those out of the school, and IIMB for management studies. At least 20% of the total number of courses offered in each curriculum in universities in India is to be in the form of MOOCs/SWAYAM. This is expected to provide for quality dissemination of knowledge and information so that education becomes more vibrant, sustainable and accessible to much larger segments of populations. In parallel, there is increasing emphasis on development of 'smart' classrooms in all schools, colleges and universities through additional grants and other incentives like additional scores during institutional assessment. A comprehensive summary of the various digital and open access education resources available in India can be seen in the recent Open Science India Report (Scaria and Ray, 2018).

The spread of digital learning has been greatly facilitated by the exponential increase in the usages of smart phones or PCs/laptops as well as the incentives provided to schools/colleges/ universities for developing 'smart' classrooms. Thus the digital learning can potentially reach a large fraction of the country's expanding population within and outside the formal education system.

Impact of Digital Media on Research Publication

Internet and digital systems have besides providing unprecedentedly powerful technologies for conducting research have also generated novel facilities for storage and real-time sharing and analysis of large volumes of data generated anywhere in the world. Digitalization of publication and the convenience of sharing the massive digital data in real time through the internet have completely metamorphosed the research publication scenario. This has not only reduced the time in submission and processing of manuscripts through online platforms, but more importantly, it has made it possible for readers to 'read' the published articles anytime and anywhere. While many journals are published in hard-copy print as well as soft-copy online versions, a large number of journals are now published only in the online format. Online publishing entails less cost and, therefore, is expected to reduce the subscription costs. This expands the accessibility of research output to a much larger segment of researchers across the world, although the pay walls created by publishers remain a very serious limitation in fulfilling the objectives of the open access movement (Lakhotia, 2017a; Scaria and Ray, 2018).

An additional advantage of the digital form of research publication is the direct availability of enormously large data sets related to the reported research to readers as 'supplementary material' or in publicly accessible data repositories. Because of the reduced cost of online publishing and the possibility of storage of rather 'unlimited' quantity of data, a new form of 'pre-print' publication has also come into existence in diverse fields of S&T research (Chaddah, 2011). Such 'pre-print' publications are not peer-reviewed when placed on the preprint platforms but are freely accessible to anyone to read, download and comment upon. A great advantage of the 'pre-print' publication process is that the authors can claim their priority in the discovery and also they do not get limited by reviewers' 'bias' in advancing their interpretations. The 'pre-prints' cannot be withdrawn by authors and thus any mis-conduct, if resorted to by authors, remains visible to everyone for all times to come. This deters the authors from indulging in research mis-conduct.

'Dark' side and limitations of digital education

The internet and digital education and research platforms have provided unlimited possibilities for globalization of knowledge. The conventional classroom teaching and learning is in fact facing some kind of crisis of survival in the face of these advantages of digital education platforms. However, it must be appreciated that the

digital education itself is beset with multiple limitations and thus is not a panacea for all the pitfalls of the existing conventional education system. Some of the major issues associated with digital education, especially in a country like India, are considered below.

High costs of hardware and software: A conventional educational establishment (school, college or university) needs to invest substantial money to setup 'smart' classrooms to enable its students to enjoy the benefits of digital technologies. While installation of the minimal hardware and software itself is expensive, its long-term maintenance is not trivial. This is compounded by the rapidly changing technologies so that the installed systems lose their appeal and maintainability rather quickly. Most institutions in the country do not have marked funds for maintenance and up-gradation of the 'smart' classrooms and, therefore, they soon get reduced to show-cases only with little utilization of the initial investment. Teachers and other staff responsible for managing the 'smart' classroom and the digital content need to be adequately trained, not only in handling the 'soft' content, but also in the technological aspects to ensure effective use of the gadgets. This is not happening. Indeed several studies from across the world have established (Kalolo, 2018; Palmer *et al.*, 2017; Thapa and Sein, 2018; Wang, 2018) that a major reason for the sub-optimal outcome or even near failure of the digital education initiatives can be attributed to inadequate technical capabilities.

Although education is considered a public responsibility to provide equal access for all, the digital divide has further enhanced the disparity between the so-called government and private schools in India, notwithstanding the small but perceptible recent trend of philanthropic organizations coming forward to support some of the state-supported fund-starved public schools.

Internet reach and speed of accessibility: India is considered to have the 2nd largest internet user base but with respect to the speed, it is way below (>70) many other nations. While a few places in the country have reasonably good connectivity, many small towns and rural areas do not have any connectivity or the minimal data transfer speed necessary for a comfortable use of the online learning materials in or outside a classroom. Complete lack of electricity in many rural areas of the country is another hurdle in wider use of digital learning. Many other places in the country have erratic power supply and this too effectively negates digital learning.

The severe disparity in internet reach has indeed escalated the digital divide (Helsper and Van Deursen, 2017; Ross, 2017; Thapa and Sein, 2018). Frequent disruptions that happen because of erratic power supply or the poor net connectivity seriously affect the learning outcome. Adequate technical expertise has to be available at the user-end to make the best of digital information (Collins and Halverson, 2009; Helsper and Van Deursen, 2017; Ross, 2017). Lack of technical training of teachers and/or maintenance staff adds to the frustration and loss of concentration on part of learners. This can be also aggravated during home-learning since most present generation parents were not exposed to these technologies and thus may not be of much help when one or the other technological issues disrupt the digital connectivity leading to child's loss of interest.

Content: There is a general worry in the society about the freely accessible digital content. Even if one were to ignore the unwarranted usages of internet by students and other targets of digital education, quality and relevance of the study-material available in the identified digital education packages is a serious concern. Besides the 'infotainment' directed attractiveness and engrossing nature of the presentation of the digital content, the quality, extensiveness and correctness of the content would depend upon the knowledge and understanding of the person/s who is/are presenting and compiling the given content. Given the market potential, a large number of private commercial operators also have become active without any formal quality check system. Even some of the digital content being prepared by faculty at formally identified academic institutions leaves much to be desired because the average quality of faculty at most academic institutions (from schools to universities) lacks optimal competence. Although such a statement may appear rather harsh, a number of surveys have revealed the rather disappointingly poor state of learning outcomes at every level of education in India (Banerjee *et al.*, 2016) primarily because of the very poor learning environment available to them in the classroom. The poor quality of 'human capital' is also reflected in India's 158th rank among 195 countries surveyed in a very recent study (Lim *et al.*, 2018).

The prevailing dismal state of learning outcomes is indeed due to combined effects of overall poor infrastructure, ambience and quality of the teachers. Can digital mode of education improve this depressing

scenario? Perhaps not by itself, since learning is not a one way process. Inadequate and inaccurate digital content would actually make things worse. Besides, mis-information getting into the online study material because of ignorance of the presenter, there could also be deliberate attempts to mis-inform. Such examples can be seen in the diverse myths and mis-conceptions and rumours that rapidly spread across the social media networks and which most begin to accept as facts. Likewise, the mis-interpretations of facts to advance particular ideologies can also have serious repercussions for the self-learners. For example, sites that talk about 'intelligent creator' extensively use and discuss biological information but interpret them wrongly. An online learner, in the absence of discussion with an informed teacher, may therefore, end up with wrong understanding. Blind faith on online information can indeed have very serious consequences for learning.

A different concern with the digital education becoming a mass movement in India is that most of the digital educational packages, especially those that have at least some quality assurance, are available in English, which a large part of population, including school children, do not comprehensively understand. Consequently, much of the content may not be understood by the target audience. We are still far away from developing qualitatively adequate digital content on a large scale in Hindi and other regional languages.

Free availability of content and tendency to plagiarize: There is an increasing tendency to 'cut and paste' not only in classroom answers and assignments but even in research publications since the digital media provide a simple mechanism to reuse the digital information available on the net without needing any formal 'training' or 'expertise'. During a survey in an educationally advanced country like Singapore it "was found that many students, while fully aware of obvious cases of plagiarism, would disagree with more complex cases, such as collusion and reuse of one's own work or of a friend's work" (Palmer *et al.*, 2017). Situation in our country is worse. The rampant use of 'cut and paste facility' is reflected in the fact that most students or even researchers, who adopt this, have no qualms about this being a crime. Even though, the University Grants Commission has extended the facility of plagiarism check to all college and university teachers through INFLIBNET, the proportion who actually use this for classroom purposes would be very small, more so because we do not extensively make use of digital examinations where the answers/assignments are submitted online. Incidences of plagiarism in research communications have also become worryingly common.

Real-life learning versus learning through computer simulations: Three-dimensional computer simulations and designing in various disciplines of learning are becoming more and more realistic. Consequently, there has been a greater pressure to rely on computer-simulations than studying the real material/situations. Such software based simulations have several advantages. However, they have many limitations as well. In view of the animal-rights activists, demands for minimizing dissections of animals in classrooms or even their study in natural conditions, because of some possibility of minor adverse effects on ecological balance etc, have been formally prohibited. Instead the students are expected to learn anatomy and other aspects of organismic biology through computer simulations. This has generated multiple concerns. Firstly, as pointed out above, many educational institutions do not have the required infrastructure to effectively show and explain what the students would have learnt by studying the real organisms. Secondly, even if a given institution has the required setup, the knowledge and experience that a student would gain from a real life situation cannot be had in totality through computer simulations. Further, the computer simulation software is limited by competence of the team developing the software as also by the knowledge available at the time. Such knowledge, it must be admitted, keeps improving as further studies are made. Studies on real organisms would let the learners comprehensively incorporate the new knowledge and appreciate the holistic aspects of living organisms and the diversity seen in different individuals of the same species. Computer simulations, however, may leave the learners with an impression of monotonous uniformity. Learners in biology also need to develop expertise in dissections of specific parts of body if they wish to engage themselves in experimental studies later on. Likewise, it is desired that a would-be-surgeon does not learn every aspect of human anatomy only through software based simulations. Similar considerations would apply in other disciplines as well.
In view of the above, computer simulations should supplement and complement, rather than replace, studies that are based on real-time real-life situations.
Reduced physical and mental activities: One of the banes of digital life-style is the dwindling physical activity, which has resulted in the scourge of increasing incidences of diverse 'life-style' diseases. The potential of health issues arising from long hours on computer and/or 'smart' mobile phones cannot also be undermined. A high reliance

on digital 'smart' devices has also reduced the need for brain to think, analyze and decide, since a large variety of answers and options are readily provided by the smartly programmed devices and the other online resources. A healthy brain needs to be continuously engaged in challenging activities to keep its enormously large numbers of neurons plastic and competent. There is a high risk of neurodegeneration in the absence of stimulating challenges. Indeed incidence of neurodegenerative disorders related to life-style has increased in recent times. Thus high reliance of young minds on digital and 'smart' devices leads to sedentary physical and mental life, which entails serious health concerns. In research also, an unduly high reliance on 'automated sophisticated' devices tends to divert a researcher's mind from original and analytical thinking to software-driven interpretations (Lakhotia, 2009).
Strategic learning: The curriculum followed in classroom learning is expected to provide a broad-base for the given subject. However, during self-learning, there would be a natural tendency to focus on what one likes more, and thus miss the basics that may actually be equally, if not more, important for a good conceptualization of the topic of interest. In fact, one of the major reasons for contemporary students coming out of the regular classroom studies being 'unemployable' is the lack of comprehensiveness in what they have learnt. The fragmented knowledge and understanding received by them does not provide the required holistic concepts and, therefore, they remain unemployable. Online learning, in the absence of regular guidance, too may provide only fragmented understanding, notwithstanding even the high quality of online course content.

Live interactions with teacher essential not only for learning the subject but also for development of a holistic personality: The conventional ideal classroom is an interactive place where a teacher and the students communicate in various direct and indirect ways and the teacher can follow the progress of learning by different students which enables him/her to attend to their specific needs. In contrast, an e-learning session can often become monologue because the lectures are pre-recorded. Even in the case of live streaming of lectures, the speaker does not really connect with the large and diverse audience spread across many geographic regions and who are visible to the speaker only on the computer screen, that too only when the live streaming is bi-directional. In the absence of eye-contact with the audience, some speakers may not able to communicate the subject matter as effectively as when amidst a live audience. On the part of audience also, a recorded or a one-way live-streaming discourse becomes less effective resulting in lack of attention and therefore, reduced learning intake. Even when an e-learning session is interactive, only a few of the 'brighter' students get an opportunity to seek clarifications while the large majority may not find it possible to get their doubts clarified then or later.

Unfortunately, several of the online recorded video lectures prepared in India, as well as outside, remain a monologue and thus may have only a limited impact on learning and understanding of the target audience. Equally important aspect of a classroom is the passive and active learning from fellow students in the interacting classroom. This is largely missing in the online studies since more often it may be a single person who is watching or listening to the recorded video/lecture. In addition, such online learning also needs self-discipline and control on part of the student to regularly and seriously follow the recorded study material. In the absence of an external intervention, such self-discipline is a difficult task, resulting in procrastination.

The human contact that happens in a good classroom cannot be achieved in a virtual classroom, no matter how lively the presentation has been prepared. Evolution of social organization in our society has indeed preferred that we learn also from other members of the society, especially from those who are hierarchically higher up in the social ladder or command respect because of their special attainments. Good teachers are considered to be role models, not only for the given subject but for many aspects of life as well. In the absence of an interactive live classroom, a great source of passive learning through interactions with teachers and peers may become unavailable to young minds. Inert materials and environments do not provide any opportunities for such inter-individual learning.

Predatory Journals- an unwarranted fallout of online journals and faulty policies: The online mode of research publications has been a remarkable outcome of the digital era since this can cut the costs and make the research outcome available across the globe rapidly and comprehensively. Unfortunately, however, commercial interests converted research and other scholarly publications into an industry with rich monetary dividends. As discussed elsewhere (Lakhotia, 2017a; Patwardhan *et al.*, 2018), the online scholarly publication system has benefitted the publishers much more than the scholar. The faulty policy, practiced world over, of assessing research output in

terms of quantity rather than quality has been officially adopted by the University Grants Commission (UGC) and imposed upon the higher education system in India in form of the Academic Performance Index (API) scoring system. One of the seriously damaging consequences of this has been the unprecedented mush-rooming of 'predatory' and bogus research journals that publish 'anything' for money (Lakhotia, 2015; Lakhotia, 2017a; Lakhotia, 2017b; Patwardhan *et al.*, 2018). Such murky commercial activities exemplify how the academic benefits of online/digital system can be extensively derailed if not carefully monitored and implemented.

Concluding Remarks

There is no denying the fact that digital learning provides an unprecedentedly powerful medium to spread knowledge and understanding across the globe. This mode becomes all the more significant in countries like India with its enormous and still increasing population. The *Sarva Shiksha Abhiyan* cannot be achieved only through classroom learning in regular schools, colleges and universities. Online digital media provide great possibilities since they can reach people instead of people going to educational institutions. However, we must not go overboard in replacing our conventional classrooms with 'smart' classrooms. Considering the high profit margins available to the hardware and software industries, it is not unlikely that commercial interests have deliberately generated hype about the 'smart' classrooms and digital mode of education. Policy-makers must not fall in such traps.

The 'smart' classrooms should only supplement and complement the regular classrooms since the role of a teacher or *Guru* is indeed irreplaceable. In all living systems, more so in human species because of its intensely interacting social systems, the physical touch and interactions are very important. Nothing can replace the human contact, touch and social interactions.

Sarvepalli Radhakrishnan, a great thinker and teacher, former Vice-Chancellor of the Banaras Hindu University and later the Vice-President and President of India, stated "to help the students to earn a living is one of the functions of education, *earthakarica vidya*", but "Education, according to the Indian tradition, is not merely a means of earning a living ……. It is initiation into the life of spirit, a training of human soul in the pursuit of truth and the practice of virtue". Radhakrishnan also said "all education is, on the one side, a search for truth; on the other side, it is pursuit of social betterment" and, therefore, "Education should give the children not only intellectual stimulation but a purpose". Radhakrishnan further stated "any satisfactory system of education should ….. insist on both knowledge and wisdom, *Jnanam vijnana-sahitam*. It should not only train the intellect but bring grace into the heart of man". Thus the true end of education is not just acquisition of information or technical skill but a superior outlook going beyond these two. It should deepen the insight, widen the horizon and create a meaningful outlook. Only a knowledgeable and humane teacher can help the young minds attain *Jnanam vijnana-sahitam* and mould the young child from that which is to that which shall be, as desired by Shri Aurobindo. The digital education should only be a means of supplementing social efforts to generate human beings with such goals. Technology must be used to serve humanity's purpose rather than dictate human lives.

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0114003 RAO, K ASHOK (Swami Swananda Memorial Institute, Room No. 31, East Avenue, East Punjabi Marg, New Delhi 110017). **PRIVATE THERMAL POWER GENERATION IN INDIA–BOON OR BANE?**

AIMS & OBJECTIVES OF AIPEF

§ To provide a forum for formulating guidelines for the co-ordinated development of power in the best interest of the nation.

§ To provide a common platform for discussion and ex-change of views amongst Power Engineers on various technical and administrative problems with a view to improving proficiency in public service and to build up sound traditions and practices for the Power Engineers.

§ To promote a sense of fraternity and a feeling of brotherhood amongst Engineers of professional as well as social levels.

§ To formulate uniform guidelines and co-ordinate the activities of the constituents.

§ To achieve, promote and safeguard professional freedom, dignity and interest of Power Engineers in the country.

§ To help, encourage and guide, maintenance of high ethical standards and ideals of service among the Engineers in discharge of their duties towards the people and the nation.

Executive Summary

The structural adjustment loan conditionalities laid down by the World Bank and the IMF ensured the withdrawal of State resources from development of a vital infrastructure – the power supply industry. At the stage of economic development at which India is today almost all the now developed economies had adopted protectionist measures and built their infrastructure with effective and efficient intervention of the State. The very same industrially developed countries, have through World Bank and IMF imposed stringent conditions to prevent developing countries like India to develop in the same fashion1. Their main concern is to protect the recession hit MNCs.

The World Bank dictated Electricity Act 2003 removed any form of techno-economic evaluation about the feasibility of setting up a power plant resulting in laissez-faire not only with respect of electric power generation, but also with regard to pollution. As a consequence, the rent seeking Indian private power producers set up power plants without forward and backward linkages resulting in sixty-five percent of the assets created by them turning into non-performing assets.

The private power producers made a bee line for anyone who offered them credit resulting in imports, from China, worth more than four years of public sector BHEL's production. This resulted in an opportunity loss of creating wealth worth Rs. 1.5 lakh crores within the nation. There is no evidence to suggest that there was any price, quality or delivery advantage over the Indian manufacturer BHEL. There is a trail of investigations alleging thousands of crores worth of over-invoicing of equipment and coal. The lackadaisical manner in which the investigating is being followed up leaves little doubt about the hidden hand that protects the wrong doers.

China which was world's largest consumer of coal, and builder of large thermal power plants realised that climate change would slow down coal based thermal plants. In order to protect their power equipment industry Chinese Government provided subsidies and Chinese financial institutions credits. In sharp contrast, duties, taxes lack of credit resulted in BHEL becoming a loss-making organisation for the first time in more than thirty years.

There are serious governance issues that need to be underlined. It has become the responsibility of individuals, Trade unions and NGOs to take matters to the Hon'ble Supreme Court to enforce law. The regulators seem to have got themselves regulated.

Electricity has become a fundamental right since it is in today's lifestyle become as vital as water and air. The engineers and officers' associations, trade unions and NGOs have to provide leadership to the citizens to ensure a consumer-friendly electrical power industry because today power have become as vital as water and air.

PART I – CHANGE OF LEGISLATION – ITS CONSEQUENCES AND VIOLATION

1.0 The ideological basis for change of electricity legislation.

With the signing of the structural adjustment loan conditionalities, it became incumbent on the Indian Government and the Parliament to amend economic legislation. One of the laws that was amended was the Electricity (Supply) Act 1948. The preamble of the amended Electricity Act 2003 states: "*generally, for taking measures conducive to development of electricity industry, promoting competition*" The amended legislation was not motivated by indigenous concerns, but was guided and motivated by the World Bank and ADB.

The first of the policy papers prepared by the World Bank, after the commencement of loans for "sectoral adjustment" or "structural adjustment" (which were intended to restrain government intervention and spending and culminated in a new "reform agenda") was -*The World Bank's Role in the Electric Power sector*, (known as *Power paper*). It lays out the Bank's plans to move away from supporting 'the single national electric utility operating as a public monopoly (in developing countries) and to 'aggressively pursue the commercialization and corporatisation of, and the private sector participation in, developing country power sectors. In practical terms, the Bank's energy policies translated into the splitting up or 'unbundling' of previously state-run energy utilities into separate generation, transmission and distribution companies, which were then privatized, and which had to operate commercially in order to gain access to finance and competition conditions in the global capital markets.

It is therefore not surprising that the basic structure of the Indian Electricity Act 2003 is almost identical to that passed in much smaller countries like Bangladesh and Indonesia. In Bangladesh, ADB drafted the Electricity Reform Bill. ADB also drafted the Power Sector Restructuring Policy of Indonesia in 1998 was the basis of the Electricity Act No. 20/2002 for the purpose of privatising NAPOCOR. The bill was passed amidst a scandal of payoffs to the parliamentarians. It was however annulled by the Constitutional Court in 2004 because it was seen to be not in line with Article 33 of the Constitution of 1945 (UUD 1945), which made the State responsible for public facilities including water supply, road, and electricity.

In India there was not even a murmur of protest, save submissions made to the Parliament's Standing Committee by groups like the National Working Group on Power that maintained that there had been no legislative failure on account of the Electricity (Supply) Act 1948 and that there was no case for restructuring the industry and jettisoning the existing institutions.

2.0 **Consequences of change of legislation - freedom given to the investors.**

In keeping with the reality that India is a developing country, characterised by resource shortages, skewed and inefficient distribution, lack of purchasing capacity of the final consumer, Section 29 of the Indian Electricity (Supply) Act 1948 stipulated that - *Every scheme estimated to involve a capital expenditure exceeding such sum, as may be fixed by the Central Government, from time to time, by notification in the Official Gazette, shall, as soon as may be after it is prepared, be submitted to the Authority for its concurrence.*

Under the Act, the Central Electricity Authority gave a techno-economic clearance after scrutinizing the following:

• The scheme provides reasonable allowances for expenditure on capital and revenue account; The estimates of prospective supplies of electricity and revenue there from contained in the scheme are reasonable;
• In the case of a scheme in respect of thermal power generation, the location of the generating station is best suited to the region, considering the optimum utilisation of fuel resources, the distance of load centre, transportation facilities, water availability and environmental considerations;
• The scheme conforms to any other technical, economic or other criteria laid down by the Authority in accordance with the national power policy.

The principal objective and purpose of Section 29 of the Act was to ensure that optimal investment was made - in the power industry – a capital intensive infrastructure characterised by long gestation period and a large multiplier effect. The other objective was to ensure that long term national interest and not short-term profits informed the choice of plant and equipment.

This techno-economic scrutiny was decried as licence raj, interference by the Government and lack of freedom for the investor. Therefore, the Electricity Act 2003 declared that setting up of a power plant would be a de-licensed activity. As per Section 7 of the Electricity Act, 2003, *any generating company may establish, operate and maintain a generating station without obtaining a license/permission if it complies with the technical standards relating to connectivity with the grid. Decision to set up a power plant is taken by concerned developer based on his*

assessment of market conditions, demand of power in future, finance options, viability of the project etc. Developer has to arrange all the inputs required to produce power i.e. land, water & fuel & necessary clearances. Sale of power under the Power Purchase Agreement is also arranged by the developer.

The laissez-faire approach to investment decisions has resulted in today's situation where more than sixty-five percent of the investment has becoming stressed assets.

3.0 Tale of violation of law - Case studies of the most ambitious of all private power plants - the Ultra Mega Power Projects (UMPPs).

The most ambitious of all schemes to attract private investment in generation was the Ultra Mega Power Projects (UMPPs) launched in 2005-06. The ultra-mega power projects (UMPPs), was launched amid much fanfare as an answer to India's power woes.

Table 1
Ultra-Mega Power Plants

Sl.No	Particulars	No. of UMPPs
1.	Total UMPPs Envisaged	16
2.	SPVs Incorporated	13
3.	Awarded	4

Given below are case studies of two UMPPs

3.1 UMPPs of Tata and Adani located at Mundra2, Gujarat

PRESENT STATUS: Shut down. Stressed assets. TATA offer to Govt. of Gujarat 49 % equity for Re. 1. Recently, the Govt. of Gujarat appointed a committee headed by a former Supreme Court judge to find ways and means to circumvent the Supreme Court Judgement.

Tata Power, which built the power station, claimed that the plant was "arguably the most energy-efficient, coal-based thermal power plant in the country". After obtaining the project on the basis of bidding the lowest tariff TATA tried to obtain compensatory tariff increase until the Supreme Court, on a petition of PRAYAS an NGO, called off the bluff.

Given below are abridged extracts from the article "Raising the 'Bar' for India's Power Sector"3 by Aditi Roy Ghatak and Abir Dasgupta

"India's high-flying industrialists are not used to having their pockets picked. Yet India's apex court appears to have done just that, in the most honourable manner, one might add. Justices Pinaki Chandra Ghose and Rohinton Nariman of the Supreme Court, in a recent order, have produced a sterling judgment with far reaching consequences for two major private corporate players in India's power sector—companies in the Adani Group and Tata Group—as well as for the future governance of the power sector. The judgment of the Supreme Court is expected to set a precedent for a number of similar cases currently being dealt with by various state-level electricity regulators across the country. As the Court order affects the operations of two of India's three largest coal-fired thermal power plants, this moment offers an opportunity to re-evaluate the country's long-term strategy to build large electricity generating capacities in an efficient, sustainable and inexpensive manner. It also offers an opportunity to take a relook at the various regulatory conundrums that the sector currently faces.

The power generating subsidiaries of the Adani and Tata Groups, along with a number of other players in the power sector—an estimated ₹4,300 crore and ₹3,600 crore respectively (Financial Express 2017) had nearly managed to secure as compensation for what they claimed was an unexpected rise in the price of coal imported from Indonesia. Tata Power (through CGPL) owns and operates a 4,000 megawatt (MW) "ultra mega power project" (UMPP) in the town of Mundra, Gujarat while Adani Power operates the 4,620 MW Mundra Power Plant, both located near the Mundra port in Gujarat. Both thermal power plants use Indonesian coal and had argued that an

increased cost in procuring high-quality coal from Indonesia merited an increase in the price charged by them; implying that the burden of this increased tariff would have fallen on the discoms, and finally, on the consumers.

The apex court's order was in response to a set of appeals that had been filed in the Supreme Court by the state discoms and the civil society non-governmental organisations (NGOs) Energy Watchdog and Prayas (Energy Group)—both authorised consumer representatives for the power sector who have been involved in these cases from their origin at various state regulators—against an April 2016 order of the Appellate Tribunal for Electricity (APTEL) based on which in December 2016 the Central Electricity Regulatory Commission (CERC) had awarded compensatory tariffs to the power producers.

The order by the Supreme Court, by setting aside the APTEL ruling, has effectively also set aside the CERC award. CERC had awarded3 compensatory tariffs to Adani Power the APTEL order had remanded the CERC to recalculate compensation The December 2016 recalculation by the CERC had been "much more generous" to the power companies. The Supreme Court's order implies a huge earnings setback for CGPL and Adani Power, with the latter having already included a likely inflow of compensatory tariff to the tune of ₹8,800 crore (Vishwanath 2017) in its revenue calculations and projections (having assumed that the CERC award would hold). For the Tata Group company, the court order increases the risk of a future earnings downgrade for 2018. The annual negative impact on Tata Power could be ₹800–₹1,000 crore, if the company continues running their power producing units at the minimum plant load factor, that is, at the minimum level needed for the plant to stay operational (Vishwanath 2017). The fact that the Supreme Court set aside the CERC award also increases the probability of both power plants at Mundra becoming economically unviable."

3.2 UMPP Reliance located at Sasan , Madhya Pradesh

Reliance Power Limited, as the lowest bidder, was selected as the successful bidder in a tariff based competitive bid process4. The Power Purchase Agreement (PPA) contained detailed clauses with respect to generation of power and the tariffs payable for the period of 25 years. Apart from other provisions, Article 6 read with Schedule 5 provided for pre-conditions to be satisfied for declaration of a generating unit as Commercial Operation Date5, "COD", namely readiness to commence commercial operations. The bone of contention was whether the COD for Unit No.3, which was the first Unit to be commissioned, COD had been achieved on 31.3.2013. If it had, then under Schedule 11 to the PPA, the entire first year would get exhausted in one day, i.e., 31st March being the end of the contract year, for which tariff payable would be at the rate of 69 paise per unit. If not, then it is only on and from the commencement of COD that such year would begin only on 16. 8.2013. COD is said to be on 31.3.2013, when a final test certificate in accordance with Article 6 of the PPA was given by the independent engineer as had been held by the Appellate Tribunal, consequently the consumers would have to pay a sum of over ₹1000 crores, being the differential tariff.

The CERC arrived at the conclusion that COD had not been achieved on 31.3.2013 but had only been achieved later, on 16th August of the same year. This finding was set aside by the Appellate Tribunal by its judgment dated 31.3.2016, in which the Appellate Tribunal found that though COD had not been achieved on 31.3.2013 in accordance with the PPA, but that the procurers under the PPA had waived their right to demand performance at 95%, and that the performance of Unit No.3, which was only roughly 17% of its contracted capacity, was accepted by all the procurers, and that therefore there was a waiver of this essential condition, which would then entitle the generator to treat 31.3.2013 as the date on which commercial operation of Unit No.3 commenced.

The All India Power Engineers Federation (AIPEF) and a few consumers challenged decision of the appellant tribunal. Hon'ble Supreme court observed that companies cannot seek to hike tariffs because of any unforeseen and unprecedented escalation in prices of imported coal after having bagged contracts to supply power on the basis of competitive bidding.

On the question of waiver obtained by the company, Hon'ble Supreme Court Judgement states, "*On the facts of this case, it is clear that the moment electricity tariff gets affected, the consumer interest comes in and public gets affected….. All this would make it clear that even if a waiver is claimed of some of the provisions of the PPA,*

such waiver, if it affects tariffs that are ultimately payable by the consumer, would necessarily affect public interest and would have to pass muster of the Commission under Sections 61 to 63 of the Electricity Act….. under Section 63 is only a tariff obtained by competitive bidding in conformity with guidelines issued. If at any subsequent point of time such tariff is increased, which increase is outside the four corners of the PPA, even in cases covered by Section 63, the legislative intent and the language of Sections 61 and 62 make it clear that the Commission alone can accept such amended tariff as it would impact consumer interest and therefore public interest….One substantial question of law is whether, when public interest is involved, waiver can at all take place of a right in favour of the generator of electricity under a PPA if the right also has an impact on consumer interest. This substantial question of law has been answered by us in the course of the judgment. We have also pointed out that the Appellate Tribunal's finding that the Independent Engineer's test certificate can pass muster and that there is a waiver on facts is not a possible conclusion, and such finding is, therefore, perverse and hence set aside. That apart, we have also pointed out the contradictory nature of the judgment of the Appellate Tribunal, when it points out that the requirement of Article 6.3.1 is not merely for the private benefit of the procurers of electricity, but is as a matter of general policy; and then later on in the judgment finds that no question of public interest or public policy arises in the present case."

The case studies analysed above raise two questions:

- **Is there a licentious regime that allows the private sector to make a mockery of the tariff based competitive bidding process? A confidence that the system can be browbeat to get a tariff increase whenever it may be required - That the regulators can be regulated.**

- **Is it the responsibility of NGOs, Trade Unions and consumers to take matters to the Supreme Court in order to bring the errant private power producers to book? Where are the checks and balances?**

PART II PRIVATE POWER PLANTS = PUBLIC MONEY, PRIVATE MANAGEMENT.

4.0 Justification for opening the sector - Capital shortage and competition

The mantra for the salvation of the power sector, according to the World Bank, was overcoming capital shortage and creating efficiency through competition.

The Ministry of Power, Govt. of India produced a paper on the 15th January 1994 which stated:

"As such private investors have been allowed entry in the power sector not for exploitation of the country, but to rescue the country out of a quagmire of resource crunch dangerously threatening to paralyze the power sector and consequently the country. And for the massive investment required of several billion dollars, gates had to be opened to foreign investors capital being not adequate for the needed capacity… The prospects being so grim, if private sector was not allowed to come in the power industry to take up generation, this nation would plunge itself with certainty into an abyss of distress and misfortune which one would shudder to imagine.(emphasis added)"

The National Electricity Policy of Feb 2005, issued by the Government of India, was more ideological than the World Bank. The policy document held out an assurance to the private sector of guaranteed returns:

"Capital is scarce. Private sector will have multiple options for investments. Returns on investment will, therefore, need to be provided in a manner that the sector is able to attract adequate investments at par with, if not in preference to, investment opportunities in other sectors. … An appropriate balance will have to be maintained between the interests of the consumers and the needs for investments…. The Central and State Government need to develop workable and successful models for public private partnership. This would also enable leveraging private investments with public finances."

Based on this policy, public investment was systematically reduced over the years. The share of power sector in total outlay of both Central and State governments have been brought down from 18.33 % in 1991-92 to 13.09 % in 2000-2001. And the share of the power sector in the total outlay of the States alone has come down more

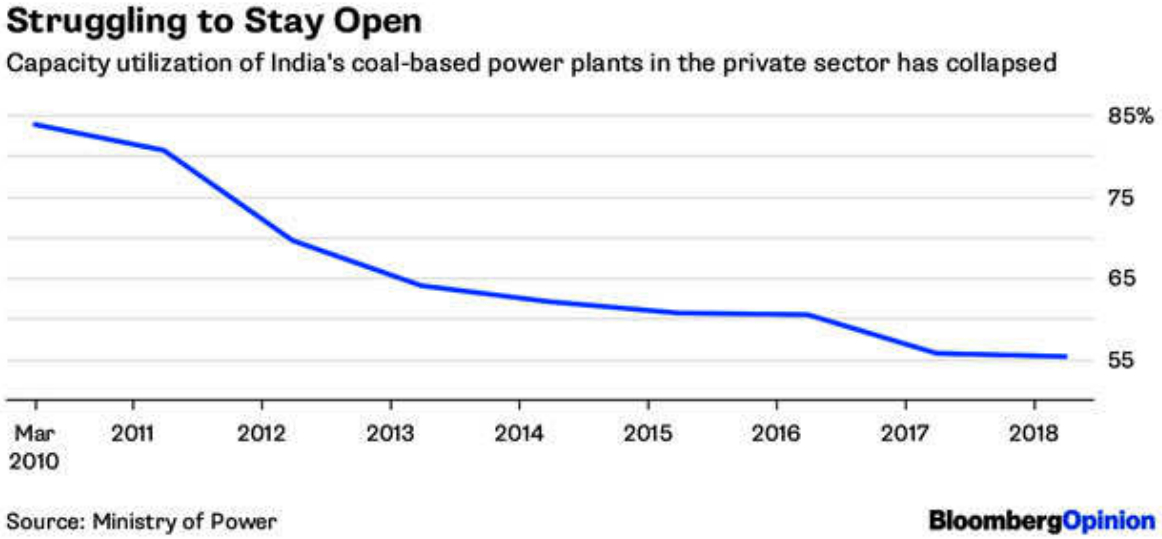
drastically from 26.09 in 1991-92 to 17.81 % in 2000-01. The amendment of legislations and withdrawal of funds from the public sector left the power sector with no choice but to seek private investment.

On the question of competition, Electricite de France6 in a Round Table with the World Bank on 'Power Supply in Developing Countries: Will Reforms Work?' stated:

"Modern economic theory tells us that competition is more difficult to introduce in network infrastructure than in other industries, and more difficult in electricity that in other networks. It is odd that the World Bank derives no consequence from this and treats electricity as any other commodity…. We also know that competition does not streamline regulation but makes it on the contrary more complex and burdensome. Introducing competition creates a "half-free, half slave" sector…. Marginally, the idea beyond our discussion about privatization and competition may be to open the power sector of developing countries to foreign operators, expertise and capital…."

5.0 Has the country been rescued from /or has it plunged into an abyss of distress and misfortune?

The share of private sector in overall installed capacity has grown from 13% in March, 2007 to 44% in March, 2017. During the last ten years, the public sector (both Central and State combined) contributed 73,402 MW while private sector alone contributed 77,891 MW capacity addition.



Government has identified 34 stressed power plants. These assets account for over 40,000 megawatts of power generation and Rs. 1,74,468 crores in credit from India's banks. In its report tabled in Parliament, the Parliamentary Standing Committee on Energy7 noted that, as on June 2017, the power sector had nearly Rs 6 lakh crore of total bank loans. Of this, Rs 37,941 crore are non-performing assets, while restructured advances amounted to Rs 60,858 crore.

Table 2
Capacity wise details of 34 stressed power projects

Total Number of Projects	34
Commissioned Capacity	24,405 MW
Under Construction Capacity	15,725 MW
Total Stressed Capacity	40,130 MW
Total Outstanding Debt	1,74,468 crores

The Parliament Standing Committee on Energy identified the following as reasons responsible for financial stress in thermal power projects:

- Non-availability of Fuel: – Cancellation of coal block. – Projects set up without Linkage.
- Lack of enough PPA by states
- Inability of the Promoter to infuse the equity and working capital
- Contractual/Tariff related disputes
- Issues related to Banks/Financial Institutions (FIs).
- Delay in project implementations leading to cost overrun.
- Aggressive bidding by developers in PPA.

The extent of stressed assets8 and the reasons for this state of affairs is given in the table 3 below:

Table 3
Reasons for and extent of the stressed assets

Causes of stress	Giga Watt	
	Constructed	Under- construction
Total Thermal	86.12	28.12
Under-recovery	11.70	
Without PPA	19.72	20.69
Imported Coal	9.80	
Gas based	10.80	2.40
Total stressed assets	51.80	23.00

Source Industry Association

Let us examine two of the reasons for stressed assets:

Non-availability of Fuel: – Cancellation of coal block. – Projects set up without Linkage. And Lack of enough Power Purchase Agreement by

It is a matter of serious concern that investments have been made in 17 thermal powers with a total capacity of 15,200 MW without proper coal linkages resulting in partial or full non-availability of coal linkage. Out of these 1,530 MW capacity Power Plants have neither coal linkage nor Power Purchase Agreement.

How could the managements of the power plant and that of lending agency allow investments to be made without backward and/or forward linkages?

Aggressive bidding by developers in PPA.

On aggressive bidding the Standing Committee report states:

The Ministry of Power have stated that the provision of tariff based competitive bidding in the Electricity Act, 2003 is aimed at achieving lower tariffs based on technical, operational and financial efficiencies brought about through competition. It is expected that bidders would estimate their costs and efficiencies and will act rationally while quoting tariffs so as to have a fair competition. However, some of the bidders might have bid irrationally or overestimated their efficiencies or under estimated their costs and might have quoted lower tariff.

Such selected bidder would obviously incur loss for every unit of electricity generated and would face difficulty in repaying the loans.

Considering that sixty-five percent of the investment has turned into stressed assets, should the promoters of the private power plants not be charged with utterly irresponsibility for jeopardising the unsuspecting citizen's life savings kept in banks?

6.0 Financing the Private Sector Independent Power Plants (IPPs)

After the Dhabol (Enrons's Indian venture) debacle there was reluctance on the part of foreign investors to rush into India. Bloomberg (May 15, 2018) reports *"the bankers who financed the U.S. energy company's unviable power plant in Maharashtra state aren't ruing that 2,000-megawatt debacle any more, it's only because they're now staring at a mess 20 times bigger.***"**

The Indian private sector that had no financial muscle could only enter the power sector, in a parasitical manner, clinging to credit from whatever source and on whatever terms it could be obtained. Indian long-term lending institutions like the IDBI, ICICI etc. had no financial muscle either. In order to facilitate funds for infrastructure development, the Indian private sector Banks, that by definition are short term borrowers and lenders, were forced to make long term lending in industries with which they were not familiar. Long term lending institutions, like IDBI, were made to open banks - IDBI bank was a failure. Both policy directives of making banks become long term lenders and long-term lenders become banks resulted in a disaster.

In 2012, Credit Suisse's had pointed out that (banking sector's euphemism for non-performing asset) - projects facing potential stress included Adani (4 projects with a debt of Rs 24,100 crore), Lanco (five projects with a debt of Rs 22,100 crore), Reliance ADAG (three projects involving a debt of Rs 32,600 crore), Tata Power (one project with a loan of 14,400 crore), India Bulls (four projects with a debt of Rs 21,200 crore) and Essar (seven projects with Rs 21,900 crore debt)"9.

Had these not been outstanding debts, but company losses reported to shareholders, surly heads would have rolled. Since the debts are from public funds no heads rolled, nor is there not be a public enquiry, instead heaven and earth are being moved to see how the errant power producers can be saved.

Indian Public Sector Bank loans to infrastructure projects had gone up by 100 times, between2000 – 2013 and during the same period the Non-Performing Assets of 30 Banks had risen by 95 %.

Table 4
Growth of infrastructure loans from banks
(Rs. Crores)

Year	Amount of Loan to Infrastructure projects	As percentage %
2000	7,243	3.62
2013	7,86,045	35.25

Private sector investments, profits and reserves as an independent means of financing the gross cost of the project varied from 0.65 % to 10.5 %.

In order to enter the Indian market China offered liberal credits for purchase of equipment. Not only did the Private sector Independent Power Producers make a bee line for purchase of Chinese equipment, but also allowed the Chinese to dictate the technical parameters by standardizing the unit size of the unit.

7.0 Further comforts and concessions.

The Govt. of India had created a scheme called SAMADHAN (Scheme of Asset Management and Debt Change Structure). In an effort to avoid liquidation of plants at throwaway considerations, this scheme was to set up a consortium that would shortlist 11 power plants with an overall capacity of over 12 GW. The Union Power Minister R.K. Singh stated "The attempt is that the assets which can be salvaged are salvaged. We don't want that these assets are sold for Rs 1 crore or 2 crore per MW (against investment of Rs 6 to 7 crore). We want to put in a mechanism to make these assets turnaround."

The Rural Electrification Corporation was also to set up a special purpose vehicle. As far as the Banks were concerned they hoped to salvage at least seven commissioned power plants worth Rs 17,000 crore for which new promoters have been identified. These projects have received bids that require lenders to take a 50% haircut.

Banks have taken 18 power plants projects to NCLT. There are 8 cases which have been resolved. Another 8 were referred for resolution under "Samadhan" - However since 4 of these were found to be unviable, they are in for insolvency proceedings.

Finally, on 12th February, 2018, the Reserve Bank of India issued a circular that stipulated that a one-day default in debt servicing would require reporting it to the Central bank and implementation of a resolution plan. All accounts with exposure of Rs 2,000 crore and above, on or after March 1, 2018, and in default have to formulate a resolution plan within 180 days (irrespective of sectors), failing which insolvency proceedings will have to be invoked against the defaulter. In case of any failure to formulate and implement resolution plan within six months, the case has to be mandatorily referred to national Company Law Tribunal (NCLT) for Insolvency and Bankruptcy Code proceedings. This circular was challenged by the Independent power producers Association.

On 27.8.23018 the Hon'ble Allahabad High Court declined to give private power companies any interim relief on the Reserve Bank of India (RBI) circular. The court suggested the government could use a special dispensation under Section 7 of the Act that reads "The Central Government may from time to time give such directions to the bank as it may, after consultation with the Governor of the Bank consider necessary in the public interest."

Next, the Government of India constituted a committee headed by the Cabinet Secretary with Secretaries of all the concerned ministries as members. The court asked this high-level empowered committee, in consultation with the RBI, to decide within two months. The court also asked the government to include RBI representation in the high-level committee.

Interestingly, the Chairman of the Central Electricity Authority has been excluded from this committee.
Three questions need to be raised:

1. Why is the Chairman of the Central Electricity Authority kept out of the High Powered Committee? Since, the Central Electricity Authority has been kept out, how will this committee compare Independent power plants (IPPs) with public invested power plants. Would technical parameters like heat rate, specific coal consumption, efficiency etc. data of plants imported from China be taken as claimed and compared to actual data generated from performing BHEL equipment10.

2. Why should Public Sector Banks, the custodian of peoples' money, take a 50 % haircut?

3. And why is the Govt. of India bending backwards to salvage the irresponsible private power producers?

Having created debt worth nearly Rs. 4 lakh crores the power producers now warn that the Non-Performing Assets (NPAs) if not resolved would destroy the banking sector, investments and investor confidence. And now the war cry is save the power plants to save the banks.

The errant power producers now argue, even if you find new buyers how would they get PPAs? So having given a haircut of the banks it's the turn of the public sector power supply corporations.

Alleging preferential treatment for Public Sector Units and discrimination against Private sector Units, the private power producers demanded from the committee –

i) Compulsorily shutting down old power plants irrespective of their residual useful life (that can be scientifically and accurately established).

ii) Either on the grounds of pollution or alleged higher cost of generation to have the existing power purchase agreements reviewed, much to the detriment of central and state undertakings like NTPC and SEB11. If public sector PPAs are to be reopened, then why not the solar PPAs of yesteryears? Solar power tariffs fell 80 % in 6 years from Rs. 17.90 in 2010 to Rs. 2.44 per unit.

iii) These should be in addition to the financial concessions and comforts, that would be at the cost of the public sector banks and other financial institutions.

Where is the guarantee that after obtaining all the concessions, the private power producers would actually operate the plants? According to market analysts, 30,000 megawatts (MW) of thermal power capacity may be up for grabs as debt-laden Indian companies look to trim the fat and focus on profitable businesses. These include assets of companies such as Jaiprakash Associates, Lanco Infratech, and KSK Energy. Going by a conservative price of between Rs. 5.5 crore and Rs. 6 crore for each MW, according to Rupesh Sankhe, senior analyst at brokerage Reliance Securities, the combined worth of these projects is well over a staggering Rs. 1 lakh crore (more than $15 billion).

All power plants that are insolvent and or causing a major loss to the public sector banks and financial institutions should be nationalised without compensation.

8.0 The same laissez-faire approach with environment clearance

8.1 Clearing thrice the capacity required in 2030.

Prayas study13 "Thermal power plants on the anvil" pointed out the same irresponsible laissez-faire policy was adopted in 2003 by Ministry of Environment and Forests (MOEF). The ministry indiscriminately clear thrice the thermal capacity to what was projected, by Planning Commission Integrated Energy Policy report, as the requirement by 2030.

"MoEF had accorded environmental clearances to a large number of coal and gas-based power plants whose capacity totals 192,913 MW. Another 508,907 MW are at various stages in the environmental clearance cycle, that is, they are either Awaiting Environmental Clearance, or have Terms of Reference (TOR) Granted, or are Awaiting TOR. This means that there are around 701,820 MW of coal and gas plants waiting to be built in the coming years. Coal based plants account for an overwhelming 84% of these in-pipeline projects. These additions are more than six times the currently installed thermal capacity of 113,000 MW.

It is obvious that for granting environmental clearance there was hardly any concern for climate change. Now the battle cry for the lobbyists of the private power producers is - pollution, climate change and the Paris accord. In order to create demand for the power generated by the private power producers they shutting down of existing units and an embargo on new units."

8.2 What is India's obligation under climate change?

The Secretary, Ministry of Coal, in regards to future of coal, further deposed before the Parliament Standing Committee on Energy as under:

Sir, you referred to the Paris Climate Deal and global climate change problem. We have looked at that and our statement is that by the year 2020, the production of Coal India Limited is likely to touch about one billion tonnes because our assessment of demand at that point of time in the year 2014 was that it will hit about one billion tonnes. The Paris Climate Deal came in the year 2015. So, I am telling you from an insider's knowledge because I was the chief negotiator in that deal. So, the overall fossil fuel consumption scenario changed after the Paris Climate Deal. And, there was tremendous pressure on developing countries, especially on China and India to reduce coal consumption. But for the near future and medium term, coal will still be the mainstay of our energy supply. So, the long-term scenario is that, maybe, after 2050, our requirement may decline; our emissions may declaim but as per our modelling studies, till 2050 we do not perceive the emissions to peak. That essentially means that our consumption may not increase at that rate at which it has been growing in the past or it is growing now but it will continue to rise."

The question that needs to be asked is - why all this shoving and pushing to stop all future thermal power plants?

PART III IMPORT OF EQUIPMENT AND ITS CONSEQUENCES

9.0 Extensive imports of equipment

9.1 Characteristics of the power equipment industry

Power equipment manufacture, being both capital and skill intensive, has enjoyed a high degree of protection. Until the advent of neoliberalism, no country, with an indigenous manufacturing facility, allowed import of equipment. The exceptions were USA, with its vast market allowed limited imports and India. India, because power sector development was intermediated by foreign loans from World Bank and similar institutions that stipulated global bidding for purchase of equipment.

There is enough documentary evidence of cartelisation amongst power equipment MNCs. In fact, there is case law regarding litigation against MNCs under the U.S. Anti-Trust laws. In the global market power equipment manufacturers are the very large and powerful MNCs. They have political and financial support not only of their home Governments but also of large financial agglomerates and the World Bank. MNCs get an extensive subsidy from their home Governments in the form of defence contracts.

The Indian power network is very well developed. India is capable of absorbing large size units as well as 'state of art' technologies. There are less than a dozen countries in the world which in 1995 had an installed MW capacity comparable to India's installed capacity. Since power generation and T&D is capital intensive and India is short of capital, the Indian power equipment market has always been intermediated by the source of financing. For example, bilateral credit implies import of equipment from the country providing credit, multilateral credit implies international competitive bidding. Commercial credits from countries like Germany clearly stipulate conditions for import of equipment from Germany. Japanese credit through OECF is more discreet but ensures a reasonable share for the Japanese industry.

Another form of intermediation is to influence the credit supplier (World Bank/ ADB etc.) to engineer the specifications in such a manner as to minimise competition. Often specifications are drawn up in such as a way that either BHEL would get eliminated from the bid or would be forced to enter into collaboration with an MNC.

9.2 Under-utilised domestic manufacturing capacity

Operating under these circumstances the entire domestic industry could only achieve around 23 % capacity utilisation as shown in Table 5 below:

Table 5
Ordering of Thermal Power plant on domestic manufacturers (MW) between 2013-2018

Year	BHEL	Non BHEL	Total	Manufacturing capacity of the Domestic industry
2013-14	3,480	2,260	5,700	30,000
2014-15	4,000	2,640	6,640	30,000
2015-16	8,525	3,580	12,105	30,000
2016-17	250	5,120	5,370	30,000
2017-18	5,040	0	5,040	30,000
21,295	13,600	34,895	150,000	21,295

Source: Compiled

9.3 National loss due to under-utilisation of BHEL

Had the 50,000 MW worth of equipment, imported by Private Power Producers (IPPS), been ordered on BHEL, the value added or wealth generated within the country would have been Rs. ONE LAKH FIFTY THOUSAND CRORES. Rs. 1, 50,000 Crores. (The expenditure in foreign exchange on procurement of Materials, components, Systems, payment of Royalty is about 14.71% of the turnover, value added is computed in terms Supplies, Services, Taxes for about 85.29% of the cost of Thermal Power Plant if the Plant (assumed at Rs. 3.5 Crores/MW)

Add to this the wealth that would have been created through the ancillaries and all other forms of support provided to BHEL from the service industry. To all th must be added the lakhs of jobs that would have been created.

Table 6
Value of indigenous materials, components and systems manufactured by BHEL.

Rs. Crores

S. No.	Financial Year	Turnover of BHEL	Materials, Components, Systems imported	**FE expenditure as a % of Turnover**
1.	2016-17	28,840	**4091**	**14.18**
2.	2015-16	26,050	**4017**	**15.42**
3.	2014-15	30,947	**4185**	**13.52**
4.	2013-14	40,338	**6066**	**25.03**
	Total for 4 Years	1,26,175	**18,559**	**14.71**

Source: Annual Reports of BHEL

It is beyond comprehension that any Government would allow domestic industrial unit to suffer. And, that too from a Government whose Prime Minister's slogan was MAKE IN INDIA !!

9.4 Is BHEL globally competitive?

As explained above, even when the Indian power supply industry was reserved for the public sector, India had to allow imports power plant equipment due to the intermediation of foreign capital. Consequently, BHEL was compelled to compete in global tenders even for projects executed by NTPC in the Central sector and State Electricity Boards in the State sector. Table 7 give details of the global tenders and BHEL's success rate.

Table 7
Orders placed on BHEL by NTPC through ICB

Total Orders (MW) obtained by BHEL through International Completive Bids (ICB) from NTPC and its subsidiaries	**61,950**

	Turbine Generator	**Boiler**
Total Mega Watts tendered	50,320	49,370
Orders placed on BHEL based on ICB	30,300	34,480
BHEL success rate as %	60%	70%

Source: Compiled

Table 8 gives details of recent Orders received by BHEL between Dec. 2017 and March 2018 for Thermal Power Plants on the basis of International Competitive Bidding. This is to establish the consistent competitiveness of BHEL

Table 8
Recent Power plant orders won by BHEL through ICB

S. No.	Date	MW Capacity	EPC Cost	Location
1.	March 2018	660 MW	4400	UP
2.	March 2018	2400 MW	11,700	Patratu, Jharkhand
3.	January 2018	660 MW	2,800	Bhusawal
4.	December 2017	1320 MW	7,300	Tamil Nadu

The CAG report on BHEL14 observed:

"Power sector constitutes bulk (76.46 per cent to 80.53 per cent) of BHEL's turnover during the period under review (2011-12 to 2015-16).BHEL's turnover which was Rs. 49,510 crores in2011-12 declined to Rs. 26,587 crores in 2015-16; while profits of Rs. 7040 crores in 2011-12 turned into a loss of Rs. 913 crores in 2015-16.

Such excessive imports had a serious impact on the indigenous manufacturing unit. ***BHEL's success rate against competitors declined from 80.44 per cent in 2013-14 to 43.95 per cent in 2014-15 and to zero per cent in 2015-16"***

It is obvious from the above data and analysis that that the excessive imports have dealt a body blow to the public sector unit BHEL.

9.5 IPPs denied domestic industry an opportunity to even compete

Unlike World Bank monitored global tenders, Independent Power Producer tenders had little or no transparency. Independent power producers (IPPs) imported, from China, 17,362 MW and 42,875 MW during the 11th and 12th Plan respecctively. Whereas, all States put together imported, from China, 1,134 MW during the 11th plan and together with the Central utilities imported 1,300 MW during the 12th plan and beyond. Details of imports are given in Table 9 below

Table 9
Orders placed on Chinese Equipment suppliers (MW)

Source	**11th Plan**	**12th Plan and beyond**	**Total**	**As % of total import**
State	1,134	100	1,234	2
Centre	0	1,200	1,200	2
Private	17,362	41,575	58,937	96
Total	18,496	42,875	61,371	

The question is, why is there such a vast difference in the imports from China by the Independent Power Producers and State and Central utilities? `

BHEL success rate in NTPC's international competitive bidding was 60 % for turbines and 70 % for boiler. Even in 2018, BHEL could maintain its competitive edge. The question that needs to be asked is, why did BHEL and the Indian domestic industry fail with IPPs that imported 96 % off the equipment?

Before answering these questions, let us examine if the IPPs had any advantage in terms of price, quality or delivery.

9.6 Did IPPS get a Price advantage?

A study by Bank of America Merrill Lynch compares prices:
• In a typical case (a supercritical project of 600 MW for around Rs 1,300 crore), a Chinese company charged Rs 1.6 crore per MW—30% less than BHEL's price.

• When life cycle costs (the total life of a plant, which is generally between 25 years and 35 years) are compared, the Chinese price of Rs 2.47 crore per MW is almost in line with the Rs 2.6 crore per MW that BHEL charges.

The higher life cycle cost for Chinese equipment is because of higher auxiliary power consumption—the total power required to run the plant including workstations, lighting, air conditioning, etc. In the supercritical category, the auxiliary power consumption of Chinese equipment is 6.5% compared with 4.9% for BHEL. The Indian company's plants are more efficient, with a plant load factor (PLF) of 85% to 95%, which is at least 5% to 10% higher than its Chinese counterparts.

Chinese players had a free run because there is no import duty on equipment for mega power projects (4,000 MW and above) undertaken by the private sector, whereas Indian manufacturers had various taxes, customs duty on components and higher capital borrowing costs.

ORDERS WON BY CHINESE PLAYERS IN 2010

Equipment providers / Developers	Market value ($ billion)	Capacity (GW)
Shanghai Electric / Reliance Power	8.3	23.8
Dongfang Electric / Abhijeet Group	2.5	6.6
Harbin Power Equipment / Lanco Infratech	1.5	10.6

Source: Credit Suisse report

DISADVANTAGES FOR INDIAN MANUFACTURERS

Sales tax/ VAT/ Entry tax /Octroi applicable for Indian goods	5% to 6%
Low customs duty on foreign competitors: No duty for mega projects and 5% for project imports	4.8% to 6.8%
Higher financing cost*	2.4% to 3.2%

* There is also a disadvantage due to the lack of quality infrastructure; *Source:* FICCI

An additional advantage was that the Chinese government gives subsidies and cheap bank financing to power equipment manufacturers. Add to this an undervalued currency easy to the unfair competition. An added advantage was the advantage of exchange variation. Chinese Yuan that was equivalent to Rs. 5.28 in January 2008 was 10.19 in August 2018.

The Indian power producers were assured flexible long-term loan from the Chinese Exim Bank at a low rate of interest to finance 36 plants of 600 MW each. For example, Reliance Power signed a $5 billion MoU in 2011 with a consortium of Chinese state banks intending to build over 16 GW of coal power in India. This led to a rush for Chinese financing among other power developers seeking low-cost financing packages for large coal based thermal power plants.

9.7 Did IPPS get a Quality Advantage?

A report published in Mint (March 10, 2013) "*CEA evaluating power generation equipment from China*" states "*developers that have placed orders were unwilling to provide details sought by CEA, the authority invoked the Electricity Act and issued notices asking the companies to divulge information*" The report further states, another power ministry official confirmed the development. "*The survey has been on for some time. We had to send notices as we were not getting the required information. Since data was not being shared, hence the Act was invoked*," a top CEA official said. "*We are hopeful that the evaluation will be completed in a few months. This is a sensitive topic; the data is being verified and re-verified*." **Why should an evaluation of an imported equipment, by a statuary authority designated by law be a "sensitive topic" and the power producers show reluctance to share information.**

The 41-page report by a committee under CEA Chairman A S Bakshi, was given to the Power Ministry. It lambasted Chinese power gear on all key operational parameters - operating load factor, heat rate, auxiliary consumption, frequency of forced outages, breakdowns, etc - and safety mechanisms, putting in the dock around 12 per cent, or 25,000 Mw, of India's installed capacity. "Chinese turbines do not have safety functions like turbine stress evaluator and auto turbine run-up systems. The level of automation or control systems of Chinese turbines is not in line with present-day turbine designs and technology... leading to the possibility of compromised safety and mal-operation," the report said. Total outages for Chinese units based on domestic coal are substantially higher than the ones from Bharat Heavy Electricals Ltd (BHEL).

Chinese units based on imported coal have, however, done better than BHEL on some parameters. This is because Indian coal has a high ash and moisture content, large amounts of non-coal matter, and a low calorific value, so equipment vendors will have to manufacture differently designed turbines and other components. The quality of the coal deteriorates as it is mined further and further, thereby making the task of designing the boiler that much more difficult. BHEL, specialises in making customised equipment, and offers a guarantee to provide spares and maintenance during the life cycle of the plant.

The experience of State Utility Haryana was - at Yamuna Nagar 2X300 MW Shanghai plant there was one failure of turbine and one failure of generator rotor. As there was no service center in India the turbine and generator rotor were transported back to China, repaired and shipped back to Yamuna Nagar. HPGCL had deducted penalty amount of about Rs 500 Crores due to delay by Shanghai.

Later when there was a breakdown of one unit, Shanghai refused to attend it unless the Rs 500 Crores was refunded. In respect of long term operations whereas spares and services of BHEL are available even on credit. The issue of availability of spares and specialist manpower for Chinese equipment is not clear except the experience of Haryana which verges on blackmail.

9.8 Did IPPS get a Delivery advantage?

There is a constant chant from vested interest that BHEL delays equipment and this puts them at a disadvantage in getting orders. The table given below does not show any trace of a "huge difference"

The data given below does not indicate any distinct advantaged gained by the private Independent power producers by importing Chinese equipment. The overwhelming reasons for such imports seem to be availability of credit from Chinese banks on the bonafide side and allegations of over invoicing and kick-backs on the malafied side discussed later).

DELAYS IN COMMISSIONING OF PLANTS BY CHINESE PLAYERS...

Project	Developers	Capacity	Supplier	Delay
Jharsuguda	Sterlite Energy	**600 MW**	Sepco, Harbin, Dongfang	20 months
Sagardighi Unit 2	WBPDCL	**300 MW**	Dongfang	18 months
Durgapur Unit 7	DPL*	**300 MW**	Dongfang	15 months
Sagardighi Unit 1	WBPDCL	**300 MW**	Dongfang	13 months
Torangallu Ext. Unit 2	JSW Energy	**300 MW**	Shanghai Electric	9 months

...VS. INDIAN PLAYERS

Project	Developers	Capacity	Supplier	Delay
Kahalgaon II	NTPC	**500 MW**	BHEL	26 months
Chhabra Unit 2	RRVUNCL#	**250 MW**	BHEL	14 months
Santaldih	WBPDCL	**250 MW**	BHEL	14 months
Kakatiya	APGENCO	**500 MW**	BHEL	13 months
Chhabra Unit 1	RRVUNCL	**250 MW**	BHEL	11 months

*Durgapur Projects #Rajasthan Rajya Vidyut Utpadan Nigam

Source: Central Electricity Authority

10.0 Comparison between the Chinese equipment manufacturers and BHEL

The above analysis clearly establishes that there was no obvious advantage due to the imports of Chinese equipment. Not only did the Chinese get huge orders, they also managed to impose standardization of equipment. Neither the World Bank nor the private sector allowed BHEL to do.

It is therefore important to understand how the Chinese Government and the Indian Government support their power equipment manufacturers.

10.1 National interest is supreme -– case study of China Equipment Manufacturing

China opened its economy very strategically. Once China embarked on becoming the manufacturer of the world great emphasis was placed on skill development and power generation. China began to consume roughly half of global coal, consequently it became the largest market for thermal power plants. Foreign investment in the sector could only be undertaken with a Chinese Manufacturer as a joint venture partner. When tendering for a power project took place, if the foreign and domestic manufacturers had the same terms and conditions, preference must be given to the domestic manufacturer. In 1990 import of units of 300 MW and below were prohibited. Only eight years later imports of power plants of 600 MW and below were no longer permitted. When importing large power plants of 600 MW and above, that could be supplied by domestic sources, the amount of domestic sub-contracting

and technology transfer needed to be clearly specified. In 1990's when international competition intensified, China reaffirmed the Harbin Power Equipment Company HPEC as China's "National Champion.

With global emphasis on climate change, aided by new policies and the dampening of economic growth rates, China went to great lengths to cap its domestic coal consumption. China added 230GW of coal fired power capacity added over the past 5 years16. Chinese domestic coal consumption declined in 2014. The rate of coal power capacity addition has slowed too, though in 2015 alone China installed more than 42 GW of new coal plants. Realising the compulsions of shifting away from coal in China and recognising the glut in coal power equipment among Chinese manufacturers, China moved towards becoming a leading exporter — buoyed by state-affiliated banks and export-credits. India's power sector market was added to its portfolio and the Indian Private Power investors became its chief patrons.

Not only has China managed to make major inroads into the Indian market, the MOUs signed by Prime Minister Modi in September 2014, include power equipment service centres to support China coal power equipment operating in India.

10.2 Indigenous power equipment manufacturer BHEL sent on a tail spin.

BHEL is unique in many respects. It is the only manufacturing unit, one of its kind, in the entire Third World17. The objective and purpose of setting up BHEL was to enable India to be self-sufficient in electrical equipment manufacture. Its size and product mix were designed to serve this objective. It has almost the entire range of equipment in power generation, transmission, distribution and utilisation. It is involved in electric traction and oil field equipment and marginally in telecommunication equipment. Recently it has started getting involved in Defence equipment. BHEL has no consumer products.

Inspite of the fact that BHEL was a late starter and in a Third World country, it has managed to remain technologically contemporary. BHEL is largely dependent upon the sale of power equipment in the domestic market. Indian Power sector accounts for the bulk (76.46per cent to 80.53 per cent) of BHEL's turnover during 2011-12 to 2015-16. During XII Plan period, BHEL achieved capacity addition of 45,274 MW, surpassing the target by 9 per cent. During the same period the Indian Private power investors imported 41,575 MW of equipment from China, that constitutes almost four years of production of BHEL.

BHEL is a sub system of the Indian economy. If the economy itself is having a resource crunch, then to expect BHEL to provide credit is begging the question. Another factor is that the condition imposed on the foreign investors is that the funds raised within India should be limited to 40 % of the total project cost. If BHEL provides supplier credit by raising the funds either from its own balance sheet or from Indian financial institutions, such credit would be counted in the 40 % ceiling. Whereas credit provided by MNC equipment suppliers would leave the foreign investor to source 40 % of the project finance from India. Also, since the financial health of SEBs would further deteriorate with the induction of investor power plants, where the promoters would be backed with guarantees, it would be reasonable to expect that BHEL outstandings would increase, creating severe liquidity problems and almost eliminate BHEL's capacity to provide suppliers credits except in the form of defaults by SEBs. Neither the Government nor the Indian financial institutions have to provided BHEL support in its efforts to export. Various factors – unplanned growth of thermal power; decline in solar power prices and spurt in solar generation; climate change etc. have contributed to the decline for demand for thermal power plant equipment. With little or no exports, BHEL's decline has started. Disruption of thermal power market would be the death knell for BHEL.

PART IV - OVER INVOICING OF COAL AND EQUIPMENT

11.0 Is fraud – over invoicing of coal and equipment - the real interest of the promoters?

11.1 Samples of DRI's show- cause notices

The extent of over-invoicing in equipment and coal can be gauged from the value of show-cause notices issued by the by the Directorate of Revenue Intelligence (DRI)

Show-cause notices for over- invoicing in respect of
Equipment – Rs. 20,000,00,00,000 (Rs. 20 thousand crores)
Coal – Rs. 30,000,00,00,000 (Rs. 30 thousand crores)

It is true that all show-cause notices do not necessarily get translated into criminal convictions, but these figures are so staggering in their immensity, that a they deserve a closer examination.
The blog18 "Where Does the ₹50,000 Crore Power Tariff Scam Go From Here?" August 16, 2018 and the article published in the Economic and Political Weekly **Paranjoy Guha Thakurta** form the basis of the analysis given below**.**

Here are some samples of the DRI show cause notices as given in the blog and the EPW article:
➢Two years ago, in 2014, the DRI issued show cause notices alleging over-invoicing of power plant equipment to the tune of Rs. 6,000 crores by a number of companies in the Adani Group. The companies were alleged to have indulged in a "trade-based money laundering scheme" by mispricing equipment and by routing invoices through an intermediary in the United Arab Emirates, which is allegedly a "front company" of the group. The cases have not yet been adjudicated by the competent customs authorities.

➢In 2015, the DRI issued show cause notices to companies in the Essar Group as well, alleging over-invoicing of power plant equipment to the tune of Rs. 3,000-odd crore. It has in fact seized power plant equipment valued at around Rs. 2,000 crores under the Customs Act, 1962. In the case of the Adani Group, the value of the equipment seized is more than three times higher at around Rs. 7,000 crores. In both instances, the mode of operation appears to have been similar. The customs duty levied on power and infrastructure projects has been either at zero or a very low rate, that is, 5% or a lower percentage of the value declared. If these companies are found to have inflated the value of the equipment imported, the equipment is not just liable for confiscation, the customs authorities can levy penalties on the firms. But this has not been done as yet.

➢DRI through a 41-page show cause notice (SCN) issued on 31 August 2016 of having inflated the price of coal that it imported from Indonesia by routing the invoices relating to the transactions through intermediaries based in Hong Kong and marking up the quality and price of the coal through these invoices. –into one of a number of instances of alleged over-invoicing of coal imported from Indonesia for use in power plants. The case before a Mumbai bench of the Customs, Excise and Service Tax Appellate Tribunal (CESTAT) concerned a Delhi-based company named Knowledge Infrastructure Systems Private Limited (KISPL). The company – which was contracted to supply coal to thermal power stations run by the Maharashtra State Power Generation Company Limited in Bhusawal and Chandrapur– On 31 May, a customs tribunal in Mumbai rejected an investigation conducted by the Directorate of Revenue Intelligence (DRI)

➢The DRI investigation, which started in 2009 and is continuing, involves some of the biggest names in India's power sector, including companies owned by private corporate players such as Gautam Adani's Adani group, the Ruia family's Essar group, Anil Ambani's Reliance ADA group, Sajjan Jindal's JSW Steel, the Hyderabad based NSL Group promoted by M Venkataramaiah and M Prabhakar Rao, India Cements headed by N Srinivasan as well as major public sector companies such as NTPC Limited (formerly National Thermal Power Corporation Limited), MMTC Limited (formerly Metals and Minerals Trading Corporation Limited), Tamil Nadu Electricity Board and Karnataka Power Corporation Limited.

➢the equipment over-invoicing cases came under the ambit of the SIT, as reported by Josy Joseph in his book A Feast of Vultures (HarperCollins, 2016). He quoted a senior Enforcement Directorate official in the SIT as stating that "it is a watertight case" and suggesting that "if the Adani case reaches its logical conclusion, the group will have to pay a fine of around ₹15,000 crore."

11.2 Lost in translation – from show cause to conviction

In the middle of 2016, it emerged that the DRI was facing hurdles in investigating the allegations related to coal imports. In a report published in India Today, it was revealed that officials in public-sector banks like the State Bank of India and Bank of Baroda had refused to submit to the DRI documents from their overseas branches in Singapore and Dubai, citing banking secrecy laws in the respective countries, despite direct requests from the then Revenue Secretary Hasmukh Adhia. In a subsequent report, a DRI official was quoted as saying that 'it looks like an "invisible outside hand"' is interfering in the investigation.

Directorate of Revenue Intelligence (DRI) also tasted defeat in a tribunal in cases relating to imports of coal and power generating equipment has. The DRI intends appealing the tribunal's decision. A Delhi based company, Knowledge Infrastructure Systems Private Limited, which has been accused of over-invoicing coal imported from Indonesia and had faced penalties imposed on it by a custom adjudicating authority, has been sought to be exonerated on an appeal to the Customs, Excise and Service Tax Appellate Tribunal. This development follows two companies in the Adani group being let off by the same adjudicating authority. The companies had been accused of similar allegations of over-invoicing.

While the future of the DRI's investigations into the ₹50,000 crore scandal that allegedly fleeced electricity consumers across the country is not clear, a recent report by the Comptroller and Auditor General of India claiming that a Tamil Nadu government-owned power utility paid Rs. 800 crores extra for lower grade coal between 2012 and 2016, has bolstered the investigating agency's contentions.

On the enormous delays in translating show cause into convictions a senior law officer in the government observed that

"The devil lies in the delay. The more you delay the adjudication process, the more the cases fade away from public memory and our collective consciousness. There is no accountability in the system. No one is held responsible if adjudication is not done in a timely manner. And this is an important reason why the government, in this case the Department of Revenue in the Ministry of Finance, ends up losing most of such cases."

The analysis in the previous paragraphs make it obvious that there was really no serious gain in importing the power equipment or basing the fuel on imported coal; then the fact that power houses were set up without forward and backward linkages and finally that funds of the people of India entrusted to the banks are in serious jeopardy all of then add up to the needle of suspicion pointing to the real motivation being over-invoicing of equipment and coal.

11.3 **Effect of over-invoicing on consumer tariffs**

Given below is Paranjoy Guha Thakurta's analysis:

How does over-invoicing power plant equipment lead to higher electricity tariffs for consumers? Electricity tariffs are arrived at by evaluating two sets of costs—fixed and variable. Fixed cost involves operations and maintenance together with servicing of equity and debt. Variable cost includes the fuel price and costs of fuel transportation and handling. Both the costs have a direct impact on tariff fixation. The fixed cost has a direct impact on tariff fixation, irrespective of whether a particular plant is operational (generates electricity) or otherwise as in the merit order dispatch, the plant with the lowest variable cost is placed on the top of the stack. As far as fixed cost is concerned, a plant's debt-equity ratio is a key determinant when the regulator fixes the tariff. The regulators normatively divide debt and equity in a ratio of 70:30 while calculating tariffs. The cost of land, which is the other component of the fixed cost, is a relatively smaller component of the fixed cost. The major item under this head is the cost of equipment. By artificially over-valuing power plant equipment, the producer obtains a higher tariff from the regulatory authorities.

The tariff is the per unit value that the electricity generating company can recover from distributors/consumers and is based on the cost that it incurs in generation of electricity. The electricity generation companies submit their fixed cost and variable cost figures to the regulator. The expenditure incurred in installation

of capital goods is also taken into consideration while fixing the tariff. The higher the fixed cost by way of over valuation of imports, the greater the tariff and, by implication, greater will be the illegal profits which are siphoned outside the country. In the end, the consumer of electricity pays.

The not so surprising fact is that the CERC has not initiated any action, *suo motu* or otherwise, to analyse the tariff structures in the context of allegations of over-invoicing of imported coal and power generating equipment, as the law officer quoted earlier pointed out. "The CERC has the power to take *suo motu* cognisance to initiate necessary action which it has not done," the person remarked.

The first act of the Narendra Modi government after it came to power in late May 2014, was to set up a SIT to investigate black money, which included senior officials from each of the different investigation agencies – this was repeatedly tom-tommed by the Prime Minister. But as the analysis shows the Independent power producers made a mockery of the Prime Minister's "Make in India" and "investigation of black money'. We would wait to see who will have the last laugh.

PART V WHAT THEN IS OUR RESPONSIBILITY AS CITIZENS?

12.0 Defend Electricity supply as a fundamental right

India started hydro-electric generation by the end of 19th century. The first hydroelectric installation in India was installed near a tea estate at Sidrapong for the Darjeeling Municipality in 1897. The first electric streetlight in Asia was lit on **5 August 1905** in Bangalore. In little over a century electricity has become as important as air and water. It has to be considered a fundamental right and no longer a commodity.

The analysis made in the earlier paragraphs leads to some very disturbing conclusions. The most vital ones are flagged below:

Is India losing its sovereignty? This is a question whose time has come because:

I) Legislation relating to the Electrical power supply industry was motivated and structured by multilateral institutions in order to suit investors conditionalities rather than consumer interest of the people.

II) The amended laws created a situation where there was laissez-faire **not** only with respect to basic and vital infrastructure - electric power generation, but also with regard to environment.

III) Imports were given favourable conditions and encouraged, not because of larger national interest but only to facilitate high flying industrialists to venture into power generation leaving behind a trail of investigations and allegations of over-invoicing and money laundering

IV) Near collapse of indigenous equipment manufacturing industry. The excessive imports resulting in loss of an opportunity to create wealth worth about one and half lakh crores besides millions of jobs.

Then next serious question is: has there been governance failure? In affirmative answer is obvious when

i) Sixty-five percent of investment becomes doubtful debts of public sector financial institutions. And instead of penalising the defaulters, every effort is being made to provide comforts and concessions at the cost of people's money.

ii) There is violation of law and no action is taken, leaving it to ordinary citizens, NGOs and Trade Unions to move the court of law in order to enforce law.

Given the above reality, we the citizens of India, have to defend national interest. Under the leadership of those who work in the industry and have intimate knowledge of the power sector and those who work in the

financial institutions; all sections of people should come together to save the electrical power supply and manufacturing industry.

As a bare minimum, we must demand and then struggle to have the following demands realised:

a) Comprehensive review of all legislation relating to the electrical power industry. In such a review all stakeholders should be involved. The review cannot be left to those who have failed the people.

b) And based on the review to enact a consumer friendly legislation leading to the restoration of the integrated power system under public control.

c) No further unbundling of the electrical power system. Legislation like the proposed Electricity Bill 201419 should be withdrawn.

d) Nationalisation without compensation of all the private power plants that are unable to repay funds collected from public financial institutions. There should be zero tolerance for allowing banks to take a haircut.

e) Initiation of criminal proceeding in all into all cases of violation of law and allegations of over-invoicing of equipment and coal.

f) Protection to Indigenous manufacturing industrial units particularly the public sector unit BHEL.

Conclusion

How does one conclude a narrative that establishes that Indian's largest and best-known private sector firms have made in investments that have resulted in sixty-five percent of the investments becoming bad debts with every likelihood of the poor and indulgent people taking a 50 % haircut through their public sector banks?

How does one conclude a narrative that establishes a failure of governance when it is left to individuals, officers' associations and NGOs to take matters to court, and when investigations carried out by the Directorate of investigations suggest almost 50,000 crores worth over-invoicing of equipment and coal and there is lackadaisical follow up?

How does one conclude a narrative that establishes that an opportunity to create wealth worth more than one and half lakh Crores and millions of jobs was deliberately and wilfully not allowed in favour of imports where there is no advantage in terms of price, qulity or delivery?

The only conclusion is that the citizens of India wake up, before it is too late, and take up the cudgels and defend their fundamental right.

0114004 SHARMA, SHANKAR (Banashankari Krupa, 3rd Cross Right Side, 80 Ft Road, Vijaynagar 1st Stage, Sagara, Karnataka 577 401). **TAKING A HOLISTIC APPROACH ON DRAFT NATIONAL ENERGY POLICY FROM SOCIAL AND ENVIRONMENTAL PERSPECTIVE**

A diligently prepared National Energy Policy has become critical for any country. The initiative of NITI Aayog to prepare the draft NEP has come at a critical juncture in India's developmental pathway. This is a great opportunity to diligently review our developmental priorities in view of the fact that whereas energy is considered as an important ingredient in HDI index, it also has huge impact on every critical element of our society including that of health, food, environment and the looming threats of Climate Change. Hence, utmost care and due diligence is required in finalising the national energy policy so as to ensure equitable, healthy and sustainable developmental opportunities for all sections of the society. Whereas draft NEP by NITI Aayog has many good points and recommendations, it can be improved considerably through the feedback from the larger civil society and the domain experts. National Energy Policy can become vastly more credible from the overall perspective of nation's welfare objectives if it considers various associated issues impacting the demand and supply of energy from social

and environmental (Climate Change) perspective. In view of the glorious cultural heritage of the country which is characterised by low per capita energy demand/requirement, time-tested practice of sourcing energy from the locally available resources, simple life style etc. it is deemed entirely feasible to meet the legitimate requirement of all sections of our society through locally available resources at minimum overall cost to the society in a just and equitable way. It is fondly hoped that the issues raised in this discussion paper will be positively considered by the NITI Aayog, and a much more inclusive energy policy will emerge from a diligent review of the draft.

Key Terms/Words: National Energy Policy; NITI Aayog; Integrated Energy Policy; Constitutional obligations; welfare objectives; demand forecast; supply options; fossil fuels; renewable energy; Climate Change; IPCC; SPV System; per capita; Carbon Dioxide; pollution/contamination; forests; water stress; emissions intensity; import dependence; energy security

Introduction:

A National Energy Policy has become critical for any country. The initiative by NITI Aayog to prepare a draft NEP (DNEP) is wholly welcome, as it comes at a critical juncture in India's post-independence era. DNEP considers the energy scenario by 2040 whereas Integrated Energy Policy (IEP) of 2011 had done so for year 2031-32. Whereas DNEP has many good points and recommendations, it can be improved considerably through the feedback from the larger civil society and the domain experts. In a nutshell it can be said that the draft would have become vastly more credible from the overall perspective of nation's welfare objectives if it were to consider the issues impacting the demand and supply of energy from social and environmental (Climate Change) perspective. It is fondly hoped that the vast number of recommendations/comments to be received from the individuals and the CSOs will be positively considered by the NITI Aayog, and a much more inclusive energy policy will emerge from a diligent review.

Overarching Comments:

True objectives of National Energy Policy (NEP)

Recently, George Monbiot a prolific writer from UK on energy, environment, and Climate Change has said: "We cannot hope to address our predicament without a new worldview. We cannot use the models that caused our crises to solve them. We need to reframe the problem." The energy sector, which is a major contributor to GHG emissions and which is also intricately linked to the accelerated depletion of our natural resources, will need a paradigm shift in the way we deal with it.

True objectives of NEP, in the Indian scenario, can be stated as follows: (a) to laydown clear policies/ directions in choosing a set of most appropriate energy technologies to meet the legitimate demand of energy of all sections of our society on a sustainable basis at the lowest overall cost to the society; (b) this has to be done keeping in view the twin goals of ensuring equitable welfare requirements of all sections and the proper upkeep of our natural environment in the context of the looming threats of Climate Change; (c) it should fully comply in letter & spirit with all the relevant Acts of our Parliament and the associated rules/polices, including International obligations.

In view of the fact that energy is considered essential for the overall development of our society, and since energy is also a major contributor to Climate Change, the NEP cannot succeed in its overall objective of contributing to the welfare of our communities, unless it takes all possible policy initiatives to minimise the deleterious impacts associated with Climate Change.

In analysing the draft NEP proper identification of the primary approach needed in the formulation of such a critical national level policy can be of help. In this context the following five issues can be considered as essential:

(i) Rational approach in projecting a realistic energy demand and the associated issues
(ii) Correct approach in the choice of suitable technologies and the effective usage of the associated global knowledge

(iii) Diligent analysis of the costs and benefits associated with of each of these technologies from a societal perspective
(iv) Social and environmental impact analysis in the background of the relevant global experience
(v) Compliance check with the relevant Acts, rules, and policies.

Overview of DNEP

The analysis of the DNEP is best done considering the highlights of its projection by 2040. Some of the key implications projected by DNEP by 2040 (page 98) are:

- Share of non-fossil fuel based capacity in electricity: 57% - 66%
- Per capita energy demand: 503 kgoe/capita in 2012 to 1055-1184 kgoe/capita in 2040.
- Energy related Emissions per capita: 1.2 tons of Carbon Dioxide Equivalent/capita in 2012 to 2.7-3.5 tons of Carbon Dioxide Equivalent/capita in 2040
- Per capita electricity consumption: 887 kWh in 2012 to 2911-2924 kWh in 2040
- CAGR of electricity supply (Ambitious scenario): 5.5% between 2012-2040
- CAGR of primary energy supply (Ambitious scenario): 3.6% between 2012-2040
- Overall Import dependence (including non-commercial energy): 31% in 2012 to 36%-55% in 2040.
- Reduction in emissions intensity: 45%-53% by 2030 from 2005 levels

Energy Demand Projection Concerns – the need to contain the demand From these bullet points two issues stand out as clear indicators of all the major concerns for the future, if our energy sector were to proceed as projected in NEP. Nearly 3 times increase in per capita energy related emission by 2040, as projected in NEP, is a very poor reflection of our national priorities as far as human health and the upkeep of our natural resources are concerned. For a much increased population by 2040, such a high per capita emission not only means huge health implications, but also vastly increased exploitation of our natural resources, which are already a concern as in 2017, and as reflected by the unacceptable pollution levels of air, water and land. If our energy resource import dependence should become as high as 55% by 2040, the foreign exchange burden will be enormously high, and the energy security can remain only as a niche term in books.

It is essential that DNEP, as a critical national policy, should consider the implications of such vast increases in GHG emissions and the energy import bill from social, environmental and economic perspective in the long run. Such implications are:

- Critical elements of our natural resources will be vastly degraded; probably reaching a point of no return much before 2040;
- With so much fossil fuel burning what will be the status of air quality, and the contamination of land and fresh water bodies; similarly how much of our natural forests will be left by 2040?
- While the growth in population, urbanisation and industrialisation are already putting extreme pressure on the population density parameters, can the land diversion for all these additional power/energy plants and the associated infrastructure improve the scenario in any way?

Whereas the total energy demand between 2012 (as the reference year) and 2040 is projected to grow between 2.7 and 3.2 times, the draft projects that only 17% energy savings is feasible by 2040 between the BAU and ambitious scenario (Table 4 of DNEP). When we objectively consider the gross inefficiency prevailing in energy production, transportation/transmission /distribution, and utilisation in different sectors of our economy, the potential to reduce the overall demand through measures such as efficiency improvement, demand side management (DSM) and conservation can be seen as huge. Hence, the savings feasible between the BAU and ambitious scenario could be much higher; likely to be much more than 25%. Suitable policy interventions in this context will help to reduce the overall energy demand to a much lower level than that is projected by 2040.

The electricity sector alone is known to have the potential to reduce its demand by as high as 40% through efficiency improvement measures. But DNEP has assumed only 6.5% reduction in demand by 2040 (DNEP table 6). Additionally, the share of electricity in total energy demand by 2040 is assumed as only 26% by DNEP (DNEP table

7), whereas the global projections say that by 2050 more than 60% of global energy consumption is likely to be in the form of electricity. Keeping the convenience of using electricity, the zero pollution at the point of usage, and the fact that much of electricity can be obtained by renewable energy (RE) sources, it is highly desirable to have a high percentage of electricity in the national energy basket. Similarly, the sectors such as transport, pumps & tractors and buildings also have huge potential in energy demand reduction. Hence, all possible efforts should be put into reducing the total energy demand by vastly more than 17% of the BAU scenario in 2040.

Additionally, it must be stated that the high T&D loss of around 22 percent in electricity sector, against a global average of less than 10 percent and best practices of less than 5 percent, is not a matter of pride for India, which is striving to excel in various fields. Targeted reduction of aggregate technical & commercial (AT&C) loss to a minimum of 10 percent by 2030 should be one of the major targets in the policy.

DNEP also indicates that the demand for coal may go up by 2.5 times. It indicates that the overall import dependence (including non-commercial energy) may go up from 31% in 2012 to 36% -55% in 2040. The combined effect of burning all these hydro carbons (in solid, liquid and gaseous forms) in vastly increased quantities by 2040 will result in a tremendous addition to GHG emissions, which will be a hugely negative factor from the Climate Change perspective. No amount of technological advancement in the so called 'clean coal/energy' technologies will be able to bring down the GHG emissions to a much lower level, which is unquestionably needed by 2040. This scenario will negate the letter and spirit of India's INDC to UNFCCC, and its ambition to become a global leader. The continued dependence on the import of hydro carbons, which in India's case already has huge concerns w.r.t the foreign exchange considerations, will have increased economic and energy security implications. Such increased foreign exchange burden is also against the efforts of the present govt. to minimise the import bill.

Whereas the nuclear power has not enjoyed the much needed public confidence even after about 5 decades of its introduction in India, its negligible percentage in the national electricity capacity basket (about 2%), the enormous capital cost, the need to depend on imported fuel/technology, and the costs/risks associated with nuclear accident/spent fuel, cannot make it a suitable technology for a densely populated and poor country like India. Similarly, dam based hydro power plants have many issues of concern to our densely populated society, such as the forced displacement, loss of forests & agricultural lands, and the degradation of river ecology. The renewable energy (RE) sources too, if not managed properly, have the issues of ecology and land diversion.

Additionally, the unlimited energy demand growth has huge economic and natural resource implications, such as forest felling, mining related issues, land diversion, people's displacement, enormous costs of transmission systems, pollution loading etc.

The considerations such as taking the per capita energy consumption to a much higher level, additional employment creation potential, and adding to GDP growth rate etc. should not become the primary objectives of our national energy policy. Such considerations will distort the primary objective of NEP, which is to ensure the minimum quantum of energy that is required to eradicate poverty at the lowest overall societal cost while not compromising the health of our environment. It is a well-known fact that the linkage between the per capita energy consumption and HDI is not true under all situations, and that it is true only at very low consumption level. Whereas there is a belief that the industries and commerce alone can add considerably to the employment opportunities, it is pertinent to know what Tamil Nadu State Action Plan on Climate Change has said. It says: "Global development experience reveals that one percent growth in agriculture (*and associated activities?*) is at least two or three times more effective in reducing poverty than the type of same growth emanating from non-agricultural sector." In this context, there is a serious case to consider only those economic activities which demand minimum energy and natural resources for employment generation opportunities.

The high GDP growth rate paradigm, which has been practiced by the successive governments for decades, has created many intractable problems for the country including the unsustainable exploitation of our natural resources and contamination of air, water and land, and all the associated issue for the vulnerable sections of our society, as highlighted in a World Bank report of June 5, 2013 on India's economy.

Reference documents on efficiency and DSM issues:
(I) "Power Sector Road Map for Tamil Nadu – 2050"; April 2016; *(http://mitramaadhyama.co.in/archives/2791)*
(ii) "Integrated Power Policy", Sept. 2012; *(http://freebookculture.com/?p=172)*

Energy/Water nexus: In recent years the close relationship between the usage of energy and water are getting highlighted for obvious reasons; so much so, that in US the 'Nexus of Energy and Water for Sustainability (NEWS) Act of 2014' was enacted and defines the term energy-water nexus as the link between energy efficiency and the quantity of water needed to produce fuels and energy, and the quantity of energy needed to transport, reclaim, and treat water. As per UN, because of the undisputed relationship between the usage of water and energy, there is a clear imperative of effectively managing both these aspects of our life keeping in view the impact of Climate Change in order to achieve the equitable development of all sections.

Water–Energy Nexus

As per an editorial in Current Science of April 2014 ("International World Water Day 2014, Focus: Water–Energy Nexus") 'Energy and water are closely intertwined. It takes a great deal of energy to supply water, and a great deal of water to supply energy'. This article also points out that water consumed for energy production, according to International Energy Agency (IEA, 2013), will increase from 66 billion cubic metres (bcm) at present to 135 bcm by 2035. Out of this global energy related water demand, it is estimated that more than half of this consumption will be by coal-fired thermal power plants, about 30% by bio fuel, whereas oil and gas-based production will account for 10%. Renewable energy generation, such as wind and solar photovoltaic power, accounts for less than 1% of water consumption for energy production. While power generation, as indicated above, requires large supply and utilization of water resources, energy itself is required for pumping, transporting, treatment and desalination of water. Agriculture, including irrigation, mining of coal and lignite, hydraulic-fracking, manufacturing and construction industries, use as much as 37% of the electrical energy produced.

India, being a water stressed country, should carefully consider this nexus between energy and water for the true welfare of the growing population, and take all feasible options to contain their combined impact on our communities.

After considering all these grave concerns associated with energy sources and electricity production technologies in a holistic manner, it has to be emphasised that there are certainly limits to how much the nature can provide to meet our escalating demands. Hence, energy demand management should receive much higher priority in the energy policy than it has been in our country.

Energy Supply Options/ Technologies – the relevance of social and environmental perspectives Keeping in view the continued growth of the already huge population base; unmet energy demand of about 25% of the population; the socio-environmental impacts of vast growth in energy demand; and the Climate Change considerations etc. the primary approach should be to determine the minimum quantum of energy required by our society to eliminate the poverty at the lowest overall societal cost on a sustainable basis. Hence, the objective should not be to meet the unlimited amount of energy demanded by few sections of the society, but to determine a manageable limit to the total energy demand of the entire society.

The country cannot afford the increase in the **hydro carbon demand** by vast margins as projected in DNEP. One of the most feasible options to reduce this demand is the fuel switching for transport sector, which has been discussed briefly in the DNEP. Whereas the deployment of electric vehicles (EV) is passingly mentioned, this option needs to be supported by a concerted action plan to minimise the liquid and gaseous hydro carbon import dependence. The maturity of this technology can be gauged by the fact that France has decided to ban the sale of gas and diesel Vehicles by 2040, and many countries, including India, have plans to massive introduction of EV vehicles by 2030. In July 2017, Volvo announced it would phase out production of petrol/diesel-only cars from 2019 in favour of electric cars. Energy storage technology, led by vehicle battery technology, is going through

unprecedented progress and has provided confidence to transport industry to aspire for EV technology as the mainstay by 2030. Keeping in view the pollution impacts and foreign exchange burden of liquid and gaseous hydro carbon, India should plan for massive induction of EV vehicles by 2040.

Bio-fuels, in an agrarian country like India, have huge potential. Expert opinion indicates that it is possible to supply transportation fuel (at least 30%), rural electrification, waste to energy conversion, rural employment, reduction in air pollution, improving the soil fertility and rain water recharge by encouraging bio fuel. NEP should lay down clear, ambitious and time-bound bio-fuel development /usage program. Rural energy supply for cooking can be based on this source. However, the competing demand on land for growing bio-fuel plants should be managed in such a way that the food security is not affected in any way. Very specific and unambiguous guidelines should be stipulated in the policy.

Railways, being a major consumer of diesel, can eliminate its usage completely by rapid electrification of its routes, and by optimally utilising its estates, such as railway platforms, buildings etc., for roof top solar PV systems. Indian Railways is already on an ambitious program of electrification, and this should be hastened by adequate investments.

Many of the heating and cooling applications in industries have the potential to be supplied by solar and bio-energy. Adequate encouragement is needed.

Gaining from the domestic and international experience it is safe to state that the usage of coal, diesel and gas in electricity generation can and must be minimised by 2040. Coal usage has been on a steep downward slope across the globe since 2010, and many countries have plans to completely stop its usage before 2040. India, with a vast potential of renewable energy (RE) sources, and a low per capita energy need, is uniquely placed to make an early move from a coal dependent energy scenario to an RE dependent scenario. Whereas all fossil fuels have the concerns associated with GHG emissions, pollution of land, air and water, the liquid and gaseous fuels also have the import dependence issues. The TAPI gas pipeline and other similar proposals to import gas from gas rich regions have many difficult issues to contend with and may not be resolved in the near future. Hence, they cannot be seen as feasible options beyond immediate future.

The advocacy on **'Clean Coal' technology** has remained very feeble basically because the CO_2 emission cannot be eliminated completely. Technologies such as CCS and CBM have proven to be very costly, inefficient, and most of the pilot projects have been discontinued. The issue of safely keeping the sequestered CO_2 away from the atmosphere has not been addressed satisfactorily. Similarly, the **hydraulic fracture** (or shale gas or fracking) as a technology, has been associated with huge controversies such as pollution of underground water. Several countries have banned or declared moratorium on hydro-fracturing of shale. Physicians, Scientists and Engineers have been in the forefront opposing unconventional fossil fuels such as shale gas for environmental reasons alone. GO no. 186 dated 08.10.2015 of Tamil Nadu government questions the very wisdom in the inclusion of CBM as part of energy policy. In this context, these unconventional technologies on the usage of hydro carbons also cannot be considered as suitable for the Indian scenario.

Three reports/news articles as in the box below may indicate the seriousness of the issues associated with fossil fuels in general and coal power in particular.

The debt threat lurking behind India's zombie power plants

http://economictimes.indiatimes.com/industry/energy/power/the-debt-threat-lurking-behind-indias-zombie-power-plants/articleshow/59692622.cms
A Reuters analysis of India's power output data shows over 50 coal- and gas-fired power plants in India are largely mothballed, or operating at a bare minimum. After steel, power firms make up the second-biggest portion of India's $150 billion mountain of bad debts. India's stalled or stranded power projects account for nearly 50 gigawatts of electricity production capacity.

India will take atleast 6 years to cap toxic emissions from power plants.
http://economictimes.indiatimes.com/industry/energy/power/india-will-take-atleast-6-years-to-cap-toxic-emissions-from-power-plants/articleshow/59692402.cms
The nation's power industry regulator says a countrywide roll out of equipment to lower sulfur dioxide emissions won't be completed until 2023. And that's only one of the the four types of pollutants plants must cap.

The coal truth: how a major energy source lost its power in Britain
https://www.theguardian.com/business/2017/jul/19/how-coal-lost-power-britain
"Only five years ago, the fuel was generating more than 40% of the UK's electricity, but new analysis by Imperial College London reveals coal supplied just 2% of power in the first half of 2017. More than 1,000 deep mines and nearly 100 surface ones operated until the early 1960s – today there are just 10 tiny mines left. Pollution laws and carbon taxes have forced large, ageing plants to close in the past five years, with three major ones closing in 2016 alone."

Similarly, the **dam based hydro power** from Nepal and Bhutan has some limitations, and is also constrained by domestic considerations such as environment and people's displacement. Our experience of **imported nuclear power technology** has so far been highly discouraging. Due to cost and time over-runs associated with land acquisition, local opposition, environmental clearance etc. the price of electricity from dam based hydro and nuclear reactors have already become very high as compared to the RE sources. Additionally, all these conventional technology electricity sources are dependent on large unit sizes and complex integrated power grid, which has been known to be against the principle of energy justice amongst different communities such as urban and rural areas.

Major issues with conventional technology electricity sources
(Source: author's compilation from various sources)

	Fossil Fuels (coal, gas, diesel)	**Dam Based Hydro**	**Nuclear Power**
Economic Issues	Huge pressure on natural resources such as land, water and minerals; reduced agricultural production; ever increasing capital and operating costs; fast depleting fossil fuels	Demands large tracts of forests and agricultural land; water logging; impacts fishing income	Demands large tracts of forests and agricultural lands; huge capital costs; long term waste management costs; vast requirements of fuels and technology
Social Issues	Peoples' displacement and Health; denial of access to natural resources for the poor	Peoples' displacement and Health; denial of access to natural resources for the poor	Peoples' displacement and health; denial of access to natural resources for the poor
Environmental Issues	Global warming; pollution of land and water and air; large quantity of ash; radiation from ash	Methane emission, submersion and fragmentation of forests	Mining related pollution; radiation emission; GHG emission in the overall life cycle

India has a huge potential in RE sources such as solar, wind, bio-mass and ocean energy, which need all the possible policy interventions and budgetary support for some more years. As compared to the massive direct/indirect subsidies received by fossil fuel industry for nearly hundred years, RE sources are not expected to need them for many more years. If the policies and regulatory measures to effectively deal with the social and

environmental costs/issues associated with fossil fuels were to be in place, the RE sources may present themselves as vastly cheaper even in 2017.

Whereas the complete elimination of fossil fuel usage in Indian scenario may be difficult in the foreseeable future because of multiple reasons, a high percentage of RE sources is considered techno-economically feasible by 2040/50. A number of reports from around the world have shown the techno-economic feasibility of very high percentage of RE sources in the electricity grid as at present, and of 100% RE sources with suitable modifications in the sector. The issues such as seasonality of wind power and the non-availability of solar power during night hours have already been satisfactorily addressed through effective usage of energy storage facilities, such as batteries, pumped storage hydro, concentrated solar power (CSP) systems etc. Additional measures such as demand response techniques, better interconnection with different climatic zones, effective usage of EVs etc. can make the RE based electric system adequately reliable. A number of reports /simulations /practical experiences from around the world on the high percentage penetration of RE sources in the existing electricity grids /scenarios should be able to provide us with the necessary level of confidence

References on high percentage RE penetration:
(i)*"Roadmaps for 139 Countries and the 50 United States to Transition to 100% Clean, Renewable Wind, Water, and Solar (WWS) Power for all Purposes by 2050 and 80% by 2030";* Prof. Mark Z. Jacobson and others; Stanford University
http://web.stanford.edu/group/efmh/jacobson/Articles/I/WWS-50-USState-plans.html)

(ii) *"Comparing electricity production costs of renewables to fossil and nuclear power plants in G20 countries",* Greenpeace Germany ;
https://www.greenpeace.de/sites/www.greenpeace.de/files/publications/20170705_greenpeace_studie_comparing_electricity_costs_engl.pdf)

(iii) *(https://www.theguardian.com/australia-news/2017/jul/10/ambitious-clean-energy-target-will-mean-lower-electricity-prices-modelling-says);* energy analysis firm RepuTex.

(iv) "Pathways to Integrate 175 Gigawatts of Renewable Energy into India's Electric Grid"; Ministry of Power;
https://posoco.in/reports/india-renewable-integration-study-report/)

In order to move towards a very high percentage of REs in the energy sector, including that in electricity sector, NEP should come up with a definitive and much more ambitious target of GHG emission reduction by 2040/50 and RE source capacity addition, backed by clear targets at 5 years interval. This will go a long way not only in vastly improving our energy scenario but also in drastically reducing the contamination of our natural resources while enhancing the status of our country at the global level by drastically reducing the GHG emissions. Adequate clarity in such a policy will also help to attract investments and to change the electricity generation capacity scenario in the country by a considerable margin with coal, gas and nuclear power capacity at very low levels, if not eliminated completely. The objective of NEP should be to advocate major changes to the data provided in Table 10 and 11 of DNEP, and these tables can look clearly dominated by RE sources, and not by any of the conventional energy sources.

The findings of a recent study from the Department of Energy (DOE) of US (as in the box item below in July 2017) have concluded that coal and nuclear power are uneconomic. But the advocates of coal and nuclear power in India may argue that the scenario of US is different to ours. While the two societies are not exactly similar, the associated issues from the electricity sector's perspective are not totally irrelevant to each other either. There is a lot India can learn from US's experience, and it can avoid many of the humongous costs which US has incurred in its developmental pathways.

"Coal and nuclear are uneconomic—more bombshells from Perry's draft grid study"
https://thinkprogress.org/draft-doe-study-bombshell-9221a62afefd

https://www.scribd.com/document/353980477/DOE-Reliability-and-Baseload-Report-Draft-June-26

A leaked draft of US Energy Secretary Rick Perry's grid study belies the attack on renewable energy. Among other things this report say: " … a large fraction of America's aging fleet of coal and nuclear plants are simply not economic to operate anymore." ".. the marginal cost of generation for many nuclear plants is higher than the cost of most other generators in the market." "High levels of wind penetration can be integrated into the grid without harming reliability." It's really no surprise that the DOE staff has concluded that the renewables are not threatening grid reliability. After all, many countries around the world, such as Germany, have integrated far higher percentages of solar and wind than we have, while maintaining high reliability.

Future electric power system – the need for a paradigm shift

Keeping in view the number of vexatious issues of the centrally controlled and fossil fuel based integrated electricity grid system the future electric power system can be expected to be a federation of a large number of micro-grids/smart grids enabled by suitable ICT and protection technologies. Such micro-grids can be expected to be electrically connected to each other directly (to the adjacent grids) or through local distribution and grid transmission lines. An indication of the future electric power system can be ascertained by two news items in the box item below.

"Market transformation will end dominance of electrical utilities, regulators predict"
http://www.sandiegouniontribune.com/news/environment/sd-me-electricity-future-20170716-story.html
"3 Questions: The future of the electric utility**"**
http://news.mit.edu/2017/mit-3-questions-francis-o-sullivan-future-of-electric-utilities-0714

Three current megatrends in energy which are deeply interconnected: decentralization, digitalization, and decarbonisation, can indicate the basic characteristics of the future electricity system. India's national energy policy cannot afford not to take cognisance of such developments elsewhere, and hence they should be studied diligently and factored in NEP accordingly.

Electricity Generation

The power network of 2040 should have a large number of small size roof top SPVs OR wind turbines OR community based bio-energy/CSP type solar power plants, because of which the need for a stronger/reliable integrated grid will increase, but the nature of the grid will be different. There can be very few conventional technology power plants such as few gas based plants, dam based hydel plants, and pumped storage plants, which are already constructed and which have long life cycles.

The chief scientist Dr. Alan Finkel's report on the future of the national electricity market in Australia gives a glimpse of how profound the change will be in future. The report cites data suggesting that by 2050, 30% to 45% of annual electricity consumption could be supplied by consumer-owned generators alone; namely, rooftop solar photovoltaic and battery storage.

Electricity Transmission

It is credible to forecast that instead of the need for more of high voltage transmission corridors transferring large chunks of power over hundreds/thousands of kM, the electricity grid of the future will be required to be strong and reliable at lower voltage levels, and may be basically designed to connect a large number of mini/micro grids. In view of large number of small size roof top SPVs OR wind turbines OR community based bio-energy/CSP type solar power plants, and mini/micro grids expected in future, the distribution system will have to discharge a very critical role in maintaining the stability of the network in connecting power sources and consumers, and in ensuring reliable and quality supply in the most optimal way.

Electricity Distribution

In order to minimise the distribution losses the distribution companies can be expected to have much higher ratio of 11 kV to LT lines as compared to what it is at present, and much larger number of pole mounted distribution transformers of appropriate size to cater to the requirements of individual consumers. High Voltage Distribution Systems (HVDS), which are already in practice in places like Delhi, to avoid unauthorized use of grid electricity, can become the mainstay of the system. Each mini/micro grid can be expected to become a Smart Grid and equipped with suitable ICT and protection systems to be able to be connected to the adjacent smart grid or the integrated grid. In such a scenario the reliability of supply to individual consumers can be expected to be of very high order, because of the essential need to keep a reliable connectivity at all times to individual generators who may supply the excess electricity to the grid.

Agricultural Pump-sets

At the national level agricultural sector is known to be consuming about 25-30% of the annual electricity mostly for water pumping, and is generally associated with very low overall efficiency. Since water pumping for agriculture is needed mostly during the day time of the summer months, solar power pump-sets are highly suitable. 100% shifting of agricultural loads to distributed solar power system will lead to a massive reduction on the integrated grid demand (if connected for isolated operation), will reduce the T&D losses to a low level, and will vastly improve the voltage profile everywhere. Roof-top mounted or locally installed solar pump-sets also have the potential to turn around the economics of distribution companies by relieving them of the burden of the associated subsidies year after year. Such fuel switching has the potential to minimise/eliminate the demand for diesel in agricultural sector.

Streetlight and public lighting system

Streetlight and public lighting system is estimated to consume about 8 to 10% of annual electricity in the country. Shifting these to the isolated solar PV systems either individually or in small groups supported by suitable battery storage system is techno-economically feasible, and can have enormous impact on the peak load problems being faced by the integrated grid and also in vastly reducing the annual energy demand for the local civic authorities.

Future transportation system

If suitable policy interventions and support are provided early, it is reasonable to project that the number of petrol and diesel passenger vehicles/trucks will come down drastically by 2040, and that they will be replaced by efficiently run mass public transportation facilities such as metro rail system, sub-urban and long distance electrified rail systems, and battery operated cars, buses and trucks. Bio-fuels are also projected to have the credible techno-economic potential to support about 30% of the transportation needs. At present it is hard to find adequate encouragement for the production and usage of bio-fuels in the country. There is huge potential for the sustainably produced bio-fuels, without impacting the food production, and this potential should be optimally harnessed to minimise the import dependence for liquid and gaseous hydrocarbons. However, there are uncertainties still persisting with the technological feasibility of replacing fossil fuel needs of aviation and shipping lines. It is hoped that in the near future suitable technological solution will be found.

Other Issues of concern which need to be addressed by NEP

The discussions in DNEP have thrown many other issues of concern to our society, when we consider the true welfare of our communities on a sustainable basis. The past practice of centralised efforts to meet the unlimited demand for energy of tiny sections of our society have already led to very many problems, including that of energy injustice, accelerated depletion of our natural resources, and pollution related issues. Such issues need careful consideration in NEP.

Energy Demand Management

- Is it in the true interest of our society that the share of manufacturing in our GDP should go up to 25% from the present level of 16%? Can we not avoid the implications associated with the resource mobilisation, pollution loading, and much higher energy demand by opting for benign economic activities?

- The dichotomy prevailing in the Indian energy scenario is made clear in IESS modelling. Why should we accept a much higher increase in per capita energy consumption by 2040 as a foregone conclusion, while we also say that energy demand could be brought down over the default scenario by 17% by suitable interventions? When we objectively consider our huge population base, gross inefficiency prevailing in energy sector, alarming rate of natural resource depletion, the global warming implications etc., maintaining the per capita energy consumption at about the same level as on today or even reducing it while aiming to lift our masses from the clutches of poverty at the same time should become the primary plank of energy policy. In this context, it can be said that both the Integrated Energy Policy (IEP) of 2011 and the draft National Energy Policy (NEP) have started on a wrong footing.

Key objectives

- The energy policy should not have the specific objective of feeding to the goal of rapid economic growth. High GDP growth rate paradigm year after year can only lead to very high energy demand in few decades time with all the other attendant risks/costs to the society.

- A lot more focus on all aspects of energy efficiency will be needed. This aspect also indicates the vast scope for containing the energy demand growth as compared to the 'do-nothing' scenario. Energy efficiency, demand side management (DSM) and energy conservation measures must have the highest priority in our efforts to provide energy/electricity to all by 2022. As National Electricity Policy has rightly stated, these measures should form the fundamental planks of our energy policy.

Coal

- The projection of vastly higher coal production/consumption by 2040 can be said to be clearly against the letter and spirit of Paris agreement on Climate Change. No argument should be able to support such a growth in coal production/consumption, if our society is serious about the impacts of Climate Change and the immediate pollution impacts on the health of our people. NEP should be very clear and unambiguous on the need to contain GHG emissions. It should seriously consider the peak coal year much before 2030 instead of looking for ways to meet the ever growing demand for coal by the industry even after 2040.

- In a paper in Nature of 28 June 2017 with the title "Three years to safeguard our climate" a group of prominent scientists, policymakers, and corporate leaders have issued a warning that if the world doesn't set greenhouse gas emissions on a downward path by 2020, it could become impossible to contain climate change within safe limits. Being the third largest GHG emitter, India cannot continue to ignore such science based warnings to reduce the GHG emissions. In view of the suitable alternatives available to replace the coal, the country should seriously embark on such replacement at the earliest.

Renewable Energy (RE)

- REs will need the continued monitory/policy support for many more years, if not for decades, in order to minimise the GHG emissions from the energy sector. Having pushed our environment to a dangerous level through reckless burning of fossil fuels all these years, the society should not hesitate to pay any needed additional costs to make the REs the mainstay of the power sector, and to mitigate/adapt Climate Change.

- All these years, while considering large role for dam based hydro power and nuclear power in the country, the overall cost to the society from social, economic and environmental perspectives have not been carefully/objectively considered through the diligent economic decision making tools such as "costs and benefits

analysis" and "options analysis". When such diligent decision making tools are objectively deployed, REs will find themselves largely beneficial as compared to nay of the conventional energy sources.

- The statement in section 6.5.3 that 'grid based electricity is preferable to renewable solutions, and that the efforts would be made to first electrify villages by extension of grid' should be carefully reviewed. The grid based electricity has led to the denial of energy justice to rural India, and the grid extension to remote villages is officially recognised also as uneconomical. Rural India will be well served by distributed RE sources in micro-grid/mini-grid mode in most cases. There are already many such good examples in Bihar and elsewhere. As a matter of fact it will be easy and cost effective to meet all the electricity needs of rural India, including that of agricultural sector, through distributed RE sources, such as roof top SPVs, community based bio-mass units, small size hydel power units etc. supported by mini-/micro-grids. Such an approach will eliminate all the concerns associated with the national grid extension to rural areas.

- While comparing the large size RE sources such as solar/wind power parks with distributed RE sources, it should be kept in mind that in addition to requiring vast tracts of land, the large size RE sources also need additional dedicated transmission lines, which will be in use for a small percentage of time in a day (such as about 6-8 hours a day for solar power park). In view of this potential wastage of the financial resources due to low utilisation factor of the associated transmission systems, and also for the ease of grid integration, it will be necessary to plan for a large no. of small or medium size REs (say of the size less than 5 MW) or roof top SPV systems all over the grid, preferably very close to the existing HT/LT lines. Such a distribution of the generating sources will also assist in overcoming the voltage instability, which is haunting the grid operators now. Additionally, the distributed kind of RE sources, such as roof top SPV systems and community based bio-mass units will encourage the general population to bear the cost of such plants (at least to a large extent) as PROSUMERS, thereby vastly reducing the financial burden of the government.

Nuclear Power

There is a critical need for DNEP to effectively deploy the economic decision making tools, such as 'costs and benefits analysis' and 'options analysis' to determine the realistic life-cycle cost of nuclear power and also to satisfactorily address the main concerns of safety before persisting with the statement that "nuclear power technology as being the only base load power source offering green energy, needs to be promoted even if its share in the overall mix is not high enough now". Without convincing the public on such issues, the energy policy cannot be expected have people's approval.

NEP should make concrete recommendation to stop spending the colossal amounts (and the scarce natural resources too) on propping up the fossil fuel and nuclear power technologies, and to spend a small percentage of such saved resources to make the RE sources much more useful to our society.

Reference material on issues of concern on nuclear power:
(i) "An overview of nuclear power in the context of additional capacity to Kaiga NPP"
http://www.countercurrents.org/2017/07/01/an-overview-of-nuclear-power-in-the-context-of-additional-capacity-to-kaiga-npp/
(ii) Amory Lovins: Nukes Not the Answer
https://www.ecowatch.com/nuclear-climate-change-2462663343.html

Other critical issues in electricity sector

- Keeping in view the credible social, economic and environmental concerns of conventional electricity production technologies the only option left for the country is to get all of its electricity and much of energy from renewable energy sources as early as possible. Such a transformation requires massive and concerted efforts in

making the production transmission/transportation and utilisation of electricity highly efficient with huge emphasis on demand side management and energy conservation. The constraints of our natural elements will not permit an unlimited growth in energy/electricity production/consumption even through RE sources. NEP should be based on this fundamental reality and should be clearly stated so.

- While advocating an effective energy policy for the nation, the primary focus should be on technical feasibility, sustainability, and the lowest overall cost to the society, instead of getting obsessed with the upfront financial costs alone. In this background adequate investment to minimise the Global Warming impacts of conventional power plants is considered worth the "huge financial cost". Hence, the upfront financial cost of the required transformation of the country's energy sector can be said to be insignificant when we consider the ecological & economic costs of not quickly transforming our developmental paradigm.

'The Economics of Climate Change' by Sir Nicholas Stern, 2006
As Sir Nicholas Stern has said in his advice to the UK govt. the Climate Change could have very serious impacts on growth and development of a densely populated and resource constrained society like India. The benefits of strong, early action on climate change clearly outweigh costs. This review has estimated that certain scenario of Global Warming may result in poor countries like India suffering economic costs of about 20 % of its GDP, whereas the mitigation of the same now can be achieved at a cost of about 1% of present GDP. The Review also indicates that the more we delay in addressing the Global Warming the higher we will have to spend in mitigation of the same in future.

- The policy guidelines to move our energy sector to the 2040/50 scenario through clear and definitive policy objectives should be spelt out in as much details as possible so that private investors can take confidence required for such long term investments. Such policy guidelines will require due diligence and effective consultation with various stakeholder groups before finalising the policy framework.

Overseas Engagements:

- As compared to the DNEP statement that with high import dependence for commercial primary energy supplies, NEP should be aiming to minimising the need to import energy/energy resources for multiple reasons. In order to do so the emphasis should be on: (i) minimising the total demand for energy; and (ii) to optimally and sustainably harness the resources available within the country. Sadly, as of now there is not much of a focus to reduce the total demand for energy itself, but only to identify different technologies to meet the ever growing demand. Instead of trying to shift the total demand for transportation fuels to electric vehicles (EV) and batteries, the focus should be to minimise the transportation fuel need itself, by suitably modifying our urban areas and the location of industries/ commerce; adequate development of rural areas; huge emphasis on mass/ public transportation & railways; and suitably designed disincentive to private passenger vehicles.

- Knowing well the serious concerns associated with nuclear power technology, including the overseas technology/fuel, it is truly unfortunate that the official policy has been to increase the nuclear capacity and to import the nuclear fuels at enormous societal costs. In view of the fact that there are much benign options, NEP should clearly lay down guidelines to move away from this costly/risky path.

- At a time when the world is clearly moving away from coal power dependency, and when the IPCC has unequivocally asked for massive reduction in the usage of fossil fuels, and when many of the coal power plants in the country are either operating at very low PLF or have become stranded assets, the country has not yet identified a target year to stop the import of coal. This issue needs to be addressed effectively.

- The public do not get to read about any R&D efforts in India in the areas such as: advanced battery and other energy storage technologies; micro/smart grid and associated technologies; ocean & geothermal energy; Concentrated Solar Power (CSP); small size wind turbines; efficient & convenient solar cookers, etc.. NEP should

laydown concrete action plan to effectively invest adequate resources in the associated R&D efforts, and also to consider suitable overseas engagement.

- One area where India should invest adequately in R&D efforts with overseas engagement is the Ocean Energy technology. With a coastline of about 7,500 kM the potential for the ocean energy to meet a substantial percentage of electricity requirements of the coastal areas is huge. Adequate focus is needed in this regard.

- Another area, which India seems to have neglected, is the Geo-thermal potential in the country. New Zealand and Iceland, which have vast experience in this sector, should be considered for overseas engagement to gain from their experience.

Air Quality and other environmental concerns

Instead of looking only at air quality as a consequential effect of energy production/usage, there is a need to take an objective look at the various elements of our environment: air, water, agricultural land and forest in general, and the phenomenon of Climate Change in particular. With DNEP's projection for the burning of vast quantities of fossil fuel by 2040, it will be impossible to keep air quality at acceptable standards. Burning of such vast quantities of fossil fuels will have huge deleterious impacts on other elements of the environment too, while lowering the credibility of India's Climate Change leadership claims/aspirations.

Since the human health is the critical part of human welfare and is intricately linked to a clean environment, and also since energy production/usage is known to impact the environment in various ways, all the associated issues need to be considered in a holistic way. Hence, the ecological and economic costs to the overall society in the choice of a technology should be the primary consideration instead of the upfront financial costs. The goal of mitigation and adaptation to Climate Change should be at the focal point in the policy making process on energy.

Issues of social and environmental concerns: Climate Change perspective

The draft NEP may indicate to most readers that it has not given due importance to the social and environmental issues of the future energy pathway. The fossil fuel sectors have the issues of forest felling and pollution of air, land and water, while the dam based hydro power has the issues of forest drowning, obstruction & pollution of rives, and Methane emission as the major concerns. Nuclear power has very many issues including the radiation contamination due to accident. All these three conventional electricity sources have some common issues of forced displacement of project affected families and reduction in forest cover. Fossil fuels and dam based hydro power also have the GHG emission concerns. Ever increasing capital and operating costs for all of them have made them costlier than RE sources. These issues must be objectively factored in the NEP, because all these concerns will only be exacerbated because of the projected impacts of Climate Change.

Unabated Climate Change Would Reverse the Hard-Earned Development Gains in Asia: ADB
Unabated climate change would bring devastating consequences to countries in Asia and the Pacific, which could severely affect their future growth, reverse current development gains, and degrade quality of life, according to a report produced by the Asian Development Bank (ADB) and the Potsdam Institute for Climate Impact Research (PIK).
(https://www.adb.org/news/unabated-climate-change-would-reverse-hard-earned-development-gains-asia-new-report)

NEP should not ignore the grave warnings of such credible reports from around the world on the serious implications to the vulnerable sections of our society, and hence should clearly advocate effective measures to make the national energy scenario a very effective pathway for the true development of our communities, instead of ignoring the social and environmental issues in its eagerness to meet the unlimited demand for energy, as the developing countries have done in the previous century.

Energy needs of rural India – the need to assign appropriate value for human and animal energy

Since the energy needs/demands of our rural areas is minimum and since the rural areas need a lot more focus in our developmental pathways, having been largely neglected since independence, the NEP should put the rural energy needs on a special pedestal, and put in place all possible measures to meet the same satisfactorily. When we assign the appropriate economic value to the human and animal energy usage, which is still vogue in vast tracts of rural India, the emergent scenario will become clearly interesting and visible in a different context. The realisation of such a vast contribution to GDP should enable us to put a reduced emphasis on employment generation potential of conventional/commercial energy sources. In view of the fact that a well-considered deployment of RE sources will lead to vast employment generation opportunities, the relevance of the conventional energy sources in the context of employment generation potential also should lose its importance.

A Greenpeace India report of 2010 "Taking Charge" has shown ten case studies on the application of small-scale, decentralised renewable energy systems in India in 2010. It says: "Taking Charge is a selection of case studies of small-scale, decentralised renewable energy systems in India in 2010, which captures some of the remarkable human and social elements that have shaped these pioneering projects". The strength of these stories lies in their diversity. One is a diversity of the context in which they are based, including the geography of the place, and its social fabric. Another strength is the diversity of solutions applied. Each of these renewable energy projects has worked because they are tailored to fit the local needs and conditions. Perhaps most interesting is the diversity of energy governance that these stories demonstrate, and the economic models that they have developed.

With regards to energy for cooking in rural and semi-urban areas, it is desirable that biomass (firewood/bio-mass in the form of fuel pellets) shall have significant role, provided that efficient, smokeless chullahs can be supplied to these areas, as this energy resource is available to many people in rural India at no cost or low cost. There are many shining examples of providing suitable, sustainable and easily accessible RE sources to our rural and semi-urban communities, as in the Greenpeace report in the box item, and each one of them should be effectively expanded to address the energy needs of the majority of our population.

Our rural areas can be put on a path of sustainable and adequate development, if their needs, including the energy needs, are met largely through the locally available resources, and also if we enable them to be in effective control of such resources. NEP should engage effectively with people/NGOs/institutions working on rural development issues to prepare the credible energy road map for the rural India.

India Vision 2040

The energy scenario for 2040/50 should be the one where effective policy measures and regulatory framework are in place to provide clean, equitable and sustainable energy at realistic cost with the primary focus on to lift the vulnerable sections of our society out of the clutches of the poverty and ill-health. As can be observed from the experiences from around the world since 2010, there is an undeniable preference for the individuals/communities to have effective control on their energy demand/supply issues. NEP should take a careful look at this issue from the Indian perspective, and formulate suitable policies/guidelines.

NEP cannot be seen as rational, if it projects enormous increase in the dependence on imports and vastly increased GHG emissions, as late as 25 years later. With an increased dependence on overseas supply, the energy security cannot be better than what it is now. Hence, all possible efforts to minimise our total energy demand without compromising our welfare goals, and to meet such a demand by domestic resources at the lowest overall societal cost should become the primary plank of our energy policy. India is endowed with huge potential in RE sources, and hence the dependence on overseas supply should come down drastically by 2040 instead of increasing.

Energy mix: It is incomprehensible that the overall share of fossil fuels is projected to come down from 81**%** in 2012 just to 78**%** in ambitious pathway in 2040; with all the planning and policy interventions will the drop of just 3% share of fossil fuels acceptable, whereas the total energy supply would have registered 2.7 to 3.2 time increase?

This means a vast increase in GHG emissions in absolute terms. What will be our role in combating the global warming threats? With so much of fossil fuel burning will the quality of our air any better than the present quality because of which we already have serious health concerns? Transportation should be largely dependent on non-fossil fuels, and the focus should be on efficient mass transport options, and EVs. Bio-fuels should have their rightful place. Rural energy needs should be met largely by the locally available resources, and all the technological and financial support needed in that regard should be in place by 2040 so as to make the rural India self-sufficient.

Structure of the energy sector by 2040/50: At the global level it is projected that by 2050 more than 60% of the energy consumption is likely to be in the form of electricity because of the ease, absence of pollutants at the point of usage, and the fact that all of the electricity demand can be met through RE sources. Hence, our efforts should be to increase the share of electricity much higher than that projected; say between 50 - 60% by 2040/50. NEP should consider recommending action plan to indicate such an ambitious but feasible target.

DNEP states: "The coastal south and west India, being close to the oil/gas rich West Asia, will witness a more significant role of LNG, including imported coal based plants." Such dependence on imported coal and oil will be against the long term national interests, and against the present policy of the govt. to eliminate coal import. Such projected dependence must be drastically reduced by optimally harnessing the domestic resources of energy.

Conclusions

- The initiative of NITI Aayog to prepare the draft NEP has come at a critical juncture in India's developmental pathway. This is a great opportunity to diligently review our developmental priorities in view of the fact that whereas energy is considered as an important ingredient in HDI index, it also has huge impact on every critical element of our society including that of health, food, environment and the looming threats of Climate Change. Hence, utmost care and due diligence is required in finalising the national energy policy so as to ensure equitable, healthy and sustainable developmental opportunities for all sections of the society.

- Various elements of NEP should fully comply in letter & spirit with all the relevant Acts of our Parliament and the associated rules/polices, including the international obligations.

- Such care and due diligence can be realised only if various stake holder groups are effectively consulted. To enable this NITI Aayog should have consultation meetings with stake holder groups in every state capital, and only then suitably modify the DNEP to correctly reflect the societal strengths and constraints.
- Being a tropical country with the great tradition of simple living and high thinking, India's huge population has per capita energy needs at very modest level (may even be termed as very low in global terms); thus necessitating simple, uncomplicated and affordable energy sources to meet the expectations of the diverse but poor communities spread over a large geographical area.

- The energy needs of such simple living communities can largely be met through distributed type of locally available RE sources and supported by micro/mini grids, which will be most optimal when owned, operated and managed by the local communities. The rural communities only need the initial financial and technical help to get suitable tools and mechanisms to make them self-sufficient.

- Keeping in proper perspective the social, environmental, economic and inter-generational issues associated with a business as usual scenario, the energy pathways for the future should become environmentally friendly and people centric. Fossil fuels and nuclear energy cannot be a part of our energy policy beyond 2040.

- Diligent application of 'costs and benefits analysis', 'options analysis', and 'life cycle cost analysis', while taking into account all the direct and indirect costs and benefits to the society, will establish the true usefulness of a given energy resource/technology.

- NEP should make concrete recommendations to stop spending the colossal amounts (and the scarce natural resources) on fossil fuel and nuclear power technologies, and spend a small percentage of such saved resources to make the RE sources the mainstay of our energy scenario by 2040.

- Our overseas engagement should be largely focused on making the RE sources widely acceptable to our communities.

- A diligently prepared final product (NEP), with specific guidelines and time-lines, will greatly benefit our society by making it dynamic and by reviewing it at regular intervals with the effective contributions from stakeholder groups.

0114005 SNEHA (CHRIST, Hosur Road, Bengaluru). **DIGITIZATION AND THE ARCHIVAL TURN IN INDIA**

The last few decades have seen a tremendous growth in a number of large-scale efforts in digitalization and archival efforts – within state institutions and increasingly among private organizations across different sectors. Digitization, especially of cultural content, has emerged as an important area of concern, especially for public memory institutions that have been deeply invested in the preservation of cultural heritage. Better access to internet and digital technologies has been a significant factor here, aiding not only varied forms of documentation and preservation, but also offering newer possibilities of access and use of cultural content. As a result, several institutions in the galleries, libraries, archives and museums (GLAM) sector have adopted digitalization on a large scale in India. This includes state institutions (National Archives, National Museum, National Cultural Audio-Visual Archive (IGNCA)) National Gallery of Modern Art) archival efforts at universities (Jadavpur University, Ambedkar University, National Centre for Biological Sciences, TIFR) individual and collaborative efforts (Indian Memory Project, 1947 Partition Archive, Indiancine.ma) to name just a few. The digital turn has therefore led to significant changes in the nature and scope of cultural archives in India, in terms of creation, management and use, but also in their re-imagination as sites of knowledge production. In the larger context of the ubiquitous growth of digitalization efforts, the emergence of new fields like digital humanities, digital cultures and cultural analytics indicate several shifts in scholarship, pedagogy and practice, on the one hand alluding to a futuristic imagination of the role of technology in education, but also reflecting persistent challenges related to the digital divide, and more specifically politics around the growth and sustenance of the humanities disciplines.

The growth of these new areas of study and practice that are premised on the 'digital' has brought about a renewed focus on the creation of digital corpora in the form of archives and repositories, and specifically on the process of 'digitisation' itself. It also emphasises the need for new digital technologies and methods of research, more specifically through the development of digital pedagogies. The contexts of these questions are however much wider, located in long-spanning efforts in digitization and digital literacy more broadly, which are still fraught with several kinds challenges of access, usage and context. Drawing upon excerpts from a recent report on mapping the field of digital humanities in India, and ongoing conversations on the digital transition in archival practices, this presentation shall discuss some pertinent concerns in the field, especially with respect to technological and cultural challenges around digitisation. It would seek to understand the politics of archiving in a now digital context, and how they continue to inform myriad initiatives and narratives of digitalization in India today.

0114006 VOMBATKERE, S G (475, 7th Main Road, Vijaynagar, First Stage, Mysuru). **HUMAN FUTURE IN THE DIGITAL ERA**

The current stage of human societies on Planet Earth has three defining characteristics. One: The extremely rapid penetration of science and technology into human societies, with concommitant changes in their social, economic and political structures. Two: An explosion in the totality of energy-use by industrialized and industrializing human societies, resulting in planet-level (climate) changes posing an existential threat to human and also other species. Three: The development of machines which are becoming more and more "human-like".

Human ingenuity and creativity has brought about phenomenal advances in science and technology, and the so-called cutting-edge technologies today concern information (IT), biotechnology (BT) and production/fabrication from extremely small levels of matter (nano-technology or NT). This trio of IT-BT-NT are all based upon the enormous digital computational power made available through the development of machines (computers) operating on the basis of the binary numerical system. These machines with enormous computational capability are small in size and energy requirement, and can acquire, store and analyse data to acquire knowledge. In turn, based upon machine data handling and machine knowledge systems, developments and refinements have created a new, path-breaking field, namely, artificial intelligence (AI). AI, which includes robotics, far exceeds human capabilities in several areas of knowledge and skill. AI is increasingly being used or planned for use in warfare, and the line or distinction between natural human intelligence and AI is blurring. These changes have huge ethical and even moral repercussions, matters which human societies need to address. Among these issues, the questions of defining "life" and "humanity" are perhaps the most basic and important.

Today, humanity is at the cusp of digital-driven change. Fundamental, existential questions arise – questions such as, will social changes due to IT-BT-NT drive changes in the human species to enable its survival on a planet which may be at the tipping point of climate change and mass biological extinctions? Can BT manipulate human genes to "manufacture" humans who can adapt to a vastly different and hostile thermal and chemical planetary environment? With extra-terrestrial exploration, can AI, enabled by IT-BT-NT, help humans to populate other planets within or outside our solar system? Will AI create conditions (perhaps sub-terrainean, perhaps ultra-low-energy-consuming) which may permit the human species to survive in some form familiar to us today? But again, these questions may return us to the need to define "life" and "humanity", and the meaning of "consciousness". They may drive us from the physical (including scientific investigations into the origin of the universe) to the metaphysical.

However, for the purposes of the focal theme of this Indian Social Science Congress, we need to focus on ideas and thought-streams which are more deterministic, in the interest of humanity at its present "digital crossroads". With a broader understanding of the principles of justice, liberty, equality and fraternity among leaders in societies, this focus may permit economic and political systems to be so changed as to enhance the quality of life – as against present-day political economies which focus on standard of living – for humanity by assuring the basic needs of water & food security, clothing & shelter, and health, education, welfare and employment, for all.

Introduction

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Human ingenuity and creativity has brought about phenomenal advances in science and technology, and the cutting-edge technologies today concern information (IT), biotechnology (BT) and production/fabrication from extremely small levels of matter (nano-technology or NT). This trio of IT-BT-NT are all based upon the digital computational power made available through the development of machines (computers) operating on the basis of the binary numerical system. These machines with enormous computational capability are small in size and energy requirement, and can acquire, store and analyse data to acquire knowledge. In turn, based upon machine data handling and machine knowledge systems, developments and refinements have created the new, path-breaking field of artificial intelligence (AI). AI along with robotics, far exceeds human capabilities in several areas of knowledge and skill. AI is increasingly being used or planned for use in warfare, and the line or distinction between natural human intelligence and AI is blurring. These changes have huge ethical and even moral repercussions, matters which human societies need to address. Among these issues, the questions of defining "life" and "humanity" are perhaps the most basic and important.

Even while having potential for benefit, the IT-BT-NT trio poses challenges to humanity, because of its enormous potential for use by state or non-state actors for psychological, political or commercial manipulation of large populations for partisan purposes. This can alter the very manner in which individuals think, behave and act in the societal context, and can result in the replacement of unstructured, intuitive learning connected with the arts and humanities, with structured, cognitive learning and the rejection of all informal knowledge systems as unscientific mumbo-jumbo.

Almost imperceptibly, the IT-BT-NT trio is de-humanising the relationships between individuals and within societies. It is an important factor in the psychological evolution of humanity. The implications of this evolutionary change in the psychological make-up of our species are not fully comprehended.

Today, humanity is at the cusp of digital-driven change. Fundamental, existential questions arise – questions such as, will social changes due to IT-BT-NT drive changes in the human species to enable its survival on a planet which may be at the tipping point of climate change and mass biological extinctions? Can BT manipulate human genes to "manufacture" humans who can adapt to a vastly different and hostile thermal and chemical planetary environment? With extra-terrestrial exploration, can AI, enabled by IT-BT-NT, help humans to populate other planets within or outside our solar system? Will AI create conditions (perhaps sub-terrainean, perhaps ultra-low-energy-consuming) which can permit the human species to survive in some form familiar to us today? But these questions may return us to the need to define "life" and "humanity", and the meaning of "consciousness". They may drive us from the physical, including scientific investigations into the origin of the universe, to the metaphysical, including reasons for the existence of the universe.

However, to adhere to the focal theme of this Indian Social Science Congress, we need to focus on ideas and thought-streams which are more deterministic, in the interest of humanity at its present "digital crossroads". This discussion therefore concerns the real-life aspects of digitization, which has the potential to change societies at individual, societal levels and global levels.

We will concern ourselves with digital data (as opposed to analog data) and its acquisition, processing, storage and manipulation, for desired outcomes. As digital technology is refined and made more efficient in terms of power, speed and reliability, and the development, production and use of digital devices proliferates, we should not fail to note that inevitably there are also undesirable and unpredictable outcomes.

From bulky computers of the 1960s using magnetic tapes and energy-hungry peripherals, today we have parallel computing using ever smaller devices needing minuscule energy and working at mind-boggling speeds. This has made reality of machine-learning and machine-knowledge systems, and the development and implementation of robotics and artificial intelligence, in the broad field of information technology. This has enabled huge computing capability for the good of societies even while creating the means for surveillance and control of societies in different ways. The time has come when the joke doing the rounds is that the managerial challenge today is dealing with artificial intelligence and natural stupidity!

Striking a balance

The media usually highlights the bright side of the burgeoning scientific and technological advances which bring digital devices and machines into common use. The commercial reasons for this are not difficult to understand. However, with technological advances or "solutions" there are unforeseen (sometimes unforeseeable) negative fall-outs due to the unintended consequences of misuse of technology or error in technical design.

There are many influential proponents of a future, of machines taking over the drudgery and physical needs of humans. This rosy picture needs to be tempered by a review of the already visible negative effects and of future negative effects of such advances. This paper attempts to strike the balance by examining the possibilities in the digital future of humanity, and raising some moral, ethical and legal questions.

However, this paper does not deal with the important social-justice issues of "which sections of present inegalitarian societies benefit from such frontline technologies, and which sections pay for it and in what manner". These questions need to be separately addressed.

The "superior" species

The opposing thumb and the cerebral cortex distinguish humans from other mammals and other forms of life. Human hands with its fingers (digits) guided by superior human cerebral power, rocketed Homo Sapiens into becoming the most powerful species on the planet. The technology of fire-making and of the wheel were perhaps the two most important developments by which the digital era may even have started millennia ago! And today we observe youngsters with mobile phones using their thumbs to communicate very rapidly on social media!

The idea of "natural stupidity" is based upon the belief that machines doing something more quickly than humans is necessarily good. This has captured the minds of most leaders of societies worldwide, with the notable exception of Gandhiji. Such leaders are sold on science and technology (S&T), perhaps out of a respect based upon their inability to understand "scientific" knowledge because it is esoteric. This is partly due to our faulty education system and partly due to the jargon, hype and promises of science and technology, or due to sensing material or political benefit from the use of those technologies. This is reflected in the fact of the widely held belief that S&T can solve all sorts of problems including social problems, and justifying poorly planned introduction of S&T into all aspects of governance.

Science and technology is pushing the frontiers of knowledge, which is growing at a phenomenal rate. Today, virtually any information is available on the internet by using a search engine such as Google, and the problem is not insufficient information but information overload.

Information technology based principally on digital techniques has enabled the production and control of machines which are ever smaller or increasingly efficient, and has spawned other technologies and provided the tools for opening up new frontiers of science. Digitization refers to the capability and implementation of digital (computing) technologies into common usage for every-day tasks as well as for specialized or niche applications.

Humans rule Planet Earth by virtue of their intellectual and technological power. But the way in which human societies have grown has led to great divisions between and within societies. Today, while science and technology do provide means to benefit societies and individuals, it is also increasingly being used for life-denying applications like weapons of mass destruction. This destructive capability has been greatly enhanced by the connected technologies of IT, BT and NT.

Industrial activity of human societies has expanded based upon the ability to acquire and use energy from fossil fuels. The cumulative effect of human industrial activity over the last two centuries has led to rise in level of atmospheric carbon, leading to global warming. Global warming has led to climate change, which is an existential threat for human societies if not to humanity itself. Paradoxically, it is the much-vaunted "superior" human intelligence which is the cause for this existential threat.

Power centralization by digitization

Data has been referred to as "the new oil" of the digital economy. Data is a prized commodity and strategic asset. The real-time value of data is when it is acquired, organized as a database, and interpreted as an asset, to enhance national strategic/political aims and objectives or business/commercial interests. Management of the asset can provide valuable, actionable information. Creation and management of a large database can only be done with huge financial, technical and infrastructural resources. Such resources are available only with large business corporations or governments, resulting in centralization of political power, and making data the "oxygen of the digital economy".

Proponents of the digital economy claim that in the public sphere, reaching social and monetary benefits to the deserving poor is made more effective due to elimination of spurious beneficiaries. The basis of this claim is belied by the technical, social and organizational realities of the scheme and its implementation. This points to the fact that digitizing an economy does not mean digitizing society itself, because society consists of real people with individual and collective strengths and weaknesses, which are irreducible to binary choices inherent to digitization.

Ultimately, digitized data is held, managed and controlled as a database by a human. Control over multiple databases through digitization therefore tends towards centralization of control. In the extreme, this can lead to a digital dictatorship, where the power of data and knowledge is wielded by a single person or a small group of powerful persons.

Such a person or group would have power over politicians who interact directly with people, and would constitute the so-called "deep state" – an unaccountable, unseen, but extremely powerful entity. Thus the foundational governance values of justice, liberty, equality and fraternity are likely to be diminished rather than enhanced by digitization. It will cause fundamental change in the transactional relationship between governments and the governed, and thereby change society itself. Digitized governance systems tend to work in the direction of centralizing political power, and against the democratic grain.

The foregoing would apply to every society due to the deep penetration of digital technology into all aspects of daily life. Accordingly, inequality of political and economic power within and between societies may increase, with persons in positions of political and administrative power and authority being directly or indirectly under the control of the deep state, exercising vastly disproportionate influence on society in virtual master-slave or feudal relationships.

Centralization of political and economic power through deep penetration of digitization would be self-reinforcing and self-perpetuating, determine the nature of transactions and relations within and between digitized societies, and widen existing class and economic gaps. Dissent and protest by under-privileged sections of society arising from asymmetry of power-and-authority within society, will be easily suppressed using digital techniques of surveillance-and-tracking (use of drones), crowd control (using drone-mounted "plasma guns") and biometric (face-in-the-crowd) identification of leaders of agitations.

The defence of digitization in an economically stratified society is based on the belief that society will be administered through benevolence, munificence and philanthropy by the power-group at the helm of governance. This is belied both by historical evidence and modern experience, since power corrupts and absolute power corrupts absolutely.

Digitization and cyber threat

Today, information technology (IT) capability and application are growing exponentially. The use of IT is centred on critical hardware and critical software which are purchased from international vendors. This results in the strong possibility of pre-installed hardware or software backdoors with the attendant risk of compromise of personal privacy and national security. The clandestine installation of microdevices in core hardware at some stage of the manufacturing process make possible, access to data and its processing and routing by the entity which installed the backdoor.

The interconnectedness between systems or autonomous data silos, facilitates free-lancing or institutional hackers to use a single "entry-point" in one database to access data in other systems or databases. The insertion of "worms" and "trojans" into databases and servers to disable them, and demanding money for removing them, is already established cyber crime.

Institutional and private entities which own and control state-of-the-art digital capability to acquire, store and process/analyse enormous volumes of data, possess huge capability for untargetted surveillance of populations, to further political or corporate interests. Given current digital technological capability, tracking persons by their

mobile phones or monitoring private lives through embedded digital devices in homes is now easy. Thus, notwithstanding data protection laws (so far not enacted), invasion of individual privacy appears to be a certain scenario of the emerging digital economy.

The cyber threat to a nation-state grows as State, non-state, institutional and free-lance adversaries of the State become better equipped in the use of easily available cyber toolkits. Cyber attack could be directed at critical infrastructure or government – including the military – by deletion of data in databases or localized / region-wide disruption or denial of data through hacking servers or routers. Cyber attack can deliver body blows to the economy, even paralyse it. Indeed, wars in the future may be in cyber space.

The growth of terrorist outfits using cyber techniques is the ground for governments to surveil populations through facial recognition or other biometric matching, and by obtaining the metadata concerning their use of social media. Alongside this will be inevitable profiling of individuals within the population. Population-scale digitization and acquisition of personal data for untargetted surveillance in the name of security against terrorists, will not merely impinge upon personal privacy, but centralization of power and control through digitization of society could set the stage for the development of a police State.

At the forefront of current micro-minitiaturization work, is the production of very small (of size and appearance of an insect like a house fly) remotely controlled robots, which can enter living and working spaces for audio-visual surveillance, monitoring or spying.

MIT (USA) scientists have developed a process to mass-produce robots containing electronic circuits of the size of a biological cell, to transmit data from their location to an external monitor. Such robots can monitor conditions inside a gas or oil pipeline, just as easily as detect disease when introduced into the bloodstream of a biological being. These synthetic cells or "syncells" reportedly behave like a living biological cell, and have beneficial uses just as much as for imaginatively nefarious purposes in the hands of criminals or political enemies.

Digitization thus opens a wide vista of possibilities for beneficial as well as undesirable/criminal use of robots.

A digital future

In present times, artificial intelligence (AI) and machine learning (ML) are fast developing realities, which one needs to understand before seeing what they can do. Briefly, AI is the theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages. And ML is an application of AI that provides computer systems the ability to automatically learn and improve from experience without being explicitly programmed, by independently developing computer programs that can access data and use it to learn for themselves.

The combined four fields of artificial intelligence (AI), machine learning (ML), neuron-based computing (extremely low power requirement and manifold enhanced computing speed), and 3D printing using exotic materials and nano-technology (NT), provide almost limitless scope for production of prototypes and mass production of end-use products. This combination may be referred to as the "digital future". The products could be more robust AI computer systems, more and better robots and humanoids, or as-yet-undreamt-of machines and devices with undreamt-of strengths and capabilities to change virtual reality (which is possible even today) to a new reality.

Combined with biotechnology (BT) involving computer-based modification of genetic material, the digital future could permit designing and creating biological super-humans with desired capabilities and strengths. Of course, its undeniable flip-side is the possibility of inadvertently or purposefully creating beings with undesirable qualities.

Social, legal, ethical and even moral questions arise along with each mind-boggling possibility. Let us consider just two illustrative examples.

#1. A robot, humanoid or not, which is designed to serve industrial, commercial, business or individual needs can become defective, whether due to deliberate (hacking, etc., done by humans or AI entities) or failure-mode change, or initial bug in the core hardware or software. Such a defect could turn a robot continuously or intermittently away from its design functions to wasteful, obstructive or destructive activities. What are the legal remedies for losses or harms due to such events? How would a human who is a physical or economic victim or encounters such a situation, handle it? What is the accountability of the manufacturer/maintainer/owner of the robot for damage caused?
#2. An anti-social or mentally deranged scientist using the tools of AI, or a highly developed AI system acting independently, can design or conduct a gene-splicing experiment, to create a Frankenstein's monster, which will be essentially un-recallable. What are the moral and ethical principles, codes and norms which inform and circumscribe creative scientific and technological endeavours? How will society and who in society will decide and adjudicate on the imponderables of a digital future?

Thus the digital future of large masses of humanity contending with the consequences of deliberate or inadvertent glitches in the AI- and ML-enhanced creative abilities can be negatively synergistic, constituting safety, health and environmental threats.

The burden of proof of health and environmental safety should lie with the proponents of these technologies rather than on the public, who would be victims.

Creative thinking, discussion and debate

It is held that original thinking especially in the creative arts comes best, although not entirely, from reflection, debate and discussion in human-to-human learning and interactions. This involves expression of ideas and emotions through musical compositions and performances, painting-drawing-photography-cartooning, poetry, writings, story-telling, theatre and cinema, pantomime, puppetry, dance, and so on.

Such expression is connected with a good measure of spontaniety, especially among persons gifted with capability of expression in one or more of these fields. Today, persons who may not have particularly great abilities in the visual or performing arts, are turning to computers with specialized software, and are able to express themselves creatively in these very fields.

For the past few decades, people have used computers to create paintings and other works of art, or posters and advertisement boards, etc., and for special effects and animation in cinema. But today, Artificial Intelligence (AI) has started to create such art work, and very recently, a painting created by AI was reported in the media. The day when AI will engage in such creations in other visual and performing arts independent of human "priming" or intervention, may not be distant.

Will human creativity be transcended by AI creativity? If so, and if these creations benefit society, why not? But then there can be another, darker question. What indeed is the meaning of "creativity", when creativity includes inventing devices and means of destruction of people and societies? The future of AI exceeding human capabilities in creating means for destruction is not beyond the range of possibility, in an era when de-humanized science and technology overtakes and submerges the arts and humanities.

Health and family

Cartoons showing physical and psychological effects of heavy usage of hand-held electronic devices are doing the rounds. Perhaps the most telling cartoon is of a person, mobile phone in hand, entering a De-addiction Centre and viewing a board which reads: "1st Floor – FACEBOOK; 2nd Floor – TWITTER; 3rd Floor – INSTAGRAM; **(and most hilarious of all)** Roof Top – TEXTING WHILE WALKING".

The most ubiquitous digital device is the mobile phone. It has long ago transcended its basic voice communication purpose, and is today a veritable hand-held computer. Enabled by software applications (Apps for

short), it is capable of texting, video calling across continents, taking pictures including "selfies", GPS position, ordering taxi, food, etc., weather forecast, etc. It is not unusual to observe people sitting ostensibly "together", with heads bent down and thumbs busy communicating with a third person (who may even be present!), or taking a selfie at a scenic spot or with an important person, to send it to a WhatsApp group.

Digitization has spawned vast numbers of video games and made them easily available to an owner of affordable electronic devices. It is now recognized that many video games and on-line entertainment, and even e-mail or mobile phone use are addictive, and others like "Blue Whale" can be dangerous. Reportedly, NIMHANS has recently recognized an addiction to "Netflix", a non-stop entertainment channel. Children, even toddlers, are getting increasingly addicted to "screens" – TV, mobile phone or laptop. They are less able to socialize with peers, play team games or take physical exercise. A common anxiety, even nagging "fear", is of one's mobile battery power failing!

Persons using digital devices are often able to reduce time spent on routine tasks, whether personal or job-related, releasing the time saved for other activities, including more work. There are others who use digital devices to seek and secure more work. The accent is on "doing more" of whatever, making for a life-style which involves less physical (manual) activity and sedentary occupations. In general, this leads to working longer or erratic hours, as may be observed among young, e-savvy corporate executives, more work stress (with accompanying life-style diseases like obesity, hypertension and diabetes) and reduced quality of life, even if more income may raise the standard of living.

Labour-saving "automatic" home appliances from fuzzy-logic automatic washing machines to remote-controlled devices are digitally controlled. These machines certainly save labour or physical effort, but they also create dependence, making the owner/user helpless and stressed-out without it.

The reality is that these digital gizmos are affecting the physical and psychological health, cognitive capabilities, family cohesion, and inter-personal and social skills of significant sections of the population. These effects in one generation will inevitably affect their progeny, altering the basic psyche of significant numbers of humans and the structure and nature of human societies.

Politics and social media

American political commentator Jerome Corsi has opined that "the first principle of all propaganda and disinformation involves the manipulation of public opinion by the creation of a lie — known in today's terminology as a 'narrative' [that is] crafted to be sufficiently credible [so that] a persistent campaign of repeating the lie can change public opinion, even if the lie — the 'narrative' or the 'meme' — is totally untrue [and] concocted without any basis in fact, evidence, or reality." To ensure that the propaganda spreads, attempts to disprove the disinformation meme are countered or dismissed as conspiracy theories.

Putting out propaganda and disinformation using electronic communication media as a political tool, is greatly simplified and enhanced by the huge capabilities of IT for mass communication. Needless to say, the means of electronic mass communication would be controlled by the entity which initiates the propaganda or disinformation. This aspect of IT is already happening in many societies across the globe, and technological advancements will make it easier and more pervasive.

The use of social media for trolling (direct, anonymous or pseudonymous attacks) targetted individuals for almost any reason, is a reality. This is often off-the-record politics of plausible deniability. Social media on the one hand enables individuals or groups which have a propensity or readiness to be insulted or hurt by actions or spoken/written words, to advertise their victimhood. On the flip-side, victims of injustice or crime are able to use social media to voice their problems to "name and shame" perpetrators of injustice or crime.

Laws to protect privacy and control misuse of social media are necessary, but the offender or criminal is always at least one jump ahead of the law. Social media and other IT communication tools work as force-multipliers equally for socially useful, socially acceptable, socially harmful or criminal purposes. Of course this is true of almost any technology, but powerful IT-enabled tools are easily accessible to almost anybody, and their illegitimate

uses may well overwhelm their productive uses, unless there are valid and implementable social and legal restraints.

Transforming society by transforming humans

Recombinant DNA technology, or genetic modification (GM) for short, aims at modification of genetic material of biological species to transfer selected behavioural or physical traits from one species to another, by mechanical or biological introduction of selected genes of the 'donor' species into the chromosomes of the 'host' species. This causes modification of the physical or behavioural characteristics in the progeny of the host species. Modern IT tools enable GM with increasing predictability, according to experts in the field.

The Human Genome Project was conducted to determine the sequence of the nucleotide base pairs of human DNA (or "reading" the human gene) to identify and map genes which govern the physical and behavioural aspects of a human. This was a necessary stepping-stone for a line of research directed towards genetic synthesis, which is the meeting point of biological research with IT.

It seeks to develop the ability to synthesize DNA for plants, animals or humans to fit a pre-determined set of physical characteristics, abilities and behavioural patterns. Using a laptop and accessible software, the DNA code is written and sent to a 3D printer which prints the DNA molecule, which in turn is inserted into a cell to reprogram it. Since the cell is self-replicating, it would result in a biological entity which would never have been possible through natural processes of biological reproduction.

Such a synthetic human (or plant or animal) with precisely engineered physical and intellectual capabilities and behavioural traits, would be a super-human. Should experimentation go wrong due to invalid assumptions or experimental error, the end-product could well be a monster, which, in an end-game, could destroy natural humans and human societies. This is not anymore in the realm of conjecture. Research is well underway, but it is secret and outside the public domain because of IPRs.

The core issue is not improved predictability of such experiments due to better understanding or skill in manipulating genes. The issue is the combination of ethical, moral and legal positions of the GM processes, especially of genetic synthesis. The GM human product may be indistinguishable from "normal" humans, unless detailed testing is carried out. So it inevitably brings up some fundamental questions concerning introduction of 'synthetic' humans into the society of "normal" humans. Questions arise regarding the genetic make-up of the progeny of 'synthetic' humans and indeed whether sexual reproduction would be required at all.

The synthesis of inorganic functional parts with biological material is not particularly new – we are familiar with cardiac pace-makers, prosthetic limbs, etc. However, now AI-ML-robotics can produce robots which are actuated and controlled by the thought of the controller. While perfection in this field may be in the future, integration of such a robotic device with a human or a 'synthetic' human is well on its way. This essentially transforms a living organism into a hyper-human if not a superhuman, bringing more ethical and moral issues to the fore.

Decision-making

Decision-making in ethical or moral matters in human affairs is still largely made by humans with all their fallibilities and frailities, but using cultural, social and individual values of "right" and "wrong". These individual decision makers are responsible for the moral, social and environmental consequences of their decision. But in present times, as societies get more complex, and control gets increasingly centralized, decisions are necessarily subject to a procedural approach involving more numbers of persons, like a committee consulting a rule book, or disputes referred to a court of law. The alternative is of course, unilateral decision(s) by a dictator or powerful ruler, who may stifle those who question his/her decisions.

With digitization, decision-making in complex situations of many variables is possible by employing purpose-made algorithms working on knowledge systems and databases. This is standard practice in gaming, ranging from simple naughts-and-crosses games through chess, poker and corporate boardroom strategic decisions, to war-gaming.

Today, the human soldier uses several digital aids for combat. He takes decisions and acts and issues orders based upon his assessment of the information available to him from digital networks. Operating under military law, he remains responsible for his decisions and actions.

However, in the battlefield of tomorrow with AI put to use, the decision-maker could well be an AI-powered machine. For example, based on available input information in the battlefield, a robot soldier or a pilotless aircraft may fire weapons, raising questions of accountability, when targets are identified wrongly and attacked, or attacked disproportionately, or when the robot disobeys orders. Can a robot be punished for decisions which humans judge as wrong? Does a robot soldier come under military law? Can a human commanding officer be held accountable for a mistake committed by a technically defective robot soldier? Similar questions would arise in the corporate or governance context.

Complexity and system failure

Urbanization of human societies as human populations grow is a defining feature of present times. Today, more than 50% of the planet's 7-billion population live in urban settings, and this urbanizing proportion is increasing. Human societies are systems of great complexity, with interactive sub-systems and sub-sub-systems living cheek-by-jowl, especially in the more densely populated nations of the "third world". It is these continuous interactions, not all of them peaceful, that make for a dynamic balance of society within urban agglomerations and within nation states. Indeed, maintaining a dynamic balance within complex societies is the leading political challenge of present troubled times.

The digitization of societies is increasing the complexities and speed of interactions and socio-economic transactions within and between societies, as a function of economic and political policies. It is known that complex systems are more prone to collapse since the sub-systems and sub-sub-systems are tightly coupled. That is, the effects of failure of a sub-system for any reason (like say, large-scale natural disaster or successful cyber attack by an adversarial nation) can quickly and negatively be transferred to other sub-systems, with possible "house-of-cards" type of failure, unless immediate and adequate measures are taken to revive the failing sub-system or resuscitate the failed sub-system.

Such failure can only be avoided, mitigated or remedied by firm and rapid political-economic measures based upon person-to-person contact. However, due to the real-life "distance" between the rulers and large sections of the people, and notwithstanding the positive possibilities of electronic social media, handling large-scale failure in a complex society is beyond the capabilities of present disaster management organizations. In the context of extreme climate events due to creeping climate change, this predicament will only be magnified.

Communication with plants

Human languages are largely based upon functioning of the human cerebral cortex, and linguistics is the scientific study of language and its structure in terms of grammar, syntax and phonetics. Human-machine communication, as with computers, is through electro-mechanical devices, and also calls for linguistics. Although limited human-animal communication has been happening for millennia, this communication is not formalised as a language.

With present advances in nanotechnology coupled with information technology, the possibilities of communication between humans and plants are beginning to manifest. Inserting carbon nanotubes into plant tissue to detect nanoscale electronic changes in biological systems has enabled very rudimentary communication from plants to humans, like detecting and communicating the presence of explosive chemicals in soil for forensic purposes. The scope for development of this subject of nanobionics to a wider spectrum of plant-human communication is as yet open-ended and loaded with opportunities.

Plant-human communication will undoubtedly lead to better understanding of "language" in general. Notwithstanding, one wonders whether working towards better human-to-human communications would be more

important, so that tensions and conflicts within and between societies can be replaced by peace through tolerance and acceptance of differences between individuals and societies.

Social interactions and software tools

IT software tools to assist in compositions in the fields of prose and poetry, and in the visual and performing arts are already easily available, and are getting ever more powerful and user-friendly. These tools enable persons otherwise unable to undertake these activities, to enter these fields to enrich their own experience. For example, a beginner with little or no discernible talent can compose prose and poems or music, paint and draw (computer art), and sing using digital pitch correction software, etc. Thus, IT can and does help in social skills, to connect with other humans in society through socially acceptable self-expression.

However, these social skills are acquired by dissociation from society since it calls for long hours of sitting before a computer screen to acquire these skills. The trade-off point is to be drawn and defined by every user of these IT software tools. A "wrong" definition can lead to actually withdrawing from society, even from family.

On the flip side, there are IT tools for image manipulation (such as "photoshop") which can be and are being used, to create and communicate images which are deliberately false and misleading. This is obviously socially undesirable and often criminal.

Robots and AI – End game

It is reported that USA's military (the Pentagon) plans to program the brains of soldiers to control robots with their thoughts. [Michael Joseph Gross; <https://www.theatlantic.com/magazine/archive/2018/11/the-pentagon-wants-to-weaponize-the-brain-what-could-go-wrong/570841/>]. Clearly, in this wanton scheme of science-for-killing, humans will control robots to kill humans (soldiers and civilians) and other robots. But since the the power of AI is superior to all but the most agile and gifted human minds, robots can theoretically at the very least, take control of militaries or strategic weapons, and deny control to their erstwhile human controllers. The repercussions of this scenario are alarming.

AI-driven robot soldiers and armed drones may be able to fight ground and air battles, while fighting a war is predicated upon strategic use of a combination of cyber attack, electronic warfare and psychological warfare. This will perhaps minimize direct soldier casualties. But again there is definite possibility of AI-created robots taking control of nuclear weapons from humans, and using them to eliminate humans (and coincidentally most other biological life forms) through large-scale nuclear exchange leading to immediate human deaths of hundreds of millions. The radioactive fallout will kill many more millions and disrupt societies. The inevitable consequence of large-scale nuclear explosions is fire-storms which will spew microparticles into the stratosphere to block sunlight and stop photosynthesis, thus destroying the food base for humans and other species. This could be a cause for the deaths of almost all of the surviving human populations and also to the end of human societies as we know them.

Some may view this ending on a sombre note as an extreme view, as unmitigated pessimism. But perhaps rationality would use the word "realism", especially as humans are Planet Earth's dominant life form, and a predator species. Humans, self-certified as "superior" and "rational" and self-named as Homo Sapiens, with intelligence and intellectual capabilities, has unilaterally claimed a position at the "top" of the evolutionary ladder, only to be on a self-destruct path. We need to examine the various possibilities that a digitalized future may hold for humans and human societies, and for other life forms on planet Earth.

From examination of the possibilities of broad-spectrum, in-depth digitization in the lives of individuals, communities and societies, salvation for human societies may be through competent leadership at various social levels. Leaders and people in general need to understand that humanity is merely one among the myriad life forms on the planet, if we are to check our current downwards spiral to self-destruction. It is appropriate to recall the timeless wisdom of Native American Chief Seattle: "Humankind has not woven the web of life. We are but one thread within it. Whatever we do to the web, we do to ourselves".

Conclusion

The "digital era" has the combination of information technology, biotechnology and nanotechnology (IT-BT-NT) as the cutting edge of civilizational transformation. All three technologies are based upon digitization of data. Even at the design and engineering level, they are dependent upon digital techniques of computation and production. The individual or institution which owns and/or controls data will gain control over systems which use that data, whether the systems are machines or social structures.

The IT-BT-NT trio are game-changers which will transform the structure of societies so as to concentrate political (including military and police) and economic power in a very few persons. These persons will wield unquestioned and unquestionable authority simply because they would have access to information about persons and institutions within society.

There is the definite possibility that the "State", howsoever it is defined and exists, would be controlled by the "deep state".

The availability of various technologies – and especially IT-BT-NT together with others like nuclear technology – could be generating more problems than they solve, and are ecologically destructive, run-away technological solutions in search of problems to solve.

On the other hand, a pragmatic view may be to accept these technologies as a "given", and initiate, engender and disseminate social processes to ensure that they are deployed and used for democratically improving life and livelihoods and sustaining biodiversity. This will undoubtedly involve a difficult and lengthy process of educational and social reforms, so as to shift out of the current paradigm of economic-growth-at-any-cost. But it will surely be worth attempting, because without it, the slow or rapid collapse of industrial civilization and human populations due to climate change or nuclear holocaust or biological calamity, or some combination of these, appears inevitable.

In the distinct possibility of civilizational collapse, whatever the trigger(s), the quality of leadership needed to steer humanity out of its existential crisis will be crucial. The leaders of the societies of tomorrow will face enormous challenges, which the members of those societies will also be forced to confront.

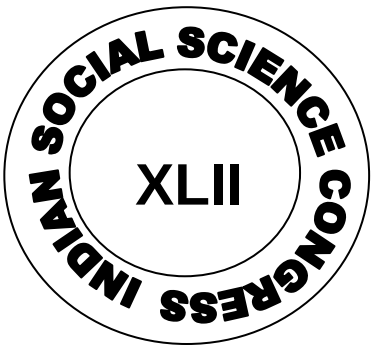
It is appropriate to paraphrase John Maynard Keynes' on what an economist should be, in terms of the qualities that a leader of tomorrow should possess in a world fraught with the challenges of nuclear holocaust or financial collapse, and the effects of global warming & climate change. He must be mathematician, scientist, historian, statesman, philosopher in some degree, able to contemplate the particular in terms of the general, and deal with the abstract and the concrete in the same flight of thought. He must view the present in the light of the past for the purposes of the future. No part of man's nature or his institutions must lie entirely outside his regard, and he must be purposeful and yet personally disinterested, as aloof and incorruptible as an artist, yet sometimes be the wily politician. He must be able to steer human creativity out of its death-and-destruction mode towards conservation and sustainability through social change.

And further, to paraphrase John Stephens writing about the civil engineer, the leader of tomorrow should be able to understand the positive and negative implications and effects of digitization in social terms, be capable of embarking on the higher flights of science and technology even while being capable and willing to wear the gumboots required to negotiate the sticky mud of political situations, when meeting and interacting with the poorest in his society. He must be able to cross the borderlines of the disciplines of his political colleagues and opponents and engage effectively with cost accountants, economists, financial specialists and management consultants, for the greater social good. He must also be able "to walk with Kings nor lose the common touch", if he is to be aware of ground realities.

Digitization tends towards greater centralization of politico-economic power and towards homogenizing societies. These tendencies of digitization go against democratization of societies and the general principle of diversity being the strength of eco-systems including human societies. I need to stress that this is not a neo-Luddite call to stop or reverse technological advances.

Human leaders need to acquire a broader understanding that technology cannot solve human social problems, and that biological and social diversity are essential for survival. They will also need to understand and genuinely implement the principles of justice, liberty, equality and fraternity, to change or tweak existing economic and political systems. Survival is not possible without protection, preservation and conservation of natural resources, for egalitarian provision of the basic needs of water & food security, clothing & shelter, and health, education, welfare and employment, for all.

Leaders and opinion-makers in societies need to acquire the practical wisdom to understand that climate change due to global warming is an existential threat to most living species and certainly to human societes. The threat is growing and not receding. Measures based on that understanding need implementation to mitigate the effects of climate change, and find an easier transition to so-called “deep adaptation” necessary for species survival. Solutions for mitigation and adaptation as a survival route for human societies, may not lie with blindly promoting digitization-based technologies.



PART II

PUBLIC/SPECIAL LECTURES

ON

HUMAN FUTURE IN DIGITAL ERA

PART II

PUBLIC/SPECIAL LECTURES

0224007 BASU, AJOY KUMAR (45, Jodhpur Park, Kolkata 700 068) IN SEARCH OF THE DOMAIN OF FEARLESSNESS

Fear is the driving force for all human actions: physical, economic or spiritual. Throughout history, in search of a Low Fear Domain from the High Fear Domain, human endeavor has brought comfort and relief but invariably pushed man into a Higher Fear Domain.

The world today has the comfort and protection that never existed earlier. Yet the stark fear for survival is taking strong grip over humanity like a multi-headed hydra, invading physique and mind of individuals, challenging the very concept of liberation and free thinking.

Fear field is universal, and each individual is genetically influenced. For an individual to move into Domain of (relative) Fearlessness calls for multiple solutions. The solution must be in a software form which helps each one to use and create appropriate program for oneself.

The paper presents the 1st. Generation version developed in India through actual practice. It is hoped that many thinkers will come out with innovative programmers which would help to reduce the intensity of Fear Power and thereby raise the level of happiness. Fortunately, in the present era, sharing of happiness through partial liberation from the grip of Fear-power is easy. Man can make life beautiful.

Our World

The world of today is not a cheerful, happy place. The Trident of ancient Holy Crusade, medieval Economic Blockade by Pirates and modern Nuclear Annihilation is now common free-market commodity. Hobgoblins and Scarecrows are taking over institutions and even nations in increasing numbers.

Everyone is threatening the others. Saints are proclaiming devastation as a consequence of sins of the Kali-yuga; environmentalists have given another 25 years of life for mankind; parents and teachers are constantly threatening children to make them aware of the menace of future human existence and of the dreadful enemies around.

Realizing that staying within this Wonderland of Alice, one would not be able to ascertain the causes and effects, attempt has been made to move into the past, searching within the lives of the primitive people.

The primitive mind was simple, survival was a continuous struggle. They could identify that within each living creature there exists an innate power for survival, for sustaining life. The scholars among them termed this power as Dharma. Simple analysis helped them to proclaim that one who tries to improve and perfect this inner power of sustainability is Dharmik (Pro-sustaining); likewise one who ignores the innate power and copies the traits of others is A-Dharmic (Anti-sustaining). They came to realize that knowledge and skill, that is, a coordinated activity of body and mind is essential for improving sustainability.

In the next eras, saints arrived with socio-political agenda and introduced the concept of holiness and sin as alternative to sustainability and non-sustainability. To convince masses, they introduced twin gods, both childish and constantly fighting, each having independent realms called Heaven and Hell.

Combining the two thoughts we see the world in different perspective. Men want to become wives, women trying to become men. Hermits become rulers, engineers sell baby food. Sportsmen act like gladiators to kill their opponents for the pleasure of their master-purchasers. Politicians take spiritual and business decisions; real estate

agents try to demolish the old countries and build edifices as per their design. In the lingo of the ancients, they all are A-Dharmik, best described in modern terms as Satanic.

The child-man is confused and hence unhappy. Its incessant search for comfort and security through self and group organization is leading to a scarier world grouted in stronger Fear-field. It is not a surprise because the phenomenon is in tune with the laws of nature. Organization calls for higher energy concentration that demands stronger force of bondage. Free atoms organize into molecules and then into crystals, steadily getting into fields of stronger bondage. The phenomenon is similar for sub-atomic particles; bondage of orbiting electrons is far weaker as compared to those in the nucleus.

The Vedas and Socrates described Life as Movement. Laws of Mechanics postulate that movement is the result of application of force. It is imperative to identify this force that drives man because then only one will be able to reorient oneself to control the force to overcome the present state of confusion.

Driving Force

The human mind, finds solace in the story of Genesis. Human form is the last of God's creation, an image of Himself, whereas everyday many species die out and new species created. Man is afraid that the new generation may be more powerful. This is the crucial factor. The singular driving force that has impelled mankind to arrive at the present more-comfortable unhappy world is fear. Volumes have been written about the achievement of mankind, its power to adjust, to love, to innovate, to build and to dream, but the single driving force, Fear-field is overlooked. Human achievement has been possible by introducing rules, regulations, ethics, social values which are all instruments for protection against real and imaginary fear. Human endeavor is to move constantly from High Fear Domain (HFD) to relatively Low Fear Domain (LFD), but really not to liberate oneself from the control of Fear-field.

Interestingly, as expected in an inverted world, the terms High and Low are reversed. Hence people truly moves from High Fear Domain into Higher Fear Domain thinking that it is Low Fear Domain. To realize this apparent contradictions it is necessary to understand the structure of Fear itself.

Structure of Fear

Let us project ourselves into the times of cave man. Life was simple and their sources of fear were real, which can be divided into three clear types:

1. Fear for Life: Attacks by hungry animals and annihilation by non-friendly tribes were common.
2. Fear for Survival: Uncertain hunting-gathering, shelter against vagaries of weather drove them to search for newer pastures.
3. Fear of Ignorance: Death was understood as a journey into a new life; the world of the Dead was unknown and frightening.

Historical journey of mankind has been an incessant struggle to overcome these primitive fears.

From the early sharpened stones and slings, man graduated to bows and arrows, moved into fire and firearms and has reached the present nuclear armory. At each step, with the increase of destructive power, Fear-power jumped. Today, the world recognizes that one who can destroy the world ten times is stronger than one who can destroy it only once. Logic and rationale are subservient to Fear-power. Super- power is synonym to Super- fear. Uncertainty for food by hunting –gathering method drove man to grow its own food and then to create a secured shelter for the food and themselves. From small communes to the megacities of today is the result of continuous initiative. But at every step, while a fear was overcome stronger fear took over. Agriculture generated food along with fear of failure, fear of surplus and search for varieties to reduce risk of mono-cropping. Initially food, condiments and medicines grown in different regions were exchanged, but here again fear drove man to occupy

areas to ensure the supply chain. Europe fought with each other to gain access to pepper grown in south India. Food was followed by minerals and new regimes emerged.

Uncertainty and inconvenience of barter system led to seals, currency and finally the modern monetary system. Purchase power of Money created fear of money shortage and money became a commodity generating more money. Virtual wealth overwhelmed real wealth of material and labour. Countries become destitute because its currency becomes invalid, although its man-material wealth remains unchanged.

Earlier houses were built by cave dwellers for better shelter. It is now a protection. Important people hide in their palaces and more fear pushes them under six feet concrete into man-made caves as a safety against enemies, both natural as well as human.

Primitive men were scared of death because they did not understand it. Modern man is more scared because they know that they do not understand it. To move into Low Fear Domain, the concept of heaven emerged, but fear drove them to introduce hell. Literature and artwork on hell have far stronger impression in the minds of men than the sublimity and serenity of heaven. Fairies transformed into fairy tales for children, but Satan-followers, the demons could not be converted into demon tales for the fun of children, They remained real . To accommodate this duality, duality of the Supreme was introduced. Documents and treatises were evolved depicting the perpetual state of war between the two Supremes, where the good Lord invariably wins.

The authors of pious tales miss a vital point. They preach that devotion, sacrifice and piety help saintly souls to reach God. None reaches. On the other hand, the so called demons enjoy everything in life, intensify their naughtiness to such an extent that God is forced to come for a face-to-face battle to slay them. The story tellers wisely stop here to leave the vital question, “will the demons go to hell or heaven?” unanswered. Probably the single exception is Veda Vyas, the writer of the Indian epic Mahabharat. At the fag end of the epic war, Duryodhan, the demonic king was dying; heaven was decorated, musicians, danseuses were in readiness and the air was filled with sweet smell of incense to welcome him into heavens. At the end of the epic Vyas records that each saintly soul is taken to heaven, only after serving a term in hell, the duration of which varies depending upon his or her earthly errors, mistakes and bad deeds.

Even if one ignores the version of Vyas as a fig of imagination, the passage of the slain demon is imperative on two counts:

1. It will lower the prestige of God if He fights an inferior adversary. Mohammad Ali or Joe Louise would not be respected as champion boxer, if the title fight was with a school child.
2. It will be unsafe for heaven if all good fighters are dispatched to hell which will surely become a super power for mankind to prefer to be associated with.

The above analysis is surely an amusing childish attempt, but it aims to establish the fact that human life on earth is within an overwhelming envelop of fear. Fear breeds more fear. The world is perplexed and unhappy. It is time for man to create a Domain of Fearlessness.

Domain of Fearlessness

Survival of the fittest is true depictions that fear is a genetic property of life. One can struggle to lessen the load of fear, but cannot live outside envelop of fear. Stories of super- men, who conquered over fear, are probably created to lessen the burden of fear for ordinary people. But since fear is with and around each, the search for a Domain of Fearlessness must aim to reach each and flexible enough for individual to adopt. The solution is therefore not an action plan, nor a program . It must be in software form only. In today’s world, it is anfractuous to record that a software may or may not be in digital form. The software of Max Plank was the concept that energy exchange is in discrete quanta. Scientists like Einstein and Niels Bohr used this software to develop programs matching photo-electric emission and atomic structure. Many more programmers have used this software. Similarly, there are digital

software which help people to create programs for writing songs, designing car components and for financial management.

So far, only the first generation software for reducing the power of Fear Domain is available, build up through experiencing life and living. The basic approach covering the three major sources of fear are as follows:

1. The process for reducing the fear of death, attempted through the creation of a Godhead calls for diminishing the stature of the anti-God, the Demon. This will ensure that the Godhead is not formidable and can be conceived as of one's own size. Thus the differential of Thou and Me merges into We. The Demon is no longer an outsider, but an integral part of We. The software suggests that an easy way for this is to respect all religious practices while adhering to the practice one is comfortable with. Technically one calls this process as Secularism.

2. The fear of physical annihilation by super destructive power is already loosening its grip. Soon scores of Nations will have adequate nuclear weaponry to destroy the world. That is the greatest deterrent against its use. The citizens of the world have to ensure that the control of these deadly weapons does not reach mentally unsound persons. Multiple controls by citizens is the only solution. Technically, Nations must shun single-point autocracy and move into Social Democracy. The software advocates for strong self-defense with the help of trained, strong and convinced citizenry. Probably Switzerland is a living example of the approach. Survival of Israel is by the unity of its citizens. Vietnam conflict shows that unified strong citizens can overcome any foreign aggression.

3. The fear for inadequate livelihood support is a complex entity and calls for scientific approach. Only a scientific mind will be able to distinguish between Need and Demand and strike a balance between them. Need of food, clothing, shelter, security, comfort are quantifiable and varies from country to country, and within a country, from community to community. But demand is controlled by commerce, business, and media as well as by personal ego. A child needs healthy, balanced diet to grow. Commerce dictates that a particular prepared food with a chemical in extra dose helps faster growth. That becomes the demand. One needs dress for protection, comfort and elegance; but the user is incapable of taking a scientific and logical decision about what to demand. Commerce is the master decider; glossy pictures and powerful salesmanship tell the customer what to demand. Modern medicines are sold at inflated prices because of manufacturer's name; customers are fooled by MRP marks, but are unaware of the effective chemical; doctors are rendered weak in Pharmacology and depend on the glossy booklets and salesman's pep talk.

House is a need for protection, comfort and to some extent to project self. But housing demand is colored by other issues. Multistoried apartments are in demand, because the Construction companies advocate, raising the bogie of land shortage. Nobody calculates that if every Indian family (300million) is having a house plot of 500sq. meter, the land need is 150 thousand sq.km., which is 4.5% of India's land (3.3 million sq.km) and that fallow land in India is more than this area. The other issues like communication, travel, services are of little meaning in the present era of computers.

The software suggests that the fear can be substantially reduced if human beings behave like human beings, stressing that the unique attribute of human species is its ability to rationalize and innovate. This is achievable through a planned value-based learning system for all, to create a Scientific Nation. Education cannot be mere information gathering in a group and being told about the past achievements of mankind; it is to be transformed into an individual learning process through a coordinated action of mind and hand. This process alone can infuse humanism and self respect which are essential to combat fear and inspire each to be a unique inventor.

The name of the software is Mohandas Karamchand Gandhi that projects India as the Hope of Future Man.

0226008 LINDLEY, MARK (11, Doane Road, Medford, MA-02155). A KIND OF ECONOMIC GRIEF, FACILITATED BY DIGITISATION AND A PROPOSED METHOD OF MITIGATING THE GRIEF

I speak as an economist (and – maybe even worse – an *academic* economist) and will start by defining accordingly a few key terms.

Commodities are *marketed* products and services. Here are a negative and a positive example: Food you get from your family garden is not a commodity (and so cannot be reckoned as part of the GDP), but if someone pays a prostitute for sexual service, the service *is* a commodity (and should be reckoned as part of the GDP).

In academic economic terminology, "**labour**" means work done by humans (including mental and/or emotional as well as physical work) *to produce commodities*. Labour is paid for with money (**wages**). All labour is work, but not all work is labour. Most of the work done by most women is not labour. A wet-nurse performs labour; a mother feeding her own baby is work but not labour; and likewise for parents and grandparents showering love and learning on their offspring, and for cleaning your own dwelling and disposing personally of your household's rubbish.[1]

"Classical" economists (i.e. from Adam Smith down through John Stuart Mill and Karl Marx) spoke of two and only two kinds of **factors of production** of commodities: labour (as defined above) and **capital** (the other factors). **Capital*ism*** is a kind of economic system whereby rich or would-be-rich people try, via production of commodities and/or buying-and-selling, to gain ownership of more and more capital. The increase, due to this or that successful enterprise, in the owner's **monetary capital** – i.e. the funds (s)he owns for further capitalist enterprise – is the **profit** from that previous enterprise. According to market-economic theory, the society's total monetary capital can grow *infinitely* and forever as a result of successful capitalism.

Land, greenery, water, stocks of fish, mineral resources etc. are often called "natural capital", but they cannot increase beyond certain limits, and indeed the natural stocks of valuable minerals, including ores and fossil fuels, are irrevocably diminished when we extract them from the Earth. Instead of "natural capital" I will, later in the lecture (please watch out for it), use the term "**natural economic heritage**" in order to preclude the mistaken notion that it expands like monetary capital does under capitalism.

A hallmark distinguishing "neoclassical" from "classical" economic theory is the concept of **marginal utility** (credited to several writers of the 1860s and '70s). The marginal utility of a commodity to a consumer shopping at a given moment is the utility ("use value") of the next little bit of it to him or her at that moment. If you are very thirsty, a glass of water is worth a lot of money to you (provided you have money and can't get the water without paying for it), but then the 2nd, 3rd, 4th… glasses are each of less marginal utility and so you would theoretically be willing to pay only less and less for them. *Abundance causes marginal utility to decline*. (This is why an ounce of water normally costs less than an ounce of diamonds although water is an essential human need and diamonds are not.

Absolute needs were defined nicely as follows by John Maynard Keynes (the most important Anglophone economist of the second quarter of the 20th century): "[T]he needs of human beings … fall into two classes – those needs which are absolute in the sense that we feel them whatever the situation of our fellow human beings may be,

[1] In journalistic and political writing, the academic economists' terminological distinction between work and labour is routinely ignored. And, the German language doesn't provide efficiently for it; the sentence written by Marx and Engels which is translated as "Workers of the world, unite!" was about labourers, not about, say, housewives preparing meals for their families. And why not mention here (speaking of traditional womanly work) that "labour" as a *medical* term for pushing a baby out into the world does not, except in "rent-a-womb" cases, mean labour in the academic economist's sense of the term.

and those which are relative in the sense that we feel them only if their satisfaction lifts us above, makes us feel superior to, our fellows."

To have substantial unmet absolute economic needs is **destitution**. All destitution is poverty, but not all poverty is destitution. Poverty is sometimes a matter of somewhat well-off people feeling distressed (and being regarded contemptuously) because they can't "keep up" materially with ostentatious neighbourly acquaintances.

(A doctrine of neoclassical theory before Keynes had been that in a state of general equilibrium (i.e. steadiness) in regard to commodity prices, there would be no **unemployment**, i.e. no one wishing to labour but unable to get paid employment. Keynes showed theoretically how general equilibrium re: prices *could* co-exist with massive unemployment. (And such were indeed the current economic conditions in Britain and the USA.) His proposed remedy was for government to interfere with the workings of the market by *giving away* some money to destitute or nearly destitute citizens. They would use it to increase demand in the market; this would theoretically stimulate producers to produce more and therefore to hire more workers (since labour was regarded as a basic factor of production – if you wanted to ramp up production in those days, you had to hire more labour); and *that* would set the market off in a better direction: better in the sense of reducing unemployment and increasing production. The government might oblige some of the recipients of the new money to do something in return for it – plant trees, dig wells, build roads, etc. – but all that would be merely a set of additional benefits to the nation; the essential thing would be the "**demand-side**" **stimulation** of providing poor folks with money to spend for goods and services they really need as they haven't been living economically abundant lives and therefore the marginal utility of certain commodities to them is high.)

(Having mentioned that *some* poverty is a matter of somewhat well-off people feeling distressed because they can't "keep up" materially with their neighbourly acquaintances, let me add that the distress has been empirically reported in the **Easterlin paradox**. In the 1970s, Richard Easterlin came up with data for it from surveys, conducted in the USA for several decades, in which people had been asked to rate their levels of happiness on a scale from 1 for miserable to 10 for completely happy. The paradox is that after a national population has, thanks to capitalism, attained a certain level of material affluence, and is therefore distinctly happier than back when there was lots of destitution or near-destitution, *further* increases in material affluence don't make the population happier.)

(The great sociologist Émile Durkheim had understood that

"desires are to some extent	les désirs, dans une certaine mesure, sont
bound to take account of	obligés de compter avec
the [available] means;	les moyens;
what one has	ce qu'on a
serves as a benchmark	sert en partie de point de repère
for determining	pour déterminer
what one would like to have.	ce qu'on voudrait avoir.
As a result,	Par conséquent,
the less one has,	moins on possède,
the less one is inclined	et moins on est porté
to extend endlessly the	à étendre sans limites le
range of one's [felt] needs."	le cercle de ses besoins.)

Another important innovation within the history of neoclassical economic theory was that of Robert Solow, who in the late 1950s began to put into his equations about production an additional factor besides those for amounts of capital and of labour. The extra "factor A(t)" represented in a catch-all way "the cumulated effect of shifts over [historic] time" with regard to improvements "in education of the labor force" (a "human-capital"-type item), in technology (Hello, digitisation!), and in "all sorts of [other] things". There was thus a fuzzy relation between Solow's "**Factor A**" and reality, but he compensated for this by showing statistically that in the USA, increases in capital and labour during the 40 years between 1909 and 1949 were far too little to explain the total increase in pro-

ductivity. (In 1987 he was awarded, "for his contributions to the theory of economic growth", the Swedish National Bank's "Prize in Economic Sciences in Honour of Alfred Nobel".)

Among Solow's many clever remarks has been that since capital investments are based on known technology, and since technology tends to improve over time, new capital investments tend to yield more productivity than former ones have yielded.

But what then of labour and unemployment? What if the new technology is a labour-cost-saving device for the capitalist?

David Ricardo, a remarkably clever capitalist and the most brilliant classical economist after Adam Smith, declared that an increase of wages usually has "a great effect in lowering profits". The converse precept is that a decrease in the wages entailed by a certain amount of production is most likely to cause an increase in profits.

Arthur Lewis – whose famous "two-sector" theory of "developing" economies with small capitalist sectors and large "traditional" ones was to win him high honours – noted, in a famous article (1954) entitled "Economic Development with Unlimited Supplies of Labour", that "the level of wages in the capitalist sector depends on the earnings in the subsistence sector" (i.e. the part of the national economy, without capitalist enterprise, where people supposedly get just enough goods to "subsist") and therefore "the capitalists have a direct interest in holding down the productivity of the subsistence workers" (so that in the capitalist sector, workers will labour for lower wages than if the traditional "subsistence work" were enabling people to have a decent way of life materially).

The focus in this lecture, since the economic effects of digitisation are felt most directly in the capitalist sector, is somewhat different. Pivotal to this lecture is the concept of the "precariat" which was introduced in 2011 by Guy Standing. (He was at that time serving at a provincial British university as a Professor of Economic Security. He had previously worked for 30 years for the ILO. He is now Professor of Development Studies at the University of London's School of Oriental and African Studies.) **The precariat** consists of labourers who have no steady jobs, but only occasional "gigs". It is nowadays expanding fast in quite a few countries. And we all know that millions of Indian farm hands and other more-or-less menial labourers belong to the precariat.

(For about a hundred years now, jazz and pop-music performers in the USA and in England have been using the word "gig" to mean a one-night paid engagement. About half a century ago this linguistic usage spread to Western classical-music performers. It's not "gigs" if you're a member of a symphony orchestra giving a subscribed annual series of concerts; *that's* a job; it's a gig if, for instance, you deputise for an indisposed regular member of the orchestra for a rehearsal and/or performance. (Would you suppose that such arrangements are likely to yield better performances?) In the last quarter-century, the social impact of digitisation and automation as aspects of Solow's "Factor A" has, together with the spread of outsourcing, led to a broader application of "gig" as an economic term.)

(Let me clear: I think the gig economy is due not just to digitization *per se* and to automation, but also to the widespread use of digitization for outsourcing, which digital technology vastly facilitates while likewise facilitating automation.)

It is often said that 21st-century digital technology may help to create as substantial a flow of opportunities for paid employment as it helps to destroy. I am pessimistic about that; I think it will probably help cause a smaller portion of the citizenry than now to produce, as labourers, all the commodities for which there's a market.

(You can read at *www.nytimes.com/2018/09/18/opinion/cut-spending-budget-cult-of-thrift.html?* an article beginning and ending as follows: "Let me tell you about the cult I have joined: the cult of thrift. The indoctrination started gently, with a podcast here, a YouTube video there, about minimalism, debt-free living, frugality, decluttering, zero waste.... I still have a long way to go in reducing my consumption. As my journey continues I plan to seek inspiration from people who have less than me rather than people who have more.")

I do believe, however, that the matter is unpredictable – and so too does the champion optimist, Klaus Schwab, the founder-chairman of the "World Economic Forum" which meets annually in Davos. He says that gains in employment from techniques such as high-speed mobile Internet and cloud technology, artificial intelligence, robots and automation are not a foregone conclusion. He speaks of "urgent challenges", not only for reskilling labourers, but also for providing "safety nets" to help the victims get by until (other) money trickles down to them in the form of wages.

And according to Yale University professor Robert Shiller (who won in 2013 the Swedish National Bank's prize), "the job insecurity that free trade often creates" is, now, a reason why "governments must find new ways to insure workers against the risks of a globalized market".

So: the grief referred to in the title of my lecture includes that which is due to the increasingly precarious economic status (characterised by month-to-month and even week-to-week uncertainties) of labourers whose levels of skill would, in an earlier decade, have enabled them to get lasting jobs.

In order to describe clearly the proposed method – a certain kind of safety net – of "mitigating the grief" (referred to in the title of the lecture), I must first distinguish clearly between **income tax**, **poll tax**, and **negative income and poll taxes**. A poll tax would be a sum paid to government (maybe periodically, maybe once and for all) by every individual within reach of the government's authority, or at least by every adult resident citizen, regardless of his or her economic condition. A "negative poll tax" would consist of money being given away by government to every such individual. Income tax varies (as we all know) according to the economic condition of the citizen, and the same is true of "negative income tax" (i.e. doles to the poor or the supposedly poor).

In 1949, a famous right-wing economist, Friedrich von Hayek, while staunchly opposed to "deliberate [i.e. governmental] redistribution [of money] beyond securing a constant minimum for everybody", said that "governmental services" should include "provision of a minimum floor for people who cannot make an adequate income in the market ... just providing, outside the market, a flat minimum for everybody". He didn't (as far as I can tell) consider whether it should be done by means of a negative income tax or a negative poll tax, but he was pretty clear that it should be aimed to eliminate destitution only, not poverty in the broader sense; he said, "This of course means in effect eliminating completely the social-justice aspect of it, that is, the deliberate redistribution beyond securing a constant minimum for everybody who cannot earn more than that minimum in the market." (He was a fuzzy thinker and writer.)

Milton Friedman, a smarter 20th-century right-wing economist, advocated a negative income tax for the USA. Every head of household should, he said, have to send periodic income-reports to the government (I think folks with good secondary-school training can do this); every household that had, during the period in question, had income at more than a certain specified rate (analogous to the "poverty-line" rate in India, but let me call it a "barely-not-destitute rate") would have to pay income tax on all its earnings above that rate. Government would then pay, to each household that had earned *some* wages and yet less than enough to get it out of destitution, a certain percentage – he suggested 50% – of the difference between the actual earnings and the theoretical barely-not-destitute amount for a household of that size and composition during that period.

For instance, if the barely-non-destitute level of earnings for a certain household during the period under consideration were reckoned to have been theoretically $500, and yet the wages actually earned by people in that household during that period had totalled $300, then the government would now pay the household $100 in negative income tax (i.e. 50% of the difference between $500 and $300). Friedman feared that a negative income tax more generous than that would weaken the incentive to labour for a wage. And, he held that negative income tax ought to replace all other government welfare-assistance payment programs, thus leaving it to private charities to sort out details of special family conditions and to lend a helping hand accordingly. (For a video of him explaining the idea (to a repulsive interviewer), see *www.youtube.com/watch?v=xtpgkX588nM*.)

It's a clever idea, but too intricate for India, wouldn't you agree?

Then how about a negative *poll tax* (a basically simpler idea, but IMHO dependent, for effective implementation, on universal aadhaar functioning smoothly – unlike now – for the destitute), funded to a large extent by Pigouvian taxation?

"**Pigouvian taxation**" is a blanket term for any kind of tax levied on activities deemed (by the government) to be destructive of the nation's natural economic heritage (as defined above). It is named after Cambridge University professor A.C. Pigou, because of the following passage from his seminal book, *The Economics of Welfare* (1920):

"Sometimes people use methods that, as against the future, cost much more than they themselves obtain. Fishing operations so conducted as to disregard breeding seasons, thus threatening certain species of fish with extinction, and farming operations so conducted as to exhaust the fertility of the soil, are instances in point.... It is the clear duty of Government, which is the trustee for unborn generations as well for its present citizens, to watch over, and, if need be, by legislative enactment to defend the exhaustible natural resources of the country from rash and reckless spoliation."

(When the Swedish National Bank awarded half of its prize this year to William Nordhaus, the announcement said he had showed that "the most efficient remedy for problems caused by greenhouse gases is a global scheme of universally imposed carbon taxes". Although such a scheme could never remedy any such problems but could only tend to mitigate the worse ones in a subsequent decade, the award shows that the Pigouvian precept is gaining acceptance among neoclassical economic theorists.)

What Pigou had in mind was levies, not for the sake of fiscal income (i.e. income to the government), but for the sake of nudging citizens away from behaviour saliently destructive to the well-being of the voting *and* non-

voting citizens, for instance the as-yet-unborn citizens whom the government is pledged to serve in addition to serving the electorate.

A modern landscape in Pennsylvania

The idea of funding a negative poll tax via Pigouvian taxation occurred to me upon reading the following paragraph in Herman Daly's and Joshua Farley's textbook, *Ecological Economics: Principles and Applications* (expanded edition, 2011):

"[S]hould we tax energy and raise its price for the sake of inducing more efficient use, or should we subsidize energy and lower its price to help the poor? One instrument (price of energy) cannot serve two independent goals (increase efficiency, reduce poverty). We need a second instrument, say an income policy. Then we can tax energy for the sake of efficiency and distribute income (perhaps from the tax proceeds) to the poor for the sake of alleviating poverty."

A fact inimical politically to such a strategy is that taxpayers do tend to vote against political parties proposing to increase tax rates. It seems to me conceivable, however, that three motivations functioning together – *(1)* "ecological fear" of "Angry Mother Nature" (but of course planet Earth isn't really angry with us, but only indifferent), *(2)* "social fear" of the 21st-century destitute and potentially-destitute precariat behaving like the proletariat did a hundred years ago in some countries, and *(3)* natural human love for humankind – might induce a large part of the taxpaying Great Indian Middle Class to join with the poor in voting for a political party that promises to help fund a weekly negative poll tax by means of Pigouvian taxation.

I would suggest (if consulted, but there's no need for that: Indians can sort out the matter without me) negative-poll-tax payouts high enough to enable the formerly destitute to bear properly their share of the indirect effects of steep Pigouvian taxation. Higher prices, due to that taxation, on certain commodities might motivate the poor as well as the lower-middle-class folks to consume sparingly such commodities as, for instance, electricity and fuels.

(It is for Indians to consider whether steep Pigouvian taxation might be, *per se*, good for the nation in the long run, given its economic vulnerability to exhaustion of aquifers, destructive weather aggravated by climate change, etc. According a study of economic effects of CO_2 emission, published recently in the journal *Nature Climate Change*, "the three highest-emitting countries (China, the United States and India) also have among the highest country-level economic impacts from a CO_2 emission".)

It seems likely to me that in India, hefty negative poll-tax payouts could amount to, say, 10% of GDP. This guess is related roughly to the fact that in the *Economic Survey 2016-17*, the chapter entitled "Universal Basic Income: A Conversation With and Within the Mahatma" offers for discussion a scheme of unconditional but not universal payouts (only people certified as "poor" would get them) estimated by the author of the survey, Arvind Subramanian, as likely to cost some 5% of India's officially acknowledged GDP.

To finance via Pigouvian taxation a substantial rate of **universal basic income** (i.e. periodic negative poll tax; "UBI" is the accepted abbreviation) would be a more deliberate kind of trickle-down than the somewhat mythical kind depicted in *laissez faire* ideology. It would be like a sugar-coated bitter pill to taxpayers. The bitter economic medicine would be higher commodity prices due to the various kinds of Pigouvian taxation; the sugar would be compounded of *(1)* relief, or at least hope of relief, from the "social fear" of Revolution, *(2)* indiscriminate brotherly love (competing with fascist tendencies), *(3)* some degree of relief from "ecological fear", and *(4)* the fact that Pigouvian-slanted excise and sales taxes would be indirect rather than direct like personal income taxes. Would UBI promote laziness? In a five-year "Basic Income Pilot Project" in rural Madhya Pradesh which was initiated in 2011 by SEWA and UNICEF, it was found that receipt of an unconditional basic income amounting to about 1/3rd of the official "poverty line" level of income had the following results: • increase in gainful employment, especially in own-account work on small farms (this effect was notably strong among women and in tribal communities) and • promotion of other new income-earning activity (households that received the cash grants were three times more likely to start a new business or production activity than were households that did not receive the grants), as well as • increased spending, by small and subsistence farmers, on agricultural inputs (resulting in better agricultural yield and improved food security), • improved nutrition (entailing a significant reduction in the proportion of malnourished female children in the villages that received the cash grants), • reduced incidence of illness (*An ounce of prevention is worth a pound of cure*); • more regular medical treatment (*A stitch in time saves nine*) and implementation of prescriptions, • improved school attendance and greater household expenditure on schooling of the family's children, • no increase in alcohol consumption (and indeed there was reduction of alcohol intake in the tribal village where one of the probes was conducted), and, as one might readily expect, • a significant

reduction in indebtedness (*Bad for the money lenders!*) and a significant increase in savings. (At *www.youtube.com/watch?169&v=UvErJvuWrWc* a 13-minute video report is accessible.)

However, the fact that those lucky poor folks behaved generally well doesn't tell us how people given enough UBI to shield them *entirely* from destitution would behave. An account of current experiments (as of October 2017) in this vein is accessible on the Internet at *https://basicincome.org/news/2017/10/overview-of-current-basic-income-related-experiments-october-2017/*. Issues of this kind are discussed periodically in notices posted at *https://basicincome.org/* and in papers delivered at the annual World Congress of the Basic Income Earth Network, which is held in a different country each year. The 19th such congress will be held, next August, in Hyderabad.

Near the outset of this talk I said that there are some socially valuable kinds of work that are not labour. (The examples cited were showering love and learning on one's offspring, cleaning one's dwelling and disposing properly of the household's rubbish.) Would poor people less burdened with labour tend instinctively to do more unpaid work?

If you accept sociobiology as a partner of sociology, and accept that Homo Sapiens got food, for a lot longer than 150,000 years, mainly by unpaid-for hunting and gathering, but only less than 10,000 years ago began to go in for urbanisation with its large-scale dependence on agriculture, transportation and money, then you may be inclined to suppose that the instinct to cooperate in unpaid work – as for instance in primitive hunting – is even deeper than the instinctual basis for market economics. Two sociologically-minded economists, Herbert Gintis (a top expert in game-theory) and Samuel Bowles, have developed this argument in a book entitled *A Cooperative Species: Human Reciprocity and Its Evolution* (2011).

Also, Ferdinand Tönnies, a founding father of academic sociology, said in 1887 that whenever human wills are not mutually antagonistic but are, instead, "positive", there is a social "bond", and in that case:

"The relationship itself,	*Das Verhältnis selber,*
and therefore	*und also*
the [resulting] bond, is	*die Verbindung, wird*
conceived of	*entweder als*
either as	*realisches und organische Leben*
[a] real and organic [form of] life	*begriffen*
[and] this [conception] is	*– dies ist*
the essence of **Community**,	*das Wesen der Gemeinschaft,*
or else as	*oder als*
[a] mental and mechanical	*ideelle und mechanische*
construction, [and] this is	*Bildung – dies ist*
the concept of **Society…**"	*der Begriff der Gesellschaft… .*

If you as a sociologist are inclined to think that "real and organic" cooperation is more deeply instinctive than cooperation by way of "mental and mechanical constructions", then you may regard this line of thought as reinforcing the sociobiological argument.

The truth about all that would come out in the pudding. A fair number of little experimental puddings should, IMHO, be baked before going big-time.

An incidental effect to be on the lookout for at that latter stage would be that enabling all the destitutes in India to buy their absolute commodity needs might well, via the demand side of the famous market-economic "Law of Supply and Demand", heighten the degree to which prices of basic foodstuffs rise faster than prices of luxuries. (My feeling about that is: "So be it. Agriculture could make good use of more income from the market.")

And meanwhile, enabling all the adult female destitutes to buy *their* absolute commodity needs might, via the supply side of that same Law, heighten the degree to which prices of rudimentary prostitutes' services performed by humans would rise faster than prices of luxuries. This could conceivably aggravate the problem of rape by very poor young men (men devoid, by and large, of marriage prospects because of gender imbalance among the youth due to an excessive relative number of female fetal abortions a generation ago). Women and decent men would in that case have to ramp up their efforts to deal with the issues – as their counterparts in the USA have now begun to deal properly with the issue of sexual abuse by wealthy men there.

0214009 SHARMA, SHANKAR (Banashankari Krupa, 3rd Cross Right Side, 80 Ft Road, Vijaynagar 1st Stage, Sagara, Karnataka 577 401). **SOCIAL ILLS OF HIGH GDP GROWTH RATE PARADIGM: ENERGY AND ENVIRONMENT PERSPECTIVE**

The obsession for high GDP growth rate year after year by the successive governments has brought the social and environmental issues of our country to such a calamitous stage, that urgent and diligent review of this paradigm has become imperative if our communities are to be adequately protected. The phenomenon of Climate Change and its projected impacts on our natural resource base and on vulnerable sections of society has made it critically important that the entire society engages in effective consultations to take our society on a path of the sustainable development.

A diligent analysis of all the associated issues will indicate that equitable developmental opportunities are certainly feasible for all sections of our society, while adequately addressing the threats of Climate Change.

Key terms: GDP growth; CAGR; social and environmental aspects; Climate Change; IPCC; sustainable development; pollution and contamination; energy demand and supply

Introduction

Whereas many conventional economic analysts argue that in order to have adequate human development index the country's economy has to grow continuously at a high rate, a densely populated and resource constrained society such as ours cannot afford to ignore the implications of high energy / material consumption, which will be a consequence of high growth of the economy.

The Club of Rome, which is a global think tank, had raised considerable public attention in this regard way back in 1972 with its report 'The Limits to Growth'. It had predicted that economic growth could not continue indefinitely because of the limited availability of natural resources, particularly oil. In 2011 a book-length article was published as an academic study of 'The Limits to Growth', its methods and historical reception. This article concluded that "The warnings that we received in 1972 ... are becoming increasingly more worrisome as reality seems to be following closely the curves that the ... scenario had generated."

UN's Cocoyoc Declaration (Mexico, 1974); and the report "Prosperity without growth? - The transition to a sustainable economy" by the Sustainable Development Commission (SDC), which was the UK Government's independent adviser on sustainable development have come to the similar conclusions. The fact that high GDP growth rate cannot be pursued indefinitely and hence cannot be sustainable is increasingly being acknowledged at the global level.

But the successive governments in India, have ignored these sane warnings, and have embarked on a high GDP growth rate paradigm at enormous costs to the society. Whereas there has always been a need to diligently consider the social ills as a consequence of a high GDP growth rate paradigm on our poor and vulnerable communities, the looming threats of Climate Change has made it critical to consider the environmental impacts also. Such an imperative is even greater for a vast, diverse and resources constrained country like India with its population expected to reach 150 Crores by 2050.

The recent past history of high GDP growth rate as applicable to India

In an article in The Hindu of 14.5.2016, C. Rangarajan, former Governor, Reserve Bank of India had said: "The "potential" to grow at 8 to 9 per cent at least for a decade exists. We have to make it happen." The successive governments in the country have been focusing on such a high GDP growth rate, as the road map to eliminate poverty in the country. After decades of such focus on high GDP growth rate, it has become essential to take a stock of the experience for the society as a whole. The question should be whether such a high growth year after year is desirable or whether it is in the true interest of our communities.

The modern economists are very often blamed for wrongly pitting the issues of 'socio-economic development' and 'environment' against each other, instead of focusing on how societal development can be achieved on a sustainable basis without compromising on the all-important environment. Since everything we see around us is provided by the nature the necessity of harnessing the natural resources on a sustainable basis need not be emphasised. A frenetic growth in non-agricultural sectors, as happening in many states of our Union, can lead to the instability in production and productivity of food and other agricultural products. Such a probability of lowered agricultural output in the context of huge population estimated to be about 1.5 Billion by 2050 should be a matter of matter of grave concern to our country.

It will be in the larger interest of the whole country if our policymakers realise early that the true welfare of every community in India is feasible only with a healthy environment. This is so because there are genuine concerns among the environmentalists, that the policy of high GDP growth rate at any cost is seriously compromising the environment, as evidenced by the deteriorating environment all over the world. The fact that global warming is clearly associated with hugely deleterious impact on food production should make this issue of even greater concern.

The country has been recording high Gross Domestic Product (GDP) growth rate for more than two decades. Since 1996 onwards the country has logged a high average GDP growth of more than 6% till 2005, and more than 7% since 2006 onwards (World Bank: http://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG). Such a high growth year after year can lead to the multiplication of the size of our economy as shown in the table below. Whereas a compounded annual growth rate (CAGR) of 4% of GDP will take about 19 years to double the size of our economy, 10% CAGR will increase the size of our economy by four times only in 18 years.

Time taken for the size of economy to get multiplied at constant CAGR

CAGR Growth Percentage	**Increase by 100%**	**Increase by 200%**	**Increase by 300%**	**Increase by 400%**
@ 4%	19 Years	29 Years	36 Years	40 Years
@ 6%	13 Years	20 Years	25 Years	29 Years
@ 8%	10 Years	15 Years	19 Years	22 Years
@ 10%	8 Years	13 Years	16 Years	18 Years

If the "potential to grow at 8 to 9 per cent at least for a decade" should be made to happen, as C. Rangarajan has suggested, the country's economy can become double in about 9 years. Even such doubling of our economy will have many serious concerns to bother the vulnerable sections of our society, while doubling the "financial wealth" of the country. The primary question should be whether such a doubling of the "financial wealth" comes at a huge cost to some sections of our society, and by how much.

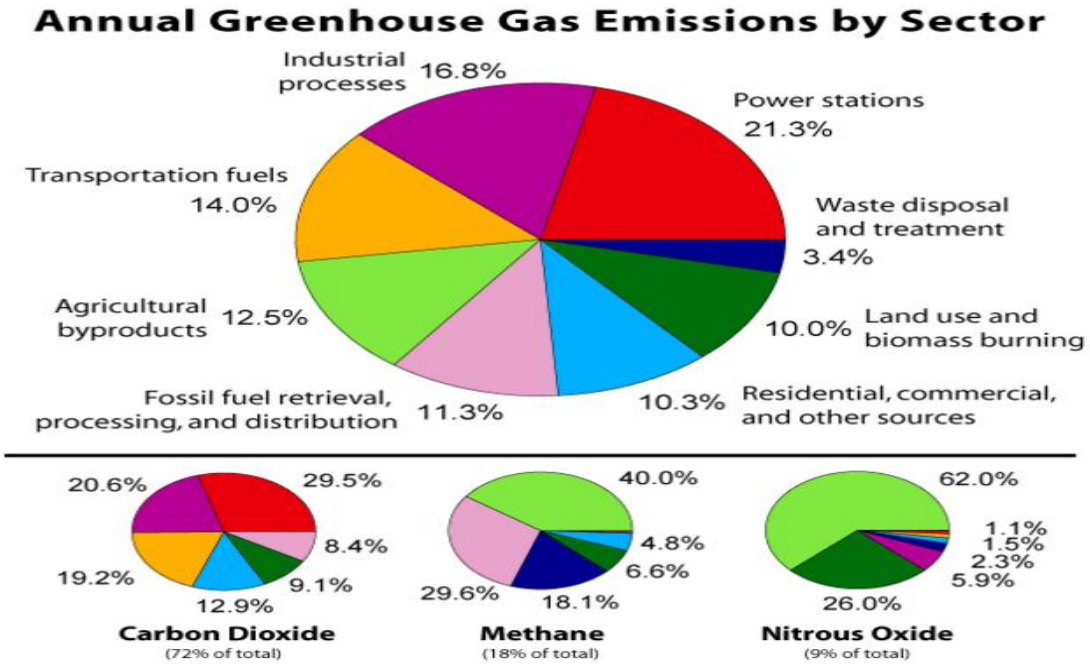
A sustained high GDP growth rate will mean the manufacture of products and provision of services at an unprecedented pace leading to: setting up of more factories/ manufacturing facilities; consumption of large quantities of raw materials such as iron, steel, cement, chemicals etc.; increasing an unsustainable demand for

natural resources such as land, water, minerals, timber etc.; acute pressure on the Government to divert agricultural /forest lands; huge demand for various forms of energy (petroleum products, coal, electricity etc.); accelerated urban migration; clamour for more of airports, airlines, hotels, shopping malls, private vehicles, express highways etc. Vast increase in each of these activities, while increasing the total greenhouse gas (GHG, responsible for global warming) emissions, will also add up to reduce the overall ability of natural carbon sinks such as forests and lands to absorb GHG emissions. There will also be increased pollution of soil, air and water along with huge issues of managing the solid, liquid, gaseous, and radiological wastes.

The base line assumption (as stated in Integrated Energy Policy of the erstwhile Planning Commission, 2008) that the country needs to sustain an economic growth of 8 - 9 % over next 20 years to eradicate poverty and to meet its human development goals, will lead to very many intractable problems for the society from social and environmental perspectives. Such a high growth rate has never been found necessary in developed economies, where even at the highest growth period they are reported to have registered only 3-4 % growth. The so called "trickle down" benefits to vulnerable sections of our society through 8-9 % growth will be negligible as compared to the all-round benefits associated with inclusive growth of a much reduced rate, say 3-4%, if we harness our natural resources responsibly and equitably. Hence, the obsession with high GDP growth rate target should be diligently reviewed against a paradigm shift in our developmental objective, which will give priority for inclusive growth aimed at sustainable and responsible use of natural resources.

At a time when our natural resources are getting depleted at an alarming rate, and when the pollution of air, water and land have become major health concerns, the above scenario cannot be ignored any longer, and hence needs a due diligence. The consequential social and environmental impacts of high GDP growth rate in China, Indonesia, Malaysia, Bolivia etc. for many years continuously should establish that the concerns are similar everywhere, whereas the poverty has not been eliminated fully.

Among various economic sectors, the energy sector contributes maximum to the total GHG emissions. As per IPCC (2007), the GHG emissions sector-wise are as in the graph below. At the global level about 46% of the GHG contributions can be directly associated with the energy sector. India's scenario is not too far different. Since the energy sector is also greatly influenced by GDP growth rates, the importance of the energy sector should become obvious in the present discussions.



The continued economic policy of high GDP growth rate by successive governments should be reviewed keeping in view the following issues:

a. Air pollution in India is so bad that it kills about half a million people every year.
b. Despite a high GDP growth rate since 1996, about 30% of the population in the country are reported to be below poverty line.

In a business as usual scenario

c. It is projected that about 60% of all the buildings we are likely to see in the country by 2050 are yet to be built;
d. Beyond 2050 at the global level the cities are projected to account for more than 60% of natural resources, energy and pollutants;
e. India's electricity consumption is projected to increase by 4 times by 2050.

On the basis of such a high GDP growth rate for the country between 2015 and 2040, the NITI Aayog also has made some disturbing projections for the energy related parameter for 2040 in its draft National Energy Policy in 2017. Some of the key implications so projected are:

- Share of non-fossil fuel based capacity in electricity will be 57% - 66%
- Per capita energy demand will go up from 503 kgoe/capita in 2012 to 1055-1184 kgoe/capita in 2040.
- Energy related Emissions per capita: 1.2 tons of Carbon Dioxide Equivalent/capita in 2012 to 2.7-3.5 tons of Carbon Dioxide Equivalent/capita in 2040
- Per capita electricity consumption: 887 kWh in 2012 to 2911-2924 kWh in 2040
- CAGR of electricity supply (Ambitious scenario): 5.5% between 2012-2040
- CAGR of primary energy supply (Ambitious scenario): 3.6% between 2012-2040
- Overall Import dependence (including non-commercial energy): 31% in 2012 to 36%-55% in 2040.
- Reduction in emissions intensity of GDP: 45%-53% by 2030 from 2005 levels

Despite the projection of reduced emissions intensity by 2040, the issue that will have huge implications is that the GDP growth itself by 2040 can be very large as compared to 2005, because of which the total GHG emissions at the country level will be enormously high putting all our welfare measures at calamitous risk.

The concerns on environment

The UN designated IPCC has been repeatedly warning the global communities that unless the GHG emissions are not brought down considerably before 2050, so as to restrict the global warming to a maximum of 1.5 degree Centigrade above the levels of pre-industrial era, there can be disastrous implications for the life on this planet. It has cautioned that the damage to the natural wealth can be permanent and hence irreversible. Hence, it has become an imperative to objectively take into account the welfare of our communities from the perspective of what the considerations of Climate Change require us to do.

A forthcoming report of IPCC (slated to be released in Oct. 2018) is reported to have come to the conclusion that the ambitious 1.5 degree Centigrade goal would require a precipitous drop in greenhouse gas emissions triggered by a rapid phase-out of fossil fuels, particularly coal, mass deployment of solar and wind energy and the eradication of emissions from cars, trucks and airplanes. Can India said to be in a leadership position in any of these requirements? Instead, our govt. is doing nothing to curb the number of private vehicles on the roads, while doing all that is possible to increase the number of airports and air travels, which are clearly associated with much higher contribution to GHG emissions.

The environmental scientists have been raising the issue whether high growth of economy is sustainable over longer periods, and whether it should be pursued at the cost of environment. Environmental economists also emphasise that the developed countries never had a high growth rate, but achieved adequate level of human development index (HDI) by inclusive growth, as against what has been occurring in most of the developing countries.

The net effect associated with high GDP growth target will be that the total GHG emissions will increase by huge margins, even if we adopt most energy efficient processes, and even if the reduced emission intensity of the state's GDP is feasible. The desirability of such high GDP growth rate scenario to our society needs to be questioned in the context that the increase in total GHG emissions will be closely associated with the increased pollution of soil, air, and water; and the increased denial of access to natural resources to the vulnerable sections of the society. Reduced area and density of forests, dammed rivers, forced displacements, much reduced food production, which will all be the consequences of a frenetic 8 - 9% GDP growth are bound to impact the vulnerable sections of our society adversely. Since the vulnerable sections of the society are also the most impacted lot due to climate change, the true relevance of such high GDP growth to our communities need to be questioned with a rational approach.

A quick look at the possible impact of sustained high GDP growth on the critical sectors of the Indian economy can reveal a disturbing trend. The transport sector will demand much higher consumption of energy such as diesel, petroleum and LNG. These products which already have more than 80% import content can only increase with disastrous consequences on energy security and on foreign exchange reserve scenario. The pollution loading of vastly increased consumption of petroleum products, which has given rise to concerns in urban areas already, is likely to reach extremely unhealthy levels. Along with increased GHG emissions and much higher levels of suspended particulate matter, the pressure on the transportation infrastructure (with acute demand for more roads and highways, motor ways, fly-overs etc.) can become unmanageable. Increased use of private passenger vehicles, which is already a huge concern in urban areas, will escalate to choke our roads and lungs.

Vastly increased industrial activities, as a consequence of high GDP growth rate, will put unbearable demand on land, fresh water, energy and other raw materials. Such a demand on land (such as in SEZs, coastal industrial corridors, large size coal power plants, nuclear power parks, IT&BT parks etc.) have already given rise to a lot of concerns to social and health scientists, and already has witnessed social upheavals as in Narmada valley, Singur in West Bengal, Niyamgiri Hills in Orissa, Kudankulam in Tamil Nadu, Jaitapur in Maharastra etc.. Under such a scenario the industrial sector, which is already responsible for about 21% of GHG emissions in the country, will contribute hugely to the increase in total GHG emissions. Similarly, high GDP growth rate will lead to steep increase in demand for building activities in the form of factories, transportation infrastructure, offices, hotels, airports etc. which in turn will put huge demand for construction materials and energy. In this scenario can the increase in GHG emissions be contained adequately?

The most telling impact of frenetic economic growth over the next 20/30 years will be on agricultural lands, forests, rivers and other natural resources, which in turn will lead to reduced capacity of nature's carbon sinks. As against National Forest Policy target of 33% of forests & tree cover, the country has less than 20% of the same, whereas the forests in tropical countries are considered to be very important sinks of Carbon di-oxide (CO_2). The demand for additional lands and minerals for the increased activities in all the above mentioned sectors will further reduce the forest & tree cover, which in turn will severely impact the availability of fresh water and on the nature's ability to absorb GHGs. The impact of vastly reduced forest & tree cover on human health and on all aspects of our society is well known, and hence requires no detailed elaboration. Whereas the increased economic activities associated with high GDP growth rate will certainly result in vastly increased GHG emissions, the same will also reduce the ability of forest & tree cover to absorb GHG emissions from the atmosphere. In this scenario it is anybody's guess as to how the net GHG emissions can be reduced to an acceptable level.

There is the critical need to appreciate the fact that there is a limit to the nature's ability to support human activities / desires/ demands. Such a demand on the nature must be carefully managed, which is not possible if we set a target of high GDP growth rate year after year for a huge population base as in India, which is growing every year. The consequences of high GDP growth rate will result in depriving the weaker sections of the society even the

access to natural resources (such as to the forests, rivers and ocean), while driving the fragile environment to a point of no return. Does our society need such an eventuality? Is this what we want from Climate Change perspective?

The context of Climate Change

The context of Climate Change makes it critically important and urgent to redefine our developmental paradigm, and to move away from high GDP growth rate paradigm. The Paris agreement in 2015 among the nations had asked for all possible efforts to limit the global temperature rise to less than 2^0 C, and preferably below 1.5^0 C, with the assumption that the associated efforts at the global level may not allow the global temp. rise beyond 2^0 C much before year 2100. But IPCC (Inter Governmental Panel on Climate Change), in its 48^{th} session at Incheon, South Korea, through the analysis of more than 6,000 literature on various associated issues since then by its Working Groups, has come up with much more worrisome findings on 6^{th} October 2018. Among other things this latest report says that with current trend of GHG emissions, the global temp. is likely to cross the 1.5^0 C barrier between 2030 and 2052; and that of 2^0 C by 2075.

IPCC report also says: There will be worse heat waves, drought and flooding at 2^0C compared to 1.5^0C. Farming and fishing communities will be hit hardest by these impacts, particularly in the Arctic, dry lands, islands and the poorest countries. Limiting global warming to 1.5^0C cuts the number susceptible to poverty and climate-related risks by up to several hundred million by 2050. Economic growth is expected to suffer as a result of the impacts of global warming, all else being equal.

To keep to 1.5^0C, CO_2 emissions would have to decline by about 45% between 2010 and 2030 and hit net zero in 2050. That's significantly faster than what is needed for 2^0C – a reduction of around 20% by 2030 and net zero by 2075. Methane and black carbon, both more potent greenhouse gases, will need to be cut by at least 35% by 2050, compared to 2010.

IPCC report has recommended for drastic reduction in coal consumption by 2030 and with almost nil consumption by 2050. The biggest polluting industries will have to make radical changes. In energy, renewables will need to supply 70% to 85% of power by 2050. Energy-intensive industries will have to slash their CO_2 by 75% to 90% by 2050, compared to 2010, in order to stick to 1.5^0C. Buildings and transport will also need to shift heavily towards (newly green) electricity. Buildings should use power for 55% to 75% of their total energy by mid-century, while the transport sector should boost its low-emission sources to 35% to 65% of its energy supply, from less than 5% in 2020. There will be tough choices around how to use land. A lot of scenarios rely heavily on bioenergy and/or expansion of forests, potentially conflicting with demand for pasture and arable land. Adapting to the effects of climate change, and reducing vulnerabilities to it, can support sustainable development. It can ensure food and water security, lower the risks of disasters, improve health and reduce poverty and inequality. Adaptation measures that also lower emissions, such as low-carbon buildings that are efficiently cooled, can help sectors go green at a lower cost.

An editorial in The Hindu has summarized these findings well. It says: " The IPCC makes it clear that the human and economic costs of a 2°C rise are far greater than for 1.5°C, and the need for action is urgent. Human activity has warmed the world by 1°C over the pre-industrial level and with another half-degree rise, many regions will have warmer extreme temperatures, raising the frequency, intensity and amount of rain or severity of drought. Risks to food security and water, heat exposure, drought and coastal submergence all increase significantly even for a 1.5°C rise. India, Pakistan and China are already suffering moderate effects of warming in areas such as water availability, food production and land degradation, and these will worsen, as the report says. Closer to a 2°C increase, these impacts are expected to spread to sub-Saharan Africa, and West and East Asia. The prognosis for India, of annual heat waves by mid-century in a scenario of temperature increase in the 1.5°C to 2°C range, is particularly worrying.

What does the latest IPCC report means to high GDP growth rate paradigm? The goal to restrict the global temperature rise to less than 1.5°C by 2052 cannot be achieved with all the GHG emissions associated with high GDP growth rate paradigm. India's economic activities have to be managed in such a way that GHG emissions

move towards net zero by 2050, and various impacts on the natural elements should be minimized, with the forests at the centre of attention in curbing GHG emissions.

The inevitable social impacts

As per IPCC' latest report, the extra half a degree of warming (in a scenario of temperature increase from 1.5°C to 2°C) is mostly bad for health. It expands the range of mosquitoes carrying diseases like malaria and dengue, and heat makes a whole range of conditions more deadly.

Earlier, a World Bank report of June 5, 2013 had highlighted how the environment has suffered in India consequent to the past decade of rapid economic growth. The report with the title "Diagnostic Assessment of Select Environmental Challenges, Economic Growth and Environmental Sustainability: What Are the Trade-offs?", has many revelations of critical importance to the future of our communities; provided our leaders take cognizance of it. Salient features of this report are as follows:

- Although the past decade of rapid economic growth has brought many benefits to India, the environment has suffered, exposing the population to serious air and water pollution.
- The report finds that environmental degradation costs India $80 billion per year or 5.7% of its economy.
- Green growth strategies are needed to promote sustainable growth and to break the pattern of environmental degradation and natural resource depletion. Emission reductions can be achieved with minimal cost to GDP.
- In this context it can be added that in the medium to long term such emission reductions can even add to GDP through positive feedback impacts.
- Simultaneously, poverty remains both a cause and consequence of resource degradation: agricultural yields are lower on degraded lands, and forests and grasslands are depleted as livelihood resources decline. To subsist, the poor are compelled to mine and overuse the limited resources available to them, creating a downward spiral of impoverishment and environmental degradation.
- Environmental sustainability could become the next major challenge as India surges along its projected growth trajectory.
- A low-emission, resource-efficient greening of the economy should be possible at a very low cost in terms of GDP growth. While a more aggressive low-emission strategy comes at a slightly higher price tag for the economy it promises to deliver greater benefits.
- For an environmentally sustainable future, India needs to correctly value its natural resources, and ecosystem services to better inform policy and decision-making The report says Green growth is eminently feasible: Green growth is necessary; Green growth is affordable; Green growth is desirable; Green growth is measurable. It can be argued that without green growth, India's future development however measured will be at great risk.
- A low-emission, resource-efficient greening of the economy should be possible at a very low cost in terms of GDP growth. A more aggressive low-emission strategy comes at a slightly higher price tag for the economy while delivering greater benefits.
- Emissions reduction would have a minimal impact on GDP which would be offset by savings through improving health while substantially reducing carbon emissions. A 10% particulate emission reduction will lower GDP only modestly. GDP will be about $46 billion lower in 2030 due to interventions, representing a loss of 0.3 % compared to business as usual. A 30% particulate emission on the other hand reduction will lower GDP by about $97 billion, or 0.7 %. GDP growth rate will be negligibly reduced by about 0.02 to 0.04% in both scenarios. There will be significant health benefits under both scenarios which will more than compensate for the projected GDP loss.
- The savings from reduced health damages will range from $105 billion in the 30% case and by $24 billion with a 10% reduction. Under both the scenarios, another important benefit would be a substantial reduction in CO_2 as a co-benefit which has a potential of being monetized. Taken together the CO_2 reduction and the health benefits will be greater than the loss of GDP in both cases.

As per a recent report (2018) from the researchers from the University of California, San Diego in the US, whereas India's SCC (social cost of carbon) is estimated to be about USD 86 Per ton of CO_2, the carbon tax (called as clean energy cess in India) as of now in India is Rs.400 per ton, which is negligible as compared to the SCC. It is not known whether this SCC has also taken into account the millions of death due to air pollution. India, which

emits more than 2.4 billion metric tons of CO_2, is reported to be bearing an economic loss of $206 billion, which is close to 10 per cent of its GDP. Hence, there is an urgent need to consider the effective GDP of the country, taking all such direct and indirect costs to our communities in a holistic manner.

It should become clear from these discussions that, whereas it is evident that an economic policy focusing on high GDP growth rate year after year has not resulted in the elimination of poverty in India even after the pursuit of the same for decades, it is certainly leading to accelerated depletion of our natural resources and to the unacceptable level of pollution of soil, water and air, while certainly contributing to global warming phenomenon with disastrous consequences on our communities. Keeping in view the need to contain the global warming and the vastly increasing pollution loading, the relevance of a high GDP growth rate paradigm for the country needs to be effectively discussed at the societal level from the perspective of overall welfare of every section of our society.

Kofi A. Annan, President of the Global Humanitarian Forum, and a former UN Secretary General says in a report of 2009: "The Anatomy of A Silent Crisis":

"Where does a fisherman go when warmer sea temperatures deplete coral reefs and fish stocks? How can a small farmer keep animals or sow crops when the water dries up? Or families be provided for when fertile soils and freshwater are contaminated with salt from rising seas? Climate change is an all-encompassing threat, directly affecting the environment, the economy, health and safety. Many communities face multiple stresses with serious social, political and security implications, both domestically and abroad. Millions of people are uprooted or permanently on the move as a result. Many more millions will follow."

The executive summary of this report says: "The human impact of climate change is happening right now it requires urgent attention. Events like weather-related disasters, desertification and rising sea levels, exacerbated by climate change, affect individuals and communities around the world. They bring hunger, disease, poverty, and lost livelihoods — reducing economic growth and posing a threat to social and, even, political stability. Many people are not resilient to extreme weather patterns and climate variability. They are unable to protect their families, livelihoods and food supply from negative impacts of seasonal rainfall leading to floods or water scarcity during extended droughts. Climate change is multiplying these risks. Already today, hundreds of thousands of lives are lost every year due to climate change. This will rise to roughly half a million in 20 years. Over nine in ten deaths are related to gradual environmental degradation due to climate change — principally malnutrition, diarrhoea, malaria, with the remaining deaths being linked to weather-related disasters brought about by climate change.
"Climate change exacerbates existing inequalities faced by vulnerable groups particularly women, children and the elderly. The consequences of climate change and poverty are not distributed uniformly within communities. Women account for two-thirds of the world's poor and comprise about seven in ten agricultural workers. Women and children are disproportionately represented among people displaced by extreme weather events and other climate shocks."

Our nation can ill-afford to ignore such dismal realities for our people arising out of the phenomenon of Climate Change, which is getting increasingly exacerbated by high GDP growth rate paradigm.

As far back as 1974, the Cocoyoc Declaration in Mexico, had unequivocally stated the criticality to limit our needs within the nature's limits. Organized by UNEP and the United Nations Commission on Trade and Development (UNCTAD), this symposium identified the economic and social factors which lead to environmental deterioration. 'The combined destructive impacts of a poor majority struggling to stay alive and an affluent minority consuming most of the world's resources are undermining the very means by which all people can survive and flourish'' .

Other statements in the Cocoyoc Declaration illustrate the clarity in understanding the difficulty of meeting human demands sustainably from an environment under pressure:

- 'The problem today is not one primarily of absolute physical shortage but of economic and social mal-distribution and usage.'

- 'The task of statesmanship is to guide the nations towards a new system more capable of meeting the inner limits of basic human needs for all the world's people and of doing so without violating the outer limits of the planet's resources and environment.'
- 'Human beings have basic needs: food, shelter, clothing, health, education. Any process of growth that does not lead to their fulfillment - or, even worse, disrupts them - is a travesty of the idea of development.'
- 'We are all in need of a redefinition of our goals, or new development strategies, or new lifestyles, including more modest patterns of consumption among the rich.'

An indication of the importance of various ecosystems around the world can be seen in a paper "Payment for Ecosystem Services (PES) in Kodagu, in Kodagu, Western Ghats of India: A Case study, 2012" by College of Forestry, Ponnampet, Kodagu, Karnataka. This paper starts with the threat facing the ecosystems around the world. It says: "The planet is experiencing a period of rapid ecosystem degradation, species loss and climate change. The deterioration of biodiversity is reaching unprecedented levels, with an extinction rate reported in the 2005 Millennium Ecosystem Assessment to be 1,000 times higher than what has been typical over most of the earth's history (UNEP, 2010). Biodiversity loss threatens the well-being of human societies and less diverse and degraded ecosystems are compromising the livelihoods of many vulnerable communities around the world."

Unfortunately for India, despite all the advantages – namely salubrious climate suitable for low carbon living, still rural based economy, not yet addicted to much of commercial energy, potential to transit to knowledge economy from agricultural economy skipping industrial economy, and inheriting the values of simple life style from more than 5,000 years old civilization –the governance in the country is influenced more by the western belief of material wealth than by Mahatma Gandhi's principle of simple living with a global outlook.

A suitable developmental model for India

Which Indian in his senses would want to be anti-development? The question, therefore, is about the very nature of development needed and what we mean by that term. Which of the following can be called a part of true development: (i) to cut down mountain ranges in the Western Ghats for putting up industrial plants or highways or power plants or railway lines or power lines or dams?; (ii) to take tribal lands away without giving the inhabitants either a say in the matter or meaningful rehabilitation plans?; (iii) polluting our rivers by industrial effluents or excess water through agricultural runoff ?; (iv) destroying our ecologically rich and green hills through unscientific mining practices?; (v) reducing the forest and tree cover to less than 20% as against the national forest policy target of 33%? . Some or all of these can be the consequences of a high GDP growth rate.

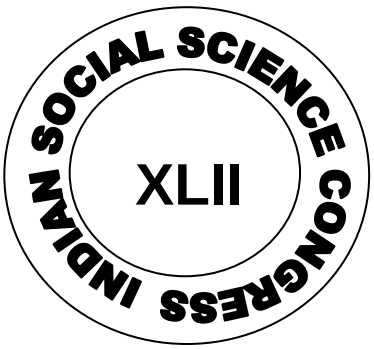
Our developmental pathway has to be reviewed in the context of such ecological issues and the stark fact that thirteen of the world's most polluted twenty cities are in India, with New Delhi ranking as the most polluted city in the world (WHO report, 2014).

Since the true objective of national level and state level policies and plans should be to ensure all-round welfare of all sections of our society and to protect effectively the vulnerable sections of our society from the ravages of the Global Warming, there cannot possibly be any compromise in the much needed paradigm shift in the development concept for our densely populated communities. Chronic issues such as clamour for materialism, unabated growth in energy demand, increasing demand for diversion of forest/agricultural lands, unending urban migration etc. cannot be ignored any longer if we hope to see the possibility of containing the Global Warming within manageable limits, and hence to ensure equitable developmental opportunities for all sections of our society. Keeping in view the constraints of the geographical features of many states, such as vast stretches of arid/semi-arid zones, large patches of drought prone areas, limited fresh water resources, absence of coal/fossil fuel reserves etc. the developmental plan for such states should focus on eliminating the poverty while conserving/enhancing the CO_2 sinks by encouraging those employment sectors which can provide jobs for a large number of people and consume minimum of the natural resources and energy, and without causing too much pollution impacts. In this context higher focus on forest based, agriculture based and allied sectors of our economy should be considered as immediate option for sustainable development.

Shall we not focus on those economic activities which will not lead to further diversion of forest/agricultural lands, which will not demand much of water and energy, which will not lead to pollution of soil, air and water, and which will lead to sustainable harnessing of our natural resources? Such activities may include sustainable agriculture, horticulture and animal husbandry, forestry, health and educational services, IT&BT, eco & health tourism etc.

In this context it is pertinent to know what Tamil Nadu State Action Plan on Climate Change (TNSAPCC) has said. It says: "Global development experience reveals that one percent growth in agriculture (*and associated activities?*) is at least two or three times more effective in reducing poverty than the type of same growth emanating from non-agricultural sector."

Keeping in view the dire need to contain the GHG emissions and the vastly increasing pollution loading, the relevance of a high GDP growth rate paradigm for the country needs to be effectively discussed at the societal level from the perspective of true welfare of every section of our society. Are we rational enough to take a diligent view of all these and other associated issues in our development pathway as a truly welfare society?



PART III

RESEARCH COMMITTEES' CHAIRPERSONS' ADDRESSES

ON

HUMAN FUTURE IN DIGITAL ERA

PART III

RESEARCH COMMITTEES' CHAIRPERSONS'ADDRESS

05. BIOTECHNOLOGY RESEARCH COMMITTEE

0305010 KAR, SANTOSH K (School of Biotechnology, KIIT Deemed to be University, Bhubaneswar-751024). IMPACT OF DIGITAL TECHNOLOGY ON RESEARCH IN BIOTECHNOLOGY

Digital technology involves collection of data and transfer of the same in digital form. But in order to do that we need to generate data in the laboratory or in the field by observation and analysis, store them securely and transfer them to others in the digital form. My primary focus in this short presentation will therefore be how we can generate data and store them in our computer for genuine user.

Taking the example of Malaria if you would be interested in finding out the incidence of malaria in a particular geographical location, data collection has to be done with great care. You can not just visit one village in that area and conduct survey very casually without marking all the house holds in that area and not trying to include as much of the residents in that area in your survey then your data will actually not represent the correct situation. On the other hand if one were to do experiments in the laboratory the situation will be more controlled. You will have to develop a hypothesis and try to see how it can be tested in the laboratory. Work done over the past one hundred years has established that malaria is transmitted by mosquitoes. But if one inquisitive researcher would like to examine other possibility of transmission he or she would have to design experiments to prove it.

This will involve innovative thinking and conducting experiments and storing the information in the computer. It has to be done in an unbiassed manner and with extreme care.Since digital data can be manipulated very easily and others can also access it one has to be very careful not only while generating and storing the data but also while transmitting it. In a highly competitive world where ethics is given a pass digitalisation has some perils.

06. CHEMICAL SCIENCE RESEARCH COMMITTEE

0306011 DUBEY, RAMA SHANKER (Department of Biochemistry, Institute of Science, Banaras Hindu University, Varanasi – 221005). METAL TOXICITY IN PLANTS: METABOLIC ALTERATIONS, OXIDATIVE STRESS AND PROTEOMICS IN THE DIGITAL ERA

With tremendous advancements made in instrumentation, electronics, computers and networks in the digital era, many manual processes of analysis of individual metabolites, activity measurements of enzymes, determination of global population of proteins in the tissues have been replaced with sophisticated digital microprocessor controlled instrumentations. The new technologies are now available which have been incorporated into the digital instrumentation and controlled hardwares and softwares. Specially the tools of proteomics involving 2-D gel electrophoresis and analysis of the data with PD Quest software, automated spot detection and matching, further sequencing of peptides using matrix assisted laser desorption/ionization - time of flight mass spectrometry (MALDI-TOF MS) have revolutionized the field of proteomics by providing rapid and accurate information related to sequencing and molecular weight detection of proteins and peptides. Increasing trends in industrialization and urbanization have led to increased introduction of several metals and metalloids like Pb, Zn, Cd, Cu, Cr, Hg, Al, Ni, As in the soil environment. High concentrations of metals often arise in the soil from mining and industrial activities, due to disposal of sewage sludge or soil acidification, use of pesticides and fertilizers, etc. These events continue to be a serious risk for plant health (Barcelo and Poschenrieder, 1990). Soil contamination with a variety of metals has become a global problem leading to losses in agricultural yield (Salt et al., 1995). These metals are taken up from the soil by growing plants and one of the consequences of the presence of the toxic metals within the plant tissues is the formation of free radical species, which can be initiated directly or indirectly by the metals and consequently leading to oxidative damage to different cell constituents (Gallego et al., 2002).

Elevated concentrations of heavy metals in the soil negatively affect plant growth, cause activation of signal transduction pathway, induction or inhibition of enzymes, and induce synthesis of metal-binding cysteine-rich polypeptides and metal transporter proteins (Maksymiec and Krupa 2007). Metal toxicity impose limitations on productivity of rice in the regions which are prone to such constraints. The manifestations of these stresses include non-expression of full genetic potential, differential transcription of many genes, induction of stress responsive genes leading to cellular metabolic changes, alteration in activity behaviours of many enzymes, overproduction of several compatible metabolites like amino acids, sugars, polyamines, phytochelatins, organic acids, increased synthesis of many enzymes and stress specific proteins. Salinity and drought are prime stressful conditions for rice crop in arid and semi arid regions of the world. Changes in temperature rethym impose heat or chilling injury. Soil flooding or submergence causes oxygen deprivation to anaerobic stress. Metal ions such as Pb, Cd, Hg, As, Ni are key pollutants of the soil, whereas Al toxicity is a problem in acid upland soils.

Metal toxicity for living organisms involves oxidative and/or genotoxic mechanisms (Briat and Lebrun, 1999). Most of the abiotic stresses cause overproduction of reactive oxygen species (ROS) within the cell which cause The potent ROS include superoxide radicals, hydroxyl radicals, hydrogen peroxide, etc. Due to disruption of various metabolic pathways (metabolic ROS) such as respiration, photosynthesis and as part of the abiotic stress-response signal transduction network in plants,these ROS are continuously produvced. ROS are regarded as indicators of cellular stress as they act as secondary messengers in the stress responsive signal transduction pathway (Choudhury et al., 2013). In plants, ROS are constantly formed by the unavoidable outflow of electrons on to O_2 during the electron transport chain. Overproduced ROS cause oxidative damage oxidative damage to membranes and biomolecules such as lipid peroxidation, protein oxidation, nucleic acid fragmentation, etc. Lipid peroxidation is regarded as the primary molecular mechanism associated with cellular oxidative damage (Repetto et al., 2012). Both free radicals and enzymes can cause initiation of lipid peroxidation in cellular and organellar membranes.

To overcome oxidative damage efficient antioxidative system exists in the cells consisting of the non-enzymic as well as enzymic antioxidants (Noctor and Foyer, 1998). Within the cell, ascorbate (AsA), glutathione (GSH), tocopherols, carotenoids and phenolics are regarded as potent non-enzymic antioxidants, whereas guaiacol peroxidase (GPX), catalase (CAT), superoxide dismutase (SOD), enzymes participating in ascorbate-glutahione (AsA-GSH) cycle e.g ascorbate peroxidase (APX), glutathione reductase (GR), monodehydroascorbate reductase

(MDHAR), dehydroascorbate reductase (DHAR) are important enzymic antioxidants (Noctor and Foyer, 1998). However, the balance between production and removal of ROS is disrupted under stressful conditions. Transgenic plants overexpressing enzymatic or non-enzymatic components of antioxidant defense system singly or in combination offer attractive possibilities to produce abiotic stress tolerant plants using biotechnological approaches (Chakradhar et al., 2017). Higher levels of non-enzymic antioxiodants AsA, GSH, tocopherol and higher activities of antioxidative enzymes SOD, CAT, peroxidases, MDHAR, DHAR, GR have been often associated with tolerance to many abiotic stresses in various plants. Encouraging results have been obtained in producing abiotic stress tolerance crop by increasing synthesis of non-enzymic antioxidants or by overexpressing enzymes of antioxidant defense system.

Increased accumulation of compatible solutes, overproduction of antioxidative enzymes, overexpression of transcription factors have shown to confer tolerance to plants to a wide range of stresses like salinity, drought and low temperature. Stress induced gene products those involved in stress tolerance and those involved in signal transduction or as transcription regulators have served as basis to engineer stress tolerant plants. To contribute to food security and sustainability in food crops production, it is essential to produce stress tolerant plants suitable for cultivation in stress prone areas. This needs a detail understanding of physiological and molecular mechanisms associated with stress tolerance more specially gene products involved in stress tolerance and signal transduction. Transcriptome profiling of plants has helped in great way in understanding how plants respond to abiotic stresses. High-throughput OMICS techniques (proteomics, genomics and transcriptomics) are extensively being exploited in recent times to dissect plants molecular strategies of metals stress tolerance. Application of omics techniques facilitates a direct observation of the agents affecting plant development. Proteomics studies involve identification and quantification of proteins in cells, tissues and biological fluids, characterization of post-translational modifications (PTMs), and studies related to protein–protein interactions under stress and non-stress conditions (Hashiguchi et al., 2010; Nam et al., 2012; Mertins et al., 2013; Ghosh and Xu, 2014). Proteomics studies are focused on experimental analysis of entire sets of proteins present in tissues, cells or organism. The entire set of proteins that are produced or modified in a tissue represents its proteome. Proteomics is more complex than genomics because genome is more or less constant in an organism, whereas proteome differs from cell to cell and with time. Genomics technologies have been helpful in addressing plant abiotic stress responses including metal toxicity (Bohnert et al., 2006). However, changes in gene expression at transcript level have not always been reflected at protein level. Therefore, in depth study of proteomics is important to identify and specify target proteins that actively take part in metal response, metal tolerance and in metal detoxification mechanism. The data obtained by proteomics provide insights which would be helpful in enhancing crop stress tolerance and could be employed in future crop breeding and engineering programs aiming at developing plants with new and desired agronomical traits (Atkinson and Urwin, 2012). With the rapid progress in the areas of functional genomics, proteomics and metabolomics a more improved understanding of novel stress responsive genes and their products under various stresses is anticipated which will provide the basis of new strategies to produce genetically engineered crop plants tolerant to a single or multiple of abiotic stresses.

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12. ECONOMIC RESEARCH COMMITTEE

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POLITICAL ECONOMY PERSPECTIVE OF DIRECTED CREDIT IN INDIA

The study attempts to analyze the trends in the growth of priority sector lending by the commercial banks and looks into whether the banks' credit allocation under priority sector has been equitable across regions, sectors. Since the primary intention behind the creation of the priority sector was to provide credit support to productive but neglected sections, in the context of frequent enlarging and reshuffling the scope and coverage of priority sector by the RBI and Government of India, the study assesses how far the present priority sector credit allocation by the commercial banks has been focused towards marginal and small farmers in their efforts to realize higher farm return. The findings reveal that in spite of substantial rise in quantum of credit in total and sector-wise, the priority sector credit suffers from allocational inequity across regions, sectors. The small and marginal farmers do not get their due share of credit from the commercial banks. By broadening the scope and coverage of priority sector, there appears to be little consistency in what is not considered a priority sector. Directed credit exists in the country as a politically popular policy instrument even though it has not succeeded much in achieving greater economic equality.

Directed credit synonymously called as Priority Sector credit was adopted by the Reserve Bank of India as a policy initiative way back in 1972. As an offshoot of the concept of 'Priority Sector' introduced by the then Deputy Prime Minister and Finance Minister, Morarji Desai in Lok Sabha on December 14,1967 to provide bank credit to certain critical sectors of the Indian Economy, the primary objective of priority sector credit policy of the RBI was to provide loan facility to the productive but neglected sectors of the economy - the agriculture, small-scale industries and other weaker sections. As per available data, over the years, the quantum of bank credit available towards priority sector both total and sector-wise has increased phenomenally. But along with this, significant changes have taken place in the RBI's policy towards priority sector lending and this has raised debate among academicians, social thinkers and policy analysts. In the post- Narasimham Committee Report(1998) on financial sector reforms, the RBI in 1998-99, has made a series of changes in the scope and coverage of priority sector lending and a number of sub-sectors hitherto outside the scope of the priority sector have been included in its fold. More so, on the basis of recommendation of the M.V Nair Committee (2012) appointed to examine the classification of priority sector and make suggestions, the RBI has issued fresh guidelines on priority sector lending on February 20, 2012. In the 2012 guidelines, the RBI while accepting some of the recommendations of Nair Committee, has infused a few innovative features like inclusion of certain services, routing bank loans through PACSs, FSSs and LAMPSs and treating them as directed credit under the priority sector status in view of non-availability of banking facilities in remote areas (cited by Chakrabarty, 2012). However, in the context of frequent enlarging and reshuffling the scope and coverage of priority sector, it is alleged that there has been much dilution in priority sector lending norm resulting in 'Other Priority Sector'(includes Housing, SHGs, Dealers and Suppliers of farm inputs, Self-employed Exports etc) advances have dominated at the cost of agriculture and small scale industries – the real weak and disadvantaged sectors and sections (EPW, Research Foundation 2007-08, Rao 2014). Added to this, there is opinion among researchers that priority sector lending suffers from inequality in the credit distribution across states, sectors and sections. In view of the fact that the present government policy lays emphasis on financial inclusion and the most recent Prime Minister Jan Dhan Yojana (PMJDY) which aims at providing banking network to hitherto unbanked areas and people, it is very much pertinent to examine how far the priority sector lending is fulfilling its primary objective of allocational efficiency- i.e. how far financial resources of the banks are being allotted to the most deserving and productive segments in the economy. On this backdrop, the present study is conducted to analyze the trends in the growth of priority sector lending by the commercial banks and examine whether the banks' credit allocation under priority sector has been equitable across regions and sectors. Since the primary intention behind the creation of the priority sector was to provide credit support to productive but vulnerable sections, here in the study we have tried to assess how far the present priority sector credit allocation by the commercial banks has been focused towards marginal and small farmers in their efforts to realize higher farm return.

Data and Methodology

Based on secondary data compiled from diverse sources such as Government of India, RBI publications etc., the study deals with the post-reform scenario- from 1991-92 to 2014-15. Along with tabular analysis, the statistical tools like compound annual growth rate (CAGR) have been worked out to estimate the growth trends in credit to priority sector as a whole and to its sub-sectors. The formula used is $Y= a+b^t$. The equity/inequity in commercial banks' priority sector credit distribution across regions has been examined comparing the share of different regions' in the priority sector credit allocation with their respective percentage share in the country's total population. The extent of inter-sectoral equity/inequity in priority sector credit deployment is analyzed by computing per capita credit outstanding of all the scheduled commercial banks across major sub-sectors. The allocational efficiency of priority sector lending by the commercial banks towards marginal and small farmers has been worked out by making a comparative analysis of small farmers' contribution to food grains output with their share in bank credit.

Results and Discussion

Trends in Commercial Banks' Total, Priority Sector and Agriculture Sub-Sector Credit:

Table-1 presents data on amount of credit outstanding of all the scheduled commercial banks, towards total, priority sector and sub-sector- agriculture and allied activities in India during the period from 1991-92 to 2014-15. Observation reveals that credit outstanding of the commercial banks on all these three heads has increased substantially over the study period. For the total credit, while the increase has been from Rs. 1256/- billion in 1991-92 to Rs. 65364/-billion in 2014-15, for priority sector it has gone up from Rs. 459.3 billion to Rs.20103.2 billion and for agriculture and allied activities from Rs.182/- billion to Rs.7659/- billion during the same period.

A close examination of annual variations in the priority sector credit reveals no particular trend of its share in the total credit during the period under study. However, in recent years, the share of priority sector credit in the total credit has decreased as compared to early 1990s and early 2000s. The agricultural credit, an important component of priority sector credit, has also seen behaving erratically over the period. While its share in the total credit varies from 10.2 to 14.5 percent, in relation to priority sector credit it has fluctuated between 33 to 39.6 per cent over the period.

Growth Performance of Total, Priority Sector and Agricultural Credit

Having discussed the increase in volume of total, priority sector and agricultural credit outstanding, their compound annual growth rates (CAGR) over the study period is worked out and is presented in Table-2. In order to have better understanding of the growth rates of these forms of credit in the post-reform period, we have worked out the compound annual growth rate by classifying the data into three periods viz., (i) first decade of reforms, from 1991-92 to 2000-01(ii) the subsequent period from 2001-02 to 2014-15, and (iii) the whole period from 1991-92 to 2014-15. The findings show that the annual growth rates in credit to priority sector and agriculture including allied activities have followed a similar trend as observed in the case of growth in total credit advanced during the two sub-periods taken into analysis- slower in the first period and faster in the second period. However, over the period as a whole, the credit growth rate of commercial banks towards priority sector and to agriculture remains higher over their growth in total credit implying that the RBI' policy of enlarging the scope of activities under priority sector and the government's farm credit policy, 2004 for doubling of credit towards agriculture have influenced the commercial banks' credit allocation into the priority sector and to agriculture.

Priority Sector Credit Distribution Across Regions :

One of the objectives of the study is to analyze the pattern of allocation of priority sector credit deployment across regions with a view to ascertain whether credit distribution is equitable/inequitable across regions. Accordingly, we have classified the entire country into 6 regions viz., Northern, North-Eastern, Eastern, Central, Western and Southern and compared proportion of the total priority sector credit advanced in each individual region with its percentage share in the total population of the country. For the population data the latest population census,

2011 is taken into analysis. Table -3 presents the figures showing the relative share of different regions in the total population of the country with their respective share in priority sector credit distribution.

A close examination of the population distribution across 6 regions in the country reveals that the Central Region sharing 24.61 percent of the total population of the country stands at the top of all the regions followed by Eastern and Southern Regions having 22.42 and 20.85 percent of the country's population respectively. These three regions constituting the major populous areas together account for nearly 68 percent of the total population of the country. Of the other three regions - the Western, and Northern having more or less equal population, share 14.45 and 13.12 percent of the total population followed by the North-East region - the least populated region accounting 3.73 percent of India's population. Thus, population distribution in the country reveals wide regional disparity.
With regard to distribution of priority sector credit across regions, we find that the Southern region sharing 33-36 percent of the total credit remains at the top of all the regions followed by the Western and Northern regions accounting 23-26 percent and 19-20 percent of the total priority sector credit. These three regions together with 48 percent of the total population account for about 78 percent of total priority sector credit outstanding of the commercial banks. The other three regions, viz., the Central, Eastern and North-Eastern do have a much lower allocation in the priority sector credit distribution. These three regions together having nearly 51 percent of the country's total population account for hardly 22 percent of total priority sector credit. Thus, from the point of view of relative share of the regions in the population of the country we find the priority sector credit distribution is very much skewed.

Inter-Sectoral Disparity in Priority Sector Credit Allocation:

The equity/ inequity aspect of priority sector credit distribution across sub-sectors is also often debated among the scholars. It is alleged that with the inclusion of education, housing, institutional entities etc., under priority sector the original intention of priority sector credit policy to finance agriculture and SSIs is vitiated. In the light of the above argument, we have here examined the pattern of priority sector credit outstanding among 4 major sub-sectors such as agriculture and allied activities, SSIs, education and housing. Besides, credit to agriculture and allied activities is discussed under two sub-categories viz., direct and indirect lending. In order to have better clarity in understanding the changes occurred in the relative share of sub-sectors in the priority sector credit we have here worked out per capita credit by dividing outstanding credit of each sub-sector by number of accounts. Accordingly, per capita outstanding credit under 4 major heads including the decomposition of agricultural credit advanced under direct and indirect categories is presented in Table - 4.

Analysis of data shows that over time significant changes have occurred in the relative share of different sub-sectors in the total priority sector credit. Credit to housing and education has gained importance in recent years. No doubt quantum of credit advanced to agriculture under priority sector has increased substantially, yet this increase has been largely due to indirect lending. As it is observed, the per capita indirect credit outstanding into agriculture including allied activities has gone up phenomenally from Rs 68000/-in 1995-96 to Rs. 2675100/- in 2014-15, nearly by 38 times. However, during the same period the direct credit into agriculture has increased by 9 fold (from Rs.12300/- to Rs.112800/-). In view of this change in composition of credit financing within agriculture we find substantial difference in per capita credit outstanding under direct and indirect advances in agriculture. Besides, as worked out, the ratio of direct to indirect agricultural credit has increased over the years affecting the credit secured by individual farmers.

Recent Changes in Agriculture and Contribution of Small Farmers to Agricultural Output

In the context of priority sector credit it is often alleged that the marginal and small farmers who have the potential to generate higher crop yield and return are the real excluded groups from accessing formal credit and thus need to be financially supported.

It is well acknowledged that over the years Indian agriculture has undergone rapid changes in terms of cropping pattern, use of inputs and machineries, agro-economic practices etc. Studies of Joshi et al, 2006 and Banerjee and Banerjee, 2015 reveal that cropping pattern has been increasingly diversified towards high value crops.

Between 1991 and 2010-11, the share of high-value commodities in the total value of agricultural output has increased from 33.91 per cent to 42.12 per cent (Joshi, 2015). Besides, available studies of Narayanamoorthy,(2007), Raghavan, (2008), Narayanamoorthy,(2013) have amply shown that agriculture has become an increasingly vulnerable economic activity in the post-reform period because of sharp rise in input prices, slashing of input subsidies dwindling of produce prices and profitability.

Along with the above changes noticed over time, Indian agriculture largely continues to be a small farmers' agriculture. The marginal and small farmers taken together constitute 84.9 per cent of the country's total farmers and cultivate about 44.3 per cent of operational area (Agricultural Census, 2010-11). Even though the average size of holding of these farm households has declined to too small to be considered to provide adequate livelihood, yet findings from recent studies have shown evidence of higher crop productivity of these farm households over that of medium and large farms (Lipton, 1993; Chand 2011). The results of NSS 2003 Farmers' Survey has empirically established that small farms continue to produce more in value terms per hectare than the medium and large farms. In the light of above discussion, we have here worked out the small farmers' contribution to the value of agricultural production. The relevant data are presented in Table -5.

Observation shows (Table -5) that the share of small farmers in the value of production of all the selected food commodities is higher as compared to medium and large farms. In cereals, and particularly for paddy, while the share of small-holder farmers is found more than double over that of medium and large farmers, for wheat and total cereals the small farmers' share remains higher over the large farm category. In case of other food products like pulses and oilseeds, the small holders' share is also found higher over medium and large farmers. For high-value food commodities such as fruits and vegetables, the share of small holders remains more than double over the larger farms. The share of semi-medium farms in the value of production of food products is also found higher compared to the medium and large farms.

Small Farmers' Share in Commercial Banks' Credit

In view of the increasing share of the small holders in the value of agricultural production, it is very much pertinent to discuss the credit allocation of commercial banks towards these vulnerable sections of the farm community as these farm households have less opportunities to borrow from elsewhere. Accordingly, in the present study, we have worked out credit distribution of commercial banks across farm sizes.

Table-6 presents data on relative share of different size classes of farmers in the direct outstanding credit of the commercial banks. Data for five selected years (1990-91, 2000-01, 2008-09, 2010-11 and 2011-12) are presented to understand the trend over the period under study. It contains both number of accounts and amount of credit outstanding across farm-sizes.

A close scrutiny of data reveals that the share of marginal and small farmers both in terms of number of accounts and amounts have increased over time. While their (marginal and small farmers) share in accounts has gone up marginally from 75 to 76 per cent, their share in credit has increased from 46 to 64 per cent. However, the large farmers having 24 percent share in accounts receive 36 percent of the total credit outstanding. Thus, credit distribution of the commercial banks remains skewed in favour of large farmers.

Summary and Conclusion

The findings reveal significant increase in the quantum of credit outstanding towards priority sector as a whole and within priority sector to agriculture including allied activities and both have grown keeping in pace with aggregate credit outstanding of the scheduled commercial banks over the period under study. However, as a proportion to aggregate credit both priority sector credit and agricultural credit have remained low and fluctuating over time. The share of agriculture in the priority sector credit has also been found declining in recent years. Besides, we notice wide disparity in commercial banks' priority sector credit allocation across regions and sectors. The distribution pattern across regions is not found aligned with the size of population. Across sectors, credit to housing has received the fastest growth. Within agriculture the increase in indirect credit is found much higher than

direct credit resulting in widening the gap between the two. Among the farm-sizes, credit sharing remains skewed. The small farmers in spite of their higher contribution to the value of food grains output receive less credit from the commercial banks.

On the above findings, it may be concluded that the present status of priority sector credit evolved over the years is not in line with the original intention (growth with equity and inclusiveness) for which the policy was formulated by the RBI in 1972. The inclusion of software firms, food-processing, venture capital, high-cost housing etc., has no doubt broaden the scope and coverage of the priority sector to receive financial benefit from the banks yet as it appears with broadening the sector there appears to be little consistency in what is not considered a priority sector. Directed credit exists in the country as a politically popular policy instrument even though it has not succeeded much in achieving greater economic equality.

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Table - 1

Growth in Priority Sector Lending by Commercial Banks During 1991-92 to 2014-15

(Rs. billion)

Year	Total Credit	Priority Sector Credit	Credit to Agril	% of Priority Sector Credit to Total Credit	% of Agril Credit to Priority Sector Credit	% of Agril. Credit to Total Credit
1991-92	1256	459.3	182	36.6	39.6	14.5
1995-96	2549	733.3	270	28.8	36.8	10.6
2000-01	5114	1544.1	519	30.2	33.0	10.2
2001-02	4672	1752.6	608	37.5	34.7	13.0
2005-06	15071	5107.4	1740	33.9	34.1	11.5
2009-10	32448	10922.8	4161	33.7	38.1	12.8
2010-11	39421	12393.9	4603	31.4	37.1	11.7
2013-14	59941	18297.2	6660	30.5	36.4	11.1
2014-15	65364	20103.2	7659	30.8	38.1	11.7

Source: Reserve Bank of India, *Statistical Tables Relating to Banks in India*, Mumbai, Various Issues.

Table - 2

Compound Annual Growth Rate in Total, Priority Sector and Agricultural Credit of Scheduled Commercial Banks between 1991-92 to 2000-01, 2001-02 to 2014-15 and 1991-92 to 2014-15

Period	Total Credit	Priority Sector Credit	Agricultural Credit
1991-92-2000-01	16.69	14.81	12.46
2001-02-2014-15	23.31	21.06	22.18
1991-92-2014-15	18.85	19.40	19.67

Table-3

Relative Share of Different Regions in Population and Priority Sector Credit Outstanding

(%)

Regions	Share in Population (Census 2011)	Share in Credit Outstanding 2010-11 Amt	2013-14 Amt	2014-15 Amt
Northern	13.12	20.44	19.00	18.73
North-Eastern	3.73	0.91	1.14	1.07
Eastern	22.41	10.27	8.88	8.63
Central	24.61	12.36	11.99	11.81
Western	14.45	22.60	23.44	26.23
Southern	20.85	33.33	35.54	33.53
All_India	100	100	100	100

Table -4

Sector-wise Per ca pita Priority Sector Credit Outstanding of the Commercial Banks

(Rs. 00)

Year	Agricultural & Allied	Direct Agricultural	Indirect Agricultural	Small Scale Industry (SSI)	Education	Housing	Total
1995-96	139	123	680	1151	264	823	237
1996-97	168	146	1213	1177	250	1105	278
2001-02	396	294	3662	3756	983	3609	758
2010-11	1181	824	22504	4564	1872	5192	2021
2011-12	1322	959	18622	5144	1879	5297	2357
2012-13	1330	1027	14949	5352	1956	5519	2327
2013-14	1273	1073	11830	5777	2036	6093	2412
2014-15	1576	1128	26751	6425	2132	6344	2759

Source: Reserve Bank of India, *Statistical Tables Relating to Banks in India*, Mumbai, Various Issues.

Table - 5

Share of Small Farms in Value of Production of Different Agricultural Commodities in 2010-11 (at 2004-05 prices)

(In percentage)

Farm-Sizes	Paddy	Wheat	All Cereals	Total Pulses	Oilseeds	Total Fibres	Fruits & Vegetables
Marginal	35.31	25.24	27.57	16.03	15.14	15.60	31.03
Small	22.65	19.75	22.10	22.67	22.48	26.02	24.08
Marginal + Small	57.96	44.99	49.67	38.70	37.62	41.62	55.11
Semi-Medium	21.14	23.15	22.70	25.19	26.96	27.06	21.85
Medium	15.20	22.72	19.17	24.95	25.62	23.06	16.07
Large	5.69	9.14	8.48	11.66	9.78	8.23	6.95
All	100	100	100	100	100	100	100

Source: Government of India (2013), *State-wise Estimate of Value of Output from Agriculture and Allied Activities*, Central Statistical Organisation, Ministry of Statistics and Programme Implementation, New Delhi.

Table - 6

Allocation of Direct Credit (Short and Long) Outstanding by Commercial Banks Across Farm-Sizes

(In percentage)

Year	Accounts				Amounts			
	Marginal	Small	Large	Total	Marginal	Small	Large	Total
1991-92	43	32	25	100	23	23	54	100
2000-01	39	31	30	100	23	23	54	100
2008-09	36	30	34	100	28	27	45	100
2010-11	37	38	25	100	29	31	40	100
2011-12	40	36	24	100	32	32	36	100

Data Source: RBI, *Handbook of Statistics of Indian Economy*, 2014-15.

13. EDUCATION RESEARCH COMMITTEE

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AN IMPACT OF DIGITAL TECHNOLOGY ON EDUCATION LEARNING AND RESEARCH: EMERGING NEEDS AND CHALLENGES

Now-a-days, Digital Technology (DT) has been identified with a host of problems and solutions that are closely linked with aims for sustainable development for average economic condition of people by earned countries particularly India. It is an essential enabling feature of globalization, and local applications of technology offer possibilities for building e-education infrastructure and creating opportunities for the youngsters in order to providing higher education and job . The impact of new technologies on society and development affects various interests and domains, and the effective and appropriate use of technology requires consideration of educational, social, cultural, economic, political, and environmental contexts and its effects. The opportunities and challenges applying the technologies to old problems require the guidance from a new breed of professionals and policymakers who can integrate technological expertise and a clear understanding of its wider ramifications as a guide to strategies for applying technology to the tasks of achieving sustainable development in e-education in India.

Today there is an emerging broad consensus around the world about the benefits that can be brought to education system through the appropriate use of evolving information and communication technologies. The range of possible benefits pervaded practically all areas of activity in which knowledge and communication play a vital role. It is involved from improved teaching and learning processes to better student outcome, increased student engagement and seamless communication with teachers and parents. Today there is a significant gap between knowledge and skills students learn in school and the knowledge and skills that workers need in workplaces and communities. Employers report that they need students who are professional, having good moral and work ethics, can collaboratively work in team, have critical thinking and problem solving ability, can lead a group of people and are skilled in verbal and written communication. This paper is to study "An impact of Digital technology on Education learning and Research: Emerging needs and Challenges"

Keywords: Education Technology (ET), e-Learning Mode of Education (e-LMoE), Sustainability Development of Education (SDoE), Environmental Context (EC), Teaching and Learning Process (TLP)

Introduction:

Digital Technology means the use of all kind of modern software's, cloud computing services, advance media and materials for maximizing the learning technology and learning experiences. Education technology is suggested by expert as one of the potential means of impairing education effectively and efficiently. Previously, teachers used to teach in rigid, formal and stereo-typed ways. Education was then conceived as the process of transmitting knowledge and ideas. Student used to get by heart whatever was given by the teacher or textbook. They often could not understand what was taught and were expected to reproduce at the time of examination. Pupils were silent audience and could not make any logical queries or independent thinking of their own. Today, the student is not considered as an empty vessel to be filled in by facts and figures.

They are now expected to use so many media and materials and to get learning experience from all sides. Education is regarded as a process of interaction and interpersonal communication. The modern teacher has to help, to guide and facilitate the learner's development. The teacher has to inspire and motivate the young leaners and assist the adult learners in their quest for knowledge and skills. Don Knezek, the CEO of the International Society for Technology in Education, compares education without technology to the medical profession without tools. "If in 1970 you had knee surgery, you got a huge scar," he says. "Now, if you have knee surgery you have two little dots."

Literature Review:

In the section of literature review, the researcher has trying finding out the genuine ness with its justification of the aforesaid research title "**An Impact of Digital Technology on Education Learning and Research: Emerging needs and Challenges"**

In connection with researcher has taken two hypothesis such as Null Hypothesis (H_o) and Alternative Hypothesis (H_e) in anticipation of variable I and Variable II, in variable one refers as the Role of e- Technology has not increased the sustainability of Education in India Null hypothesis (H_o) where as the second variable refers as the execution of e-technology has a tremendous impact for not only increases the ratio of education in different classes such as children ,youngsters in respect of boys and girls, but also it facilitate the education system of application of technology in a advanced way which enhances the Sustainability (H_e). After the testing of hypothesis, (See the final result table) the result proves that role of e-technology has a positive impact to enhance the education system and makes its sustainability.

Henceforth, we reject the null hypothesis (H_O) and accepted the alternative hypothesis (H_e) due to its importance .Similarly, the difference in sex ratio is nil in National ,ICSE is 0.66 and CBSE is 0.12, thus , National Education has able to sustain sex ratio of girls as equal with boys student by using e-technology.

Aim and Objectives:

In this section, "Our aim was to encourage far higher levels of active student engagement, where knowledge is obtained by sharing, problem-solving and creating, rather than by passive listening. This classroom enables both active engagement and equal access" by lead researcher, Liz Burdon Britain's Durham University (2012). [3]

- For recognizing the need for a broad-based appreciation of the need to understand technology in the context of development, in this regard, the Indian Institute of Science Bangalore, India, (IISc) and the Swiss Federal Institute of Technology, Lausanne, Switzerland, (EPFL) have developed this Certificate of Advanced Studies in Sustainable Development and the Role of Technology (CSDRT)

- To serve a diverse group of professionals directly concerned with the role of technology for sustainable development.

- It will examine the role of technology and how it may contribute most effectively to sustainable development.

- It will consider approaches to soundly integrate technology into a specific environment, rather than the technical details, with particular attention to social, economic, and environmental impact of new technologies and the contexts that affect innovation and creativity.

It. recognizing the role of various social, cultural, environmental, and political contexts of development and the value of an interdisciplinary approach, the course will enable participants to work more effectively with others to promote the development and application of new technologies for sustainable development

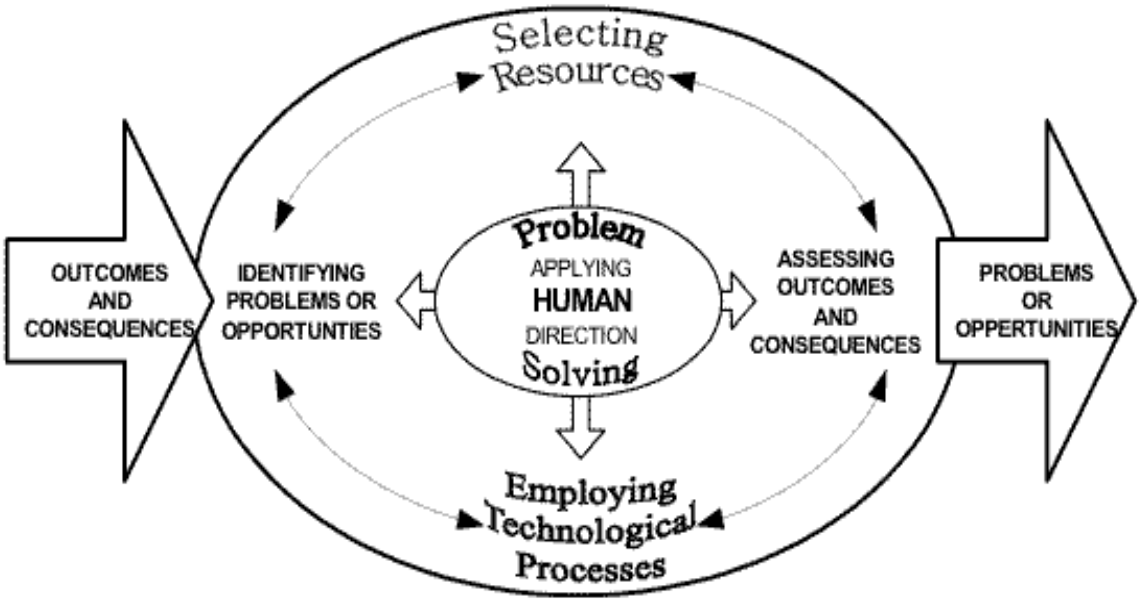
What is Education Technology?

Technology in education is defined as an array of tools that helpful in advancing student learning and measured in how and why individuals behave. Educational technology is the study and ethical practice of facilitating e-learning, which is the learning and improving performance by creating, using and managing appropriate technological processes and resources. Educational Technology relies on a broad definition of the word "technology" which significant the tools and the sources to enhanced, to develop the skill of the Education.

Uses of Technology in Education:

Education is essential for learn to all in order to differentiate ourselves from the dark to light i.e **"ignorance to light"** enchanting the related Sanskrit Sloke of Indian Vedic (Aryan) Culture **"Saa Vidya Jaa Bimuktate Tamosa Maa Jyotri Gamayae"** because it helps to all becomes a well cultured and Civilized Person Educational technology could be traced back to the emergence of very early tools, e.g., paintings on cave walls. But usually its history starts with the introduction of educational films (1900s) or Sidney Presser's mechanical teaching machines in the 1920s. V79.2 7

Here, a model of technology in education has been present for the purpose of solving human problems in the fields of education from this model i.e



[Models of Education Technology Figure: 1]

The first large scale usage of new technologies can be traced to US WWII training of soldiers through training films and other mediated materials. Today, presentation-based technology, based on the idea that people can learn through aural and visual reception, exists in many forms, e.g., streaming audio and video, or PowerPoint presentations In the 1990s, there are a variety of schools that have Computer-based learning (CBL) system. They are frequently based on constructivist and cognitive learning theories, these environments focused on teaching both abstract and domain-specific problem solving learning. The 2000s emergence of multiple media and ubiquitous technologies which gave a new impulse to situated learning theories favouring learning-in-context scenarios. Students are now growing up in a digital age where they have constant exposure to a variety of media.

Why technology is used in Education Industry?

Economists identify three factors that lead to growth which is based on increased human capacity.

Capital deepening - the ability of the workforce to use equipment that is more productive than earlier versions

Higher quality labour

- Gaining a more knowledgeable work force that is able to add value to economic output

Technological innovation

- The ability of the workforce to create, distribute, share and use of the new Knowledge.

These three productivity factors serve as the basis for three complementary, somewhat overlapping, approaches that connect education policy with economic development.

The Technology literacy Approach

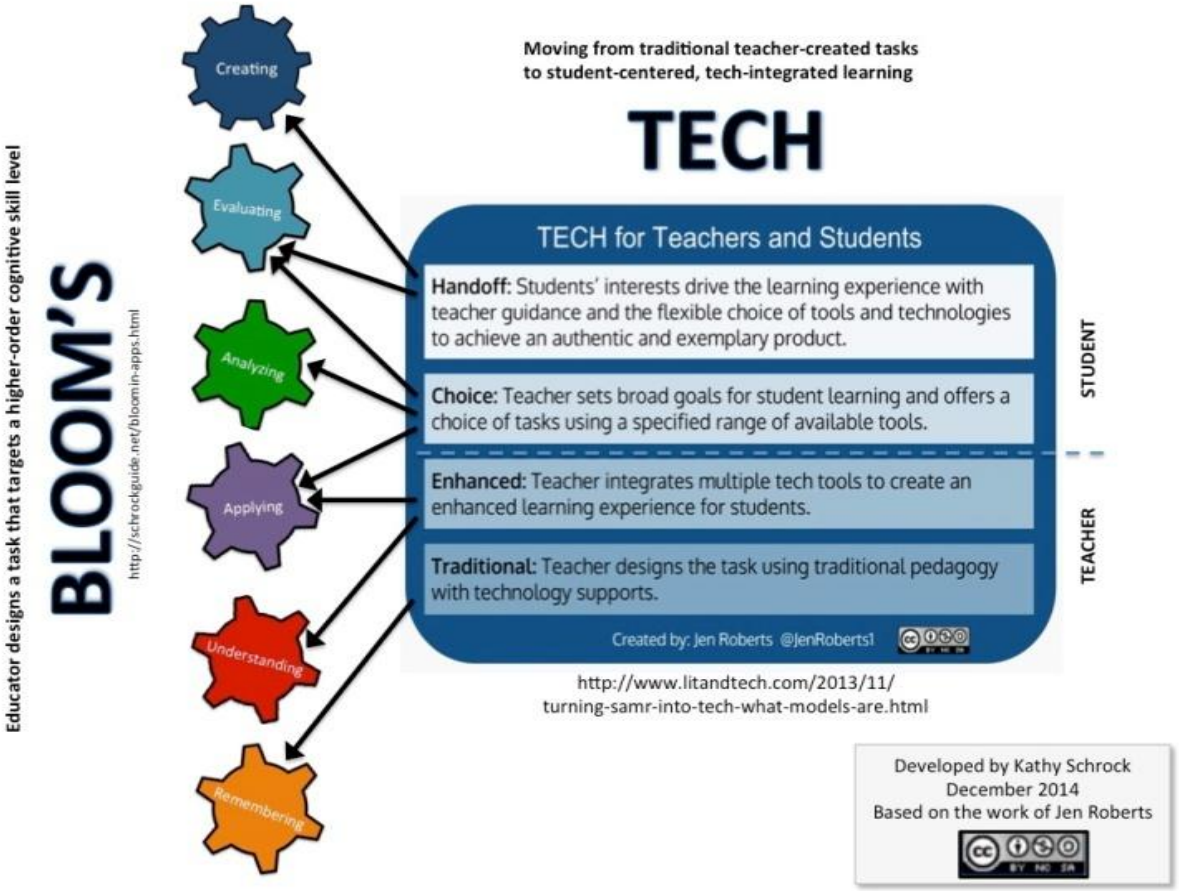
- Increasing the extent to which new technology is used by student's citizens and the work force by incorporating technology skills into the school curriculum.

The Knowledge deepening Approach

- Increasing the ability of students, citizens, and the workforce house knowledge to add value to society and the economy by applying it to solve complex, real-world problems.

The Knowledge Creation Approach

- Increasing the ability of students, citizens, and the workforce to innovate, produce new knowledge, and benefit from this new knowledge through this model of tools and technologies.



[Tools & Digital Technologies in Teaching Fig-2]

Technology as tools of Teaching

There are various types of technologies currently used in classrooms. Among these are:

Computer in the classroom

Having a computer in the classroom is an asset to any teacher. With a computer in the classroom, teachers are able to demonstrate a new lesson, present new material, illustrate how to use new programs, and show new information on websites.

Class blogs and Wikipedia

There are a variety of Web 2.0 tools that are currently being implemented in the classroom. Blogs allow for students to maintain a running dialogue, such as a journal, thoughts, ideas, and assignments that also provide for student comment and reflection. Wikipedia, an online encyclopedia, are more group focused to allow multiple members of the group to edit a single document and create a truly collaborative and carefully edited finished product.

Wireless classroom microphones

Noisy classrooms are a daily occurrence, and with the help of microphones, students are able to hear their teachers more clearly. Students learn better when they hear the teacher clearly.

Mobile devices

Mobile devices such as tablet or smart phone can be used to enhance the experience in the classroom by providing the possibility for professors to get feedback.

Interactive Whiteboards

An interactive whiteboard that provides touch control of computer applications These enhance the experience in the classroom by showing anything that can be on a computer screen .This not only aids in visual learning, but it is interactive so the students can draw, write, or manipulate images on the interactive whiteboard.

Digital video-on-Demand

Digital video eliminates the need for in-classroom hardware and allows teachers and students to access video clips immediately by not utilizing the public Internet.

Online Media

Streamed video websites can be utilized to enhance a classroom lesson.

Online study tools

Tools that motivate studying by making studying more fun or individualized for the student

Digital Games

The field of educational games and serious games has been growing significantly over the last few years. The digital games are being provided as tools for the classroom and have a lot of positive feedback including higher motivation for students.

There are many other tools being utilized depending on the local school board and funds available at their disposal.

Education Technology Project in India

The Government of India in the Ministry of Education and Social Welfare realized the importance of Education Technology for Qualitative improvement of education and included the Education Technology Project in its Fifth Five Year Plan in 1971. This project had four sub-schemes as follows:

- Setting up an Education Technology Unit in the Ministry of Education and Social Welfare.
- Establishing a Centre for Education Technology (CET) in the NCERT
- Assisting States for setting up Education Technology Cells and their programmes on 100% basis
- Strengthening a few education institutions for undertaking Education Technology Programmes

Accordingly, unit was started in the Ministry since 1971 and a CET in the NCERT was set-up during 1973. Education Technology Cells come into being different states from 1972-73 onwards.

The Unit in the Ministry made all planning, policy-making and providing funds for implementation of the Educational project and the CET in the NCERT started functioning in the following areas:

- Systems designing and implementation.
- Prototype production of suitable hardware and software
- Training in different areas of Education Technology
- Research and Evaluation
- Collection and dissemination of information, data and consultancy services

The Education Technology project was conceived as a broad-based and collaborative effort among the Ministry of Education and Social Welfare, the Ministry of Information and Broadcasting, the Indian Space Research Organization and other concerned organizations. It is underlined the importance of inter-agency co-ordination, systematic planning, scientific evaluation and effective utilization. Operationally the scheme sought to extend, the benefits of technology to large groups, particularly those in rural areas. It aimed at improving the quality of education at all levels, to reduce wastage and stagnation and to introduce new methods of teaching and innovation. Recently, Information and Communication Technology (ICT) for education, initiative by UNESCO, conducted an extensive consultation to identify the competencies that teachers should develop to use technology effectively in the classroom. It is basically an umbrella term that encompasses all communication technologies such as internet, wireless networks, cell-phones, satellite communications, digital television computer and network hardware and software; as well as the equipment and services associated with these technologies, such as videoconferencing, e-mail and blogs etc. that provide access to information.

Challenges of use of Education Technology in India:

Not enough or limited access to computer hardware & computer software in education institutes
(a)Lack of time in school schedule for projects involving use of technologies
(b) Lack of adequate technical support for education institutes
(c)Not enough teacher training opportunities are there
(d) Lack of knowledge about ways to integrate technologies to enhance curriculum
(e)Education technologies integration is not a priority
(f)Students and Teachers do not have access to the necessary technology at home
(g) There is also a negative facets of new technologies used in education. Many ethical questions and issues arise with this use of the latest technologies in education
(h)The Copy and paste syndrome– Schools and universities have more and more problems with students
(i) Who prepare essays/ project/ presentation by using material from websites or blogs? Often, students just copy pieces of information that look relevant and paste them together, without sometimes even understanding them, let alone citing them.
(j)Distortion of reality – When students are looking for some information on the website, they usually
(k)Employ a search engine.

Data Table for Use of Technology in Education:

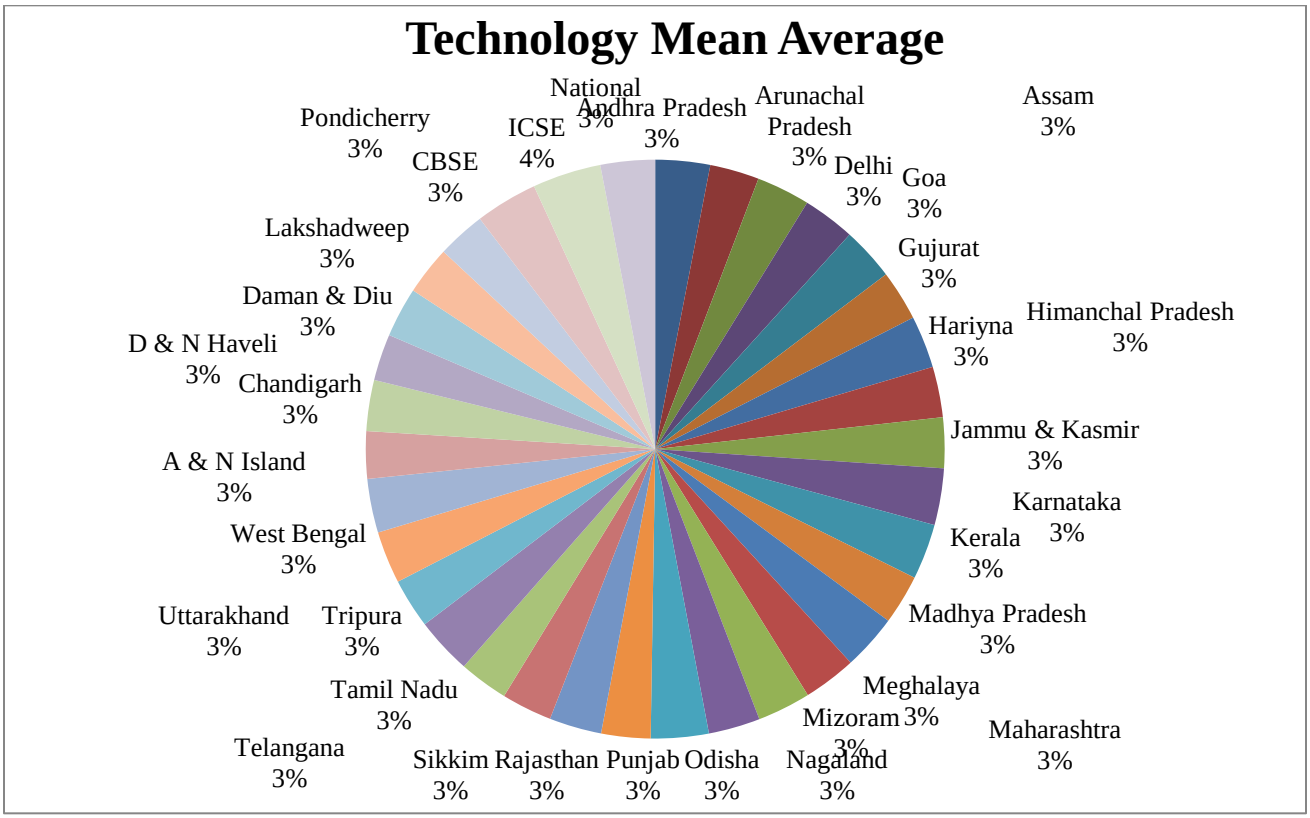
State/UTS/Board	Use of Technology								
	Mean Average	Gender Wise		Area Wise		Category wise			
		boys	Girls	Rural	Urban	SC	ST	OBC	Others
Andhra Pradesh	251	250	251	253	243	247	229	250	263
Arunachal Pradesh	226	226	225	227	223	217	226	241	223
Assam	246	251	241	249	231	237	235	247	252
Delhi	240	245	237	242	240	237	232	245	241
Goa	244	243	247	240	252	239	236	240	247
Gujurat	231	230	233	227	239	227	222	231	239
Hariyna	240	239	241	238	243	228	225	240	248
Himanchal Pradesh	232	232	232	232	230	229	228	231	235
Jammu & Kasmir	232	233	232	231	235	221	225	233	235
Karnataka	260	260	260	262	255	249	260	262	264
Kerala	255	252	258	257	250	243	230	256	262
Madhya Pradesh	228	230	226	226	232	226	219	230	233
Maharashtra	255	256	254	257	250	253	255	255	255
Meghalaya	243	243	243	241	247	247	240	235	266
Mizoram	245	246	245	246	245	206	245	232	262
Nagaland	237	239	234	234	239	236	236	252	244
Odisha	265	265	265	265	269	256	254	267	281
Punjab	226	226	225	227	222	223	200	230	228
Rajasthan	240	241	239	238	246	232	227	242	251
Sikkim	232	235	229	231	234	227	228	232	243
Tamil Nadu	226	225	223	228	226	227	223	224	228
Telangana	260	257	262	260	256	255	253	263	256
Tripura	228	228	228	228	227	231	226	224	231
Uttarakhand	240	237	247	238	247	231	238	243	243
West Bengal	247	252	243	250	235	244	241	247	250
A & N Island	217	220	214	221	216	218	223	216	242
Chandigarh	234	235	234	231	236	233	207	237	235
D & N Haveli	214	213	216	215	212	201	214	217	218
Daman & Diu	229	226	232	228	230	224	210	233	230
Lakshadweep	223	221	224	223	212	223	221	234	235
Pondicherry	222	218	225	218	226	221	194	222	228
CBSE	286	283	290	282	288	279	247	290	288
ICSE	315	314	318	307	317	295	276	302	320
National	250	250	250	247	256	240	237	250	260

Source: National Achievement Survey (NAS) Class X- 2015, NCERT

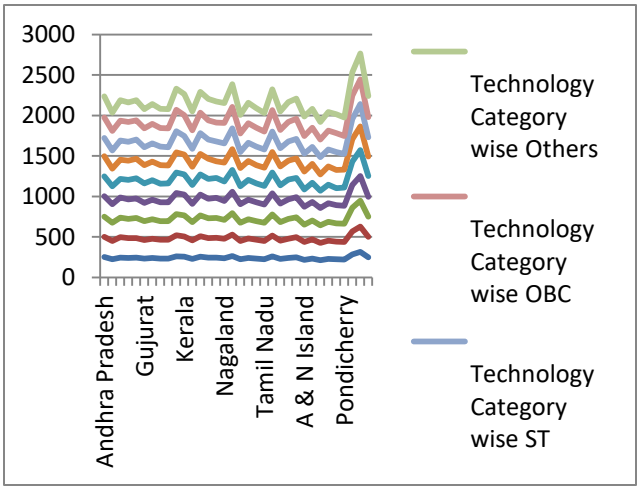
Final Result: (As per Sex Ratio at Exam.)

Name of Exam	Name of the Boards	Boys	Girls	Difference	% of Difference	Ratio
10th std.	CBSE	283	290	07	0.012	1.22
10th Std.	ICSE	314	318	04	0.006	0.63
10th Std.	National	250	250	00	0.00	0.00
Total		**847**	**858**	**11**	**0.006**	**0.645**

Pie Chart of Use of Technology: (State wize)



Results in Line Chart:



Use of Technology in Education

The organizations using technology as an effective tool to bridge the gap of education can thus be segregated at four levels broadly:

Technology Act as an Enabler

The organizations working in this space are working towards solving the issues pertaining to access of education. The main role of technology is to make quality education accessible to the ones who don't have. The programs like digital classroom by E Vidyaloka, Pratham Vodafone Web box, E Prashala are focusing at making education available to a large target group using technology as the medium. The organizations working in this space focus on developing new technology products and not on the content creation per se. The target issues are lack of sufficient teachers, reach in remote areas, lack of infrastructure, lack of Government interventions etc. The technology is not for students but rather to support teachers' role in class. Focus of the organization remains on providing the technology whereas the users' main focus is on gaining education and not on learning, the technology also helping a lot to facilitate on it.

Technology as the driver

Government with its ICT policy is making computer systems available in all the schools and ICT training to teachers with the idea of improving the quality of education and supporting the content of class. Similarly Affordable Private Schools (APS) in order to cater to the needs of more children with limited infrastructure are taking help of technology to provide quality education.

Performance management and tracking system- Technology for e governance

Organizations in this space are using technology to monitor the delivery of education and also the Government systems. Program VISHWAS (Visiting Information on Schools Handled with Attendance System) helps in tracking the visits of Government officials to the schools and helps in getting rid of the issues prevailing due to ignorance or absenteeism of the field officers. Similarly, Digital Empowerment Foundation is working with a vision to vanish all the information barrier in India, to see that individuals and communities in India do not lag behind or lie in backwardness due to lack of avenues to access the immense power of information and communication technologies.

Use of technology to create an ambience or ecosystem for better learning environment

For the organizations working under this space, technology is not the focus neither for the organization nor the end user. But it is rather a medium to solve the glitches which hinder the delivery of education. For example SELCO with its solar solutions is making cheap and effective technology solutions available in the areas where there is no electricity. Similarly Digital Empowerment Foundation is using technology effectively to link teachers with the needy students by providing an online platform for connection.

In spite of good products being developed and models being emerged there is still a huge gap in demand and supply. The organizations are majorly facing difficulty in scaling up. Other than the common issues of education sector and rural areas, the major challenges being faced by these organizations are in terms of acceptance and making students/ teachers learn to use technology. More than delivering and making technology available the major setback comes in terms of optimum usage of this technology. Transferring this knowledge is a humongous task combined with maintenance of these systems. Even after the initial investment of setting up a lab, maintenance and upgrading of infrastructure is a major challenge.

Future of Education Technology in India

While education technologies appears to have been taken quite seriously by many state governments and by certain private sector initiatives, most of these programmes are aimed at preparing students for the job market. In addition, the programmes are software- eccentric, i.e. they emphasize the learning of a specific set of software tools. There is an urgent need to demystify this technology and de-emphasize the learning of specific tools. A balanced

generic curriculum, where computers are relegated to their due place as tools, and where they extend the horizons of other subjects is a must. To enable technology in India, computer based learning system must be introduced from the junior level so that the students become computer savvy from very young age and are not afraid of using Education Technology when actually needed.

Conclusion

In conclusion, role of Technology can reduce the tremendous effort given by students to gather number of printed book and journals for acquiring knowledge and increase students' focus on more important knowledge gathering process. Equally important, technology can represent education in ways that help students understand latest concepts and ideas.

The Education Technology also enables teachers to integrate project based learning. With guidance from effective teachers, students at different levels can use these tools to construct knowledge and develop skills required in modern society such as presentation skills and analytical skills. In the present time the teacher's role in teaching is facilitator. The teacher has to facilitate the learning by providing students with access to technology. The teachers can find the means to engage students more easily in learning and to cater to the various needs of different students.

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14. ENGINEERING SCIENCE RESEARCH COMMITTEE

0314014 PATHAK, SANT SHARAN (Department of Electronics and Electrical Communication Engineering Indian Institute of Technology Kharagpur). **TELECOMMUNICATION NETWORKS SECURITY IN SOCIAL APPLICATIONS**

Introduction

Recent trends in wireless communication is focused significantly on privacy, authentication, integrity and non-repudiation. This is likely to enhance the opportunities on cellular, ad hoc, IOT and similar other wireless networks to fulfill difficult tasks ahead. However, the technology faces a lot challenges in the era of high computational power provided at hand held devices. Encryption is process of mapping the message from message space to an arbitrary space such that the guess of input from the received output is intractable without application of inverse mapping which, in turn, is made private with the help of a secret key. Two authentic users can share the key partially/fully depending upon the application. This further complicates the challenge when unauthorized sender attempts to use the facility with the help of knowledge acquired from the resources. This leads to implementation of a signature scheme which is message dependent. Two messages are not allowed to have the same signature unless they are the same. Signature is normally an one way process commonly known as hash. For long messages sometimes signing of hashes is preferred over signing of messages with authentic algorithms. In this way, the wireless communication can have a combination of some or all of message, encryption, signature, shared key, and some similar other options for communication. Growing challenges appear because Society has acquired ability to connect incalculable number of automated devices via Internet, ability to communicate with such devices, ability to remotely manage interconnected automated devices via internet. Transition is accelerating at alarming rate in the form of closed networks, enterprise IT networks, public internet, cloud etc. Some of the common applications are Military, Banking, Digital cash, Electronic voting, Soft currency, etc where signature in different forms is used. As there is no single solution to effectively mitigate every possible threat and various IT security controls have evolved, tentative solution is to find how to adapt them to new constraints. New Constraints at devices include factors like limited storage available, low power consumption requirement, no human being operating for authentication and decision to take command. This series of talk will cover some aspects of the problems cited above.

Role of Communication Technology in Digital Era

Telecommunication has helped mankind across the world coming closer. The consistent growth on high performance algorithmic developments coupled with the fabrication technology supported by high computational power has shown convenient means for operating the human life related privileges with hand held devices like Cell Phones. Some of the major needs for mankind include life saving access mechanisms, digital cash transaction, internet banking, electronic voting, and similar others. For example carrying cash in mobile phones may reduce the time and effort make payments to toll plaza, parking lots and similar places. Electronic voting may expand the bounds on time limit set for elections and constraint on localization of voting sites. E-medicine is helping people in bringing the hospital to the door step for initial medications to save life. However, it has not been developed to the mobile phone based applications considerably as yet. Demand of society is to secure devices that perform critical functions. These include Life-critical functions, Driverless vehicles, Control of nuclear reactors, Burglary tempted by dynamic energy meter readings, etc. Also compliance with stringent regulatory requirements, examining constraints of devices, and security challenges posed by the devices throw open further challenging constraints. There is no single solution to effectively mitigate every possible threat. Various IT security controls have evolved. Tentative solution is to find how to adapt them to new constraints. Some of the prominent ones are those of New constraints at devices, Limited storage available, Low power consumption required, No human being operating for authentication and decision to take command., and similar other factors.

Addressing Social Problems

It is agreed across the world that democracy is the endeavor for human beings to enjoy balance of freedom, discipline and creativity. Democracy may be strengthened by implementing privacy, authentication, integrity, and non-repudiation related features in human day to day work culture. The most important ones in the lime light are those of Internet Banking, Carrying Digital cash for one time payment and/or withdrawal, Electronic elections with open time span and guaranteed honesty from voters, administration, disturbing elements of society, etc, Ledger based global transactions of trade, and similar other features. Digital signature generation, verification, and authentication can be used in different formats for various applications cited above. In the long run cellular mobile phone based access to such applications is expected to encourage the citizens to reinforce the democratic norms in the society. A close discussion on such formats and their possible application in robust manner looks imperative.

Summary

In this talk such formats will be highlighted with the perspective pros and cons. Some tentative solutions will be discussed with related remarks.

20. MANAGEMENT SCIENCE RESEARCH COMMITTEE

0320015 RAO, N SAMBASIVA (Commerce and Management Studies, Andhra University, Visakhapatnam-530003). **DIGITIZATION AND ITS IMPACT ON SOCIETY**

Digital technologies fundamentally transform organizations, with the pace of technological change exacerbating the challenge. Organizations must have a coherent strategy that includes a plan to reskill workers. The digital revolution has created new roles (such as search engine optimization managers and social media account managers), new types of organizations (cloud computing providers and social media agencies), and even new sectors of the economy (digital security and data science). The impact of digitalization has also acted as a catalyst for employment growth in the wider economy. In India, for example, it is estimated that three to four jobs are created for every job within the business process outsourcing and IT-enabled services sectors. Agriculture is the backbone of the Indian economy. However, changing weather patterns have resulted in millions of farmers facing an uncertain future due to crop failure. In this context, to analyse volumes of data on weather forecasts, local rainfall and soil conditions, digitalisation and cloud computing may help the farmers for better accessibility of accurate information. The healthcare supply chain is a complex system that requires buy in from manufacturers, distributors, providers, payers (government and insurance companies), regulators, and patients. Providers, such as hospitals and healthcare clinics, are at the centre of this supply chain.

Today, however, the question of whether technology creates or destroys jobs is gaining momentum. The truth is that we actually know quite little of what is going to happen. What will the economic impact of innovations be in the future? How will humans interact with machines and algorithms? What kind of skills do we need and how should we learn? How will all of this impact labour markets? In this background, this paper discusses the role and importance of digitization and its impact on three important sector like education, health and agriculture.

Introduction

Innovation and technology have been predominant in every sector in India with each undergoing vast change in the past few years. Technology has made everything much easier and faster, leaving no option for various sectors of the economy but to adapt to change or fear to become obsolete. Digital transformation is generating a fierce debate among policy-makers, economists and industry leaders about its societal impact. As digitalization disrupts society ever more profoundly, concern is growing about how it is affecting issues such as jobs, wages, inequality, health, resource efficiency and security. The way societies operate and interact with each other has drastically changed with the advent of the digital revolution. Over the years, the impact of technology has been profound, not just in terms of making our lives easier, but also in terms of our approach to the way we carry out tasks, solve problems and resolve issues. So digitization means, “Digitization is the integration of digital technologies into everyday life by the digitization of everything that can be digitized.”

There is no doubt that our leaders understand the role that technology can play in realizing the vision for India’s growth – it is at the core of the Digital India programme and a key driver across all plans devised by the Indian Government over the last four years. The government recognizes the transformative power of technology and sees it as an enabler for the change that we all seek- be it in delivering better citizen services, digitizing education records, efficient and productive functioning, or using technology to provide a new social security platform.

Cloud is really at the core of the technology revolution that we see around us. Today, cloud computing is making it possible to drive intelligence and insights from the immense magnitude of data available, converting it into predictive and analytical power. This power puts data and cloud computing at the centre of the analysis and action that governments are taking to address different societal issues.

Education, agriculture and healthcare are critical for the progress of our country, and the ability of software to make an impact in these areas will ensure that we are successful in empowering our citizens. In this direction, the government has to effectively implement the process of partnering with different state governments as well as

private and public institutions to come up with solutions that have the potential to fundamentally handle major challenges in these three core sectors. The suggestions given by these institutions have to be taken positively and try to update the systems and procedures.

Indian Education System

We are running into the 21st century where technology knows no bounds. This is the phase of radical development where technology is taking over every niche and corner. Smartphones, laptops, and tablets are no more unknown words. During this phase the education system is evolving for the sake of betterment, as this generation's students are not born to be confined by the limits of simple learning; their curiosity is vast and cannot be catered with educational systems that were designed earlier. If we kept on teaching our children the way we taught them yesterday, we would deprive them of their tomorrow. Our old educational system lacks the capability to stand a chance in the 21st century. So we are compelled to use digitization in our educational system. Digitization is the trending term, describing the 21st century in the most precise manner as possible. We are in the era where unprecedented ideas are unfolding in our education industry and creating the advancement that can't be matched by lagging behind in terms of technology.

India has more than 250 million students enrolled in government and private schools. While this is one of the largest school enrolment figures in the world, unfortunately, more than 70 percent of children never complete their education. Same thing at higher education level also. People completing their degree and post graduate courses but required skills are not acquiring to get employability. In this direction skill development corporations are trying to reduce this gap. Online education systems increased in the country to get better and relevant information and get the qualifications while earning. To prevent dropouts, suitable systems and interventions have to be designed. In this process, machine learning and advanced visualization techniques may be more useful.

Information technology has reformed each sector it has grasped and it is currently in the promising phases of altering academia. In the coming decades if information technology has its approach, education will be far changed, more immersive and hopefully more constructive to the people than it is today. Digitization in education industry has totally changed the learning and also the teaching process to a very great extent. Technology has made imparting education stress-free for both students and educators. Schools are gradually implementing digital teaching solutions to involve with a generation of learners familiar with the likes of PlayStations and iPads and trying to make the classroom atmosphere more broad and participatory. The best part about the digitization of education in the 21st century is that it is combined with the aspects of both; classroom learning and online learning methods. Walking hand in hand both act as a support system to each other, which gives a stronghold to our modern students. Digitization in education has also proved to be the right method for saving resources. Online examination platforms have restricted the frivolous usage of paper, directly confining the cutting down of trees. This way the digitization of education industry in the 21st century proves to be a boon to our society.

The urban population in India is expected to grow faster than its overall population by 2030, according to a report in the Hindustan Times. This will put considerable pressure on the economy and education system. Our education system currently faces a few challenges, like the sheer capacity to deliver education to all sections of our society, and the quality of existing institutions.

Agriculture in India

The agriculture sector employs nearly half of the workforce in the country. However, it contributes to 17.9% of the GDP (statisticstimes.com, March 2017). Over the past few decades, the manufacturing and services sectors have increasingly contributed to the growth of the economy, while the agriculture sector's contribution has decreased from more than 50% of GDP in the 1950s to 17.49% in 2016-17 (at constant prices). India's production of food grains has been increasing every year, and India is among the top producers of several crops such as wheat, rice, pulses, sugarcane and cotton. It is the highest producer of milk and second highest producer of fruits and vegetables. The production of food grains in India reached a record 275.68 million tonnes (MT) during FY 2016-17, as per the Fourth Advance Estimates (AE) released by the Department of Agriculture, Cooperation and Farmers

Welfare, Government of India. Agriculture is the backbone of the Indian economy. However, changing weather patterns have resulted in millions of farmers facing an uncertain future due to crop failure. In this context, to analyse volumes of data on weather forecasts, local rainfall and soil conditions, digitalisation and cloud computing may help the farmers for better accessibility of accurate information. This data may be useful to develop a "Sowing Date" application that tells farmers the right sowing date to maximise their yield. Access to this platform for farmers may be simplified by providing information to farmers via SMS in their own language.

However, the agricultural yield (quantity of a crop produced per unit of land) is found to be lower in the case of most crops, as compared to other top producing countries such as China, Brazil and the United States. Although India ranks third in the production of rice, its yield is lower than Brazil, China and the United States. The same trend is observed for pulses, where it is the second highest producer. Agricultural growth has been fairly volatile over the past decade and such variation in agricultural growth has an impact on farm incomes as well as farmers' ability to take credit for investing in their land holdings. Key issues affecting agricultural productivity include the decreasing sizes of agricultural land holdings, continued dependence on the monsoon, inadequate access to irrigation, imbalanced use of soil nutrients resulting in loss of fertility of soil, uneven access to modern technology in different parts of the country, lack of access to formal agricultural credit, limited procurement of food grains by government agencies, and failure to provide remunerative prices to farmers.

The convergence of agriculture and information and communication technology (ICT) is a new development in India which is intended to increase efficiency in every process of production, distribution and consumption. This system can be also described as an integrated agricultural system. The main keys of the integrated agricultural system includes data processing and digital control machinery for digitization, data transmission, data collection, network and automation of agricultural activity.

The current agriculture has converged with technologies such as information technology (IT), biotechnology (BT), environment technology (ET), and nano technology (NT). And it mainly focuses on areas such as cost reduction during production level, reduction in labour burden, high quality and organic production, and quality management in facility. Second, it is important to meet consumers' needs at the production and distribution stages through building a system, which delivers food safety information. This means, IT applications need to be expanded in the agriculture farming automation system. Furthermore, at the distribution and processing stages, advanced distribution technologies using IT need to be introduced including the convergence of distribution data. These are the very small portions of the digital agriculture system that is part of making big database of the whole agriculture system.

Health sector

The healthcare supply chain is a complex system that requires buy in from manufacturers, distributors, providers, payers (government and insurance companies), regulators, and patients. Providers, such as hospitals and healthcare clinics, are at the centre of this supply chain – they purchase goods from manufacturers or distributors and use them to deliver services to their patients, while also ensuring they will receive appropriate approval from payers and meet the quality standards of regulators. To have an efficient healthcare supply chain, providers much manage the goals of each of these stakeholders to deliver optimal customer value at minimum costs. Not only do digital medical records reduce the risk of errors, they open up a wealth of opportunity for the development of telemedicine technology. Telemedicine is a growing field involving the digital transfer of medical information and the use of video communication to diagnose and treat patients remotely.

A digital healthcare transformation is taking place globally that will have an immense impact on patients and providers alike. Four trends shaping the future of digital healthcare - rise in patient engagement and mobile technologies, growth of telemedicine, use of Artificial Intelligence and turning Big Data into actionable Insights. Digitalization has made an isolated impact on each stage of this supply chain; however, the most profound impact has come in the form of increased ability to communicate transparent, real time data between each stage and

stakeholder. This is particularly powerful in the healthcare industry because it allows for ongoing monitoring and reporting of patient centric data that enables providers to identify and respond to patients' needs more quickly.

Employment

Digital transformation is always one of the biggest challenges faced by the C-Suite (Chief Executive Officers) of today. Rising threat from disruptive digital players, lowered spending forecasts from consumers, rising cost of operations and a host of other factors often figure as key pain points that the executive team is forced to think about. It will be difficult for recruiters to keep up with the volume of hiring using traditional methods. "The market is broken, as evidenced by the fact that 75% of workers submitting applications don't hear back from employers and 54% of employers say it's become more difficult to find qualified candidates," according to consultants. In the future, it might even be possible to predict when someone decides to change jobs using Big Data. To hire the right candidate in this digital world, it is imperative for recruiters to forsake traditional methods and embrace the digital ways of recruitment.

Recruiters are the brand ambassadors of a company as they are the first people with whom a candidate interacts. In addition, HR plays a crucial role in shaping the culture and talent of any organization. From personnel management role to a business partner/strategic role, HR has undergone tremendous changes in the last decade. While attracting the right talent is still one of the most important functions of HR, the changes in business needs and technology have made hiring one of the top challenges faced by companies across the globe.

Recruiters, it's time to go Digital!

Along with qualification and experience, candidates should also meet additional needs like adaptability to organizational culture, openness to changes, ability to learn, agility etc. It is but natural that an "ideal" candidate will be inundated with job opportunities. In order to sustain in the fierce hiring battle, recruiters and manpower consulting companies must go the digital way in their business model. Online job portals like Monster, Indeed and CareerBuilder have helped in reaching out to candidates across different geographies and industries. They have also helped in building good candidate pipelines for recruiters; an indication of the changes to come. Then came the applicant tracking system that helped to easily manage candidate database via company-promoted employee referral policies, job postings on Social Media, and so on. But to meet changing business needs, faster and better solutions are needed.

Some of the more established retailers are well known for providing great suggestions to shoppers. This is largely a result of the massive data aggregation and shopping algorithms they employ, which suggest the products most likely to appeal to specific customers. This process will reach new heights as the shopping algorithms become more advanced to include even more data from services and products used by each shopper. The results from such an algorithm, which has data from multiple sources, connected to each other only in relation to their relevance to the customer, can be astoundingly accurate.

E- Commerce

The bottom line is that e-commerce has grown from an insignificant and limited business opportunity to a full-fledged, ever-growing market. In fact, many brick-and-mortar stores have opened up their own online retail sites in recognition of the growing business opportunities in this field. As digital transformation grows more prominent with each passing day, e-commerce will grow bigger and better as shopping from home becomes easier and friendlier.

When e-commerce sites first came into existence, many shoppers were hesitant to use them. The websites presented an entirely new platform for customers to interact with sellers. A place where they could not personally see or touch the merchandise they were buying. A system where they had to pay in advance by going through a long and tedious online payment process.

Today, e-commerce has changed drastically with significantly safer online transactions and super-fast checkouts. Online shopping continues to gain popularity, creating new opportunities for both established online retailers and brand new startups. But e-commerce isn't finished changing and improving.

The bottom line is that e-commerce has grown from an insignificant and limited business opportunity to a full-fledged, ever-growing market. In fact, many brick-and-mortar stores have opened up their own online retail sites in recognition of the growing business opportunities in this field. As digital transformation grows more prominent with each passing day, e-commerce will grow bigger and better as shopping from home becomes easier and friendlier.

Conclusion

As digitalization disrupts society ever more profoundly, concern is growing about how it is affecting issues such as jobs, wages, inequality, health, resource efficiency and security. The way societies operate and interact with each other has drastically changed with the advent of the digital revolution. These are but a few glimpses of how technology can transform India and the world. Digital India seeks to transform India into an empowered society. These emerging platforms, technologies and solutions will support India's digital transformation and positively impact the lives of a billion people. The core sectors of economy are education, health and agriculture where the technology plays a vital role to transform them to improve the quality of life of the citizens in the country.

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23. PHILOSOPHY RESEARCH COMMITTEE

0323016 KUMAR, P KESAVA (Department of Philosophy, University of Delhi, Delhi – 110007). EXPLORING AND ENFRAMING PHILOSOPHY OF INFORMATION SOCIETY

Human life has evolved through technology. *Technology unveils, transforms, and controls the world, often designing and creating new realities in the process*. Technology played a remarkable role in transforming our societies from food gathering to information society. Technology has not only facilitated the progress and development but also stratified the society. It is not value neutral. Information technology of our times has been invading all spheres of life than earlier technologies. Through information technology, on one hand we find global connectivity and on other hand find the sharpening of inequalities and marginalization of the weak social groups. On the whole, the information society brings new power relations and hegemonic practices. In globalization of economy, information technology is playing a significant role in globalizing social process. It has been acquiring the language of neo liberalism of late capitalism. In information society, production, acquisition, and flow of knowledge are driving the economy. In the knowledge economy, the raw material that matters is intellectual rather than physical. There are several attempts to understand the information and communication technology mediated new society from diverse disciplines. The scholars characterized the information society as *Post-Industrial society* (Daniel Bell), *Post-Modern society* (Jean Baudrillard), *Network Society* (Manuel Castells), *Infosphere* (Luciano Floridi) and it even termed as a *Surveillance society* (David Lyon). The philosophers are critically reflected on the interface of technology and society from diverse philosophical perspectives of technology. Philosophy of technology is a discipline concerned with critical, reflective examination of the nature of technology, the use of technology and the transformation of technologies upon human activities and human activities upon technologies. The initiated debates in this field extended from modern society to information society. Philosophy of information has been emerging as a distinct trans- disciplinary philosophical system. James Moor rightly observed that there is a conceptual vacuum to have a better policy by reflecting upon Information society. Philosophy of information is a step towards critical and conceptual understanding of information society.

Reflecting upon modern technological society, Heidegger pointed out that under the reign of modern technology; reality manifests itself as raw material for production and exploitation. He means that technology constitutes a new type of cultural system that restructures the entire social world as an object of control. Jacques Ellul argues that the "technical phenomenon" has become the defining characteristic of all modern societies regardless of political ideology. He made a point that technology has become not only a part of our everyday world but also man and machine is merging- techniques (technology), and the Economy, the State, and humans. John Dewey, the pragmatist viewed that the success of technology is depending upon its usefulness as both knowledge and technology are socially situated. Herbert Marcuse, the Frankfort school thinker in *One Dimensional Man* (1964) argues that technology leads to a new form of domination in industrial society. He forwards a view that restoration of harmony of man and nature through new science and technology. He calls for a radical reconstruction of a society. Marcuse saw technology as more than technical, as more even than political. He believed that in a liberated society “certain lost qualities of artisan work may well reappear on the new technological base.” These philosophical debates on modern industrial society may help us in understanding the information technology mediated contemporary society. Information technology has to be philosophically evaluated from social and political point of view rather than looking it as a value neutral.

Luciano Floridi in *Philosophy of Information* made an attempt to develop a methodology of philosophy of information. He proposed a method of *informational structural realism* to explain informational ontology. He argued that well-formed data need to be meaningful and truthful and in order to count as semantic information. The ultimate nature of reality is informational, mind-independent and constituted by structural objects that are neither substantial nor material but cohering clusters of data. Semantic information needs to be not only truthful but also relevant in order to qualify as knowledge. In other words, reality is the totality of information and ultimate nature of reality is structural. Wu Kun, Chinese philosopher considered philosophy of information as metaphilosophy. In information society, he finds convergence of science and philosophy. He argues that contemporary philosophy of information established transformation of philosophy to science and critique of science by philosophy. He named this convergence as *Unified Science and Philosophy of Information.* Because of its universal character, information

has a fundamental significance for the transformation of both philosophy and science, given its transdisciplinary properties and multiple levels and dimensions. He further argues that Floridi's informational ontology fail to capture the evolution of real informational process.

The theories of philosophy of information identified the unique situation created by information technology. But the philosophical theories of information are limited to epistemological and ethical concerns. It is observed that the most of the theories of ethics of information are within liberal framework. On the other hand, the sociologists like Manuel Castells and Herbert Schiller identified information society with informational capitalism and approached the information society from a political point of view. We may find here the extension of critical theory. They remind us to take note of the structural problems of inequalities, domination, cultural hegemony and power relations generated by the ICT. It is not enough to interpret the information society but also needs transformation of it. The philosophical understanding of the information society demands a comprehensive, critical, ethical and interdisciplinary approach that internalized the social, economical, ethical and political concerns. Democratization of information technology could be the imperative in philosophical understanding of information society. It is possible through realization of alternative rationality informed by the alternative social struggles as viewed by Andrew Feenberg.

24. PHYSICAL SCIENCE RESEARCH COMMITTEE

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There is no doubt in accepting the fact that in today's modern age, technology has immense influence on our day-to-day life. One of the biggest consequence of this, singinificant increase in human-machine interaction, leading to the important issue of "*thriving* in a digital age", "the digital age" being perceived as an era of conflict between human and artificial intelligences. For example, internet is a technology which on one hand opened the door to having the entire world of information on finger tips but on other hand raised serious concerns like surveillance by states and passive addiction to devices, apps and services. Human-machine interactions thus compel us to pose the question what the role of an individual human might be in this new era with communities linked by digital technologies. For humanity and the digital to coexist, we need to be clear about the important differences in the role of the two in advancement of the society. In particular, one needs to recognize the fact that humans have mind of their own being blessed with creativity, while machines can only carry out actions programmed by humans. Thus the conflict between human and machine is only apparent and the advancement in digital world, if turned in right direction, can only be an advantage to human civilization.

It is thus very pertinant and timely that 42nd Indian Social Science Congress with a focal theme of HUMAN FUTURE IN DIGITAL ERA is being organized during December 27-31, 2018 at KIIT University in Bhubaneswar (Odisha). I wish all success of the meeting.

28. SOCOIOLOGY RESEARCH COMMITTEE

0328018 MATIN, ABDUL (Department of Sociology, Aligarh Muslim University, Aligarh 202002). **DIGITAL SOCIOLOGY FOR DIGITAL ERA**

The paper describes the background in which author‟s interest in Digital Sociology stems in a top ten ranked north-American University. It is divided into two sections. The first section draws attention towards the trajectory of internet history by focusing on ARPA and DARPA and the tremendous significance of Si Material discovery. It further argues that digital revolution is regulated by Moore, Metcalfe and Coase laws and even beyond. Then it defines Digital Sociology and its relevance for the contemporary digital era. After explaining GPT, ICT and Smartphone have been considered as GPT. The second section draws attention towards internet use and abuse by young people in the domains of screen time, privacy, cyber bullying, digital foot print, cyber security, critical thinking and digital empathy. E-safety measures based on DQ have been discussed for children in the digital era.

Prelude

I express my sense of gratitude to the competent authority of the 42nd Indian Social Science Congress for providing me this opportunity to express my views on the focal theme on HUMAN FUTURE IN DIGITAL ERA. I further express my gratitude to our host, the Kalinga Institute of Industrial Technology University, Bhubaneswar (Odisha) for providing such an excellent and well managed logistic support in spite of time constraint.

The exact title of my presentation is **Digital Sociology for Digital Era.** Before I describe what do I understand by ‘Digital’ in general and ‘Digital Sociology’ in particular, background of my interest in this domain may be mentioned. My interest in digital computation started since 1983 at the University of Toronto (henceforth will be referred as UofT), Canada then a Ph.D. student. During mid-1980s when India was denied Super Computer by the USA, UofT had its own Super Computer. As the University was not consuming its full potentials, therefore, 50 per cent of its use was sold to the Government of Ontario. My initial exposure to the use of mainframe for using mainly “Scribe” as well as few statistical packages and subsequent switch over to Desktop in which I mainly used the word processor “Word” and statistical packages “SAS” and “Minitab” made me realize the great potentials of digital computations. At the University of Toronto Computing Services' (UTCS) Pat Hood (my computer guru), Roni Morvani taught me to use softwares in mainframe as well as microcomputer with a greater patience. Ihor Prociuk was of tremendous help in transferring my Lotus Worksheet files into the EPAS mainframe to run the SAS and writing programmes for cross tabulations and other computations. Barry Lay helped me in writing SAS programmes for generating the tables finally incorporated in my thesis. John Bradley guided me with greater patience in using Final Word II as an advanced user. Centre for Computing in Humanities (CCH) allowed me to use the IBM-Pc for data and word processing. The staff from the CCH had been of tremendous help in teaching me how to use the Finalword II in the Novell network system. All these learning experience shaped my understanding on human future in digital era.

I
ARPA and DARPA

One may look at the trajectory of the historical role of ARPA and DARPA in shaping today‟s internet usage through the World Wide Web (WWW). It is a well-known fact that the first recorded description of the social interactions that could be enabled through networking was a series of memos written by **J.C.R. Licklider** of MIT in August **1962**. He had discussed his "Galactic Network" concept. He envisioned a globally interconnected set of computers through which everyone could quickly access data and programs from any site. In spirit, the concept was very much like the Internet of today. Licklider was the first head of the computer research program at the U.S. Defense Advanced Research Projects Agency (DARPA), starting in October 1962. At DARPA he convinced his successors: Ivan Sutherland, Bob Taylor and MIT researcher Lawrence G. Roberts, of the importance of this networking concept. The technical underpinnings of the Internet were developed as a project funded by the Advanced Research Project Agency (ARPA). The purpose was to research how to build a network that would withstand bomb damage.

Vinton Cerf created „Internet technology" in the early 1973. It was a part of a project headed by Robert Kahn and conducted by the ARPA, part of the United States Department of Defense. Thereafter, Cerf led many efforts to build, scale, and standardize the Internet. In 1984 the technology and the network were turned over to the private sector and to government scientific agencies for further development. The growth has continued exponentially. Service-provider companies that make "gateways" to the Internet available to home and business users enter the market in ever-increasing numbers. By early 1995, access was available in 180 countries and encompassed more than 30 million users. The Internet itself began in 1984 with funding from the US National Science Foundation as a means to allow US universities to share the resources of five regional supercomputing centers. The number of users grew quickly, and in the early 1990s access became inexpensive enough for domestic users to have their own links on home personal computers. As the amount of information available via the Internet grew, indexing and search services such as Gopher, Archie, Veronica, and WAIS were created by Internet users to help both themselves and others. The newer World Wide Web allows seamless browsing across the Internet via hypertext (Matin, 2004). This was the time when I was having close encounter and experiences at the UTCS and CCH at Toronto.

Digital Sociology

Oxford Dictionary defines digital as signals or data as series of the digits 0 and 1, typically represented by values of a physical quantity such as voltage or magnetic polarization. It also refers to using or storing data or information in the form of digital signals. It is often contrasted with analogue, which refers to using signals or information represented by a continuously variable physical quantity such as spatial position, voltage, etc. The information on a gramophone record is analogue. Lupton (2012) has observed that "Digital sociology provides a means by which the impact, development and use of digital technologies and their incorporation into social worlds and concepts of selfhood may be investigated, analyzed and understood" (2012: 4). John Holmwood has pointed out that "Sociology is a discipline that has to be „achieved", or continually re-invented, in new circumstances." – Digital Sociology in the broadest sense addresses the question of what such reinvention could or should mean in new circumstances where the content of this „newness" is defined largely by the digital. I prefer to simplify Digital Sociology as "a complex web of virtual (digital) relationships between stakeholders". For Digital Sociology one has to look at massive literature. However, one may critically examine the works of Castells (2000a) (2000b) (2000c) (2009), Stadler (2006), Tapscott (1996), Van Dijk (2006), Webster (2006) for various dimensions of Digital Sociology.

It is a well-known fact that industrial revolution transformed initially the European society and subsequently societies at large. All the institutions and web of social relations underwent transformation from the pre-industrial societies characterized by urbanization, industrialization in a new bureaucratic form well reflected in the writings of classical sociologists like Karl Marx and Max Weber. Bangwei Zhang (2012) in „On Typical Materials Acting as the Dividing Standard of the Development Stages of Human Substance Civilization" has drawn attention towards major discoveries as follows: Stone 3 million B.C.; Bronze 3300 B.C.; Iron 1400 B.C.; Steel and Cement 1900 A.D.; Si Material 1960 A.D.; and Nano Materials 2001 A.D. One gets struck by Moore"s Law and its relevance after Si Material in 1960. According to this law, "Every eighteen months, processing power will double while cost remains constant." While it took such a long time to discover bronze after stone or iron after bronze or steel and cement after Iron and Si material after Steel and Cement. However, gap in discoveries especially after the discovery of Si Material and subsequent relevance and tremendous significance of Moore"s law is baffling. No doubt Moore"s law makes better sense in relation to Metcalfe and Coase"s laws. Metcalfe"s Law attaches significance to Computer Users not computer itself (unlike Moore). The utility of a network is equal to the square of the number of users. Similarly, Nobel Lauret Ronald Coase (Economist) law identifies Market / Firm"s optimization. To him, development of Ideas, firms, organizations and Markets are closely tied together. Why firms at all? Why cannot free markets organize individuals using contracts in the same way? Market works on „incentives", nothing else. However, firms are non-distributional, hierarchical and act in the interest of the share-holders. They do not know the interests of the share-holders. Unlike market, firms demand a lot of knowledge of People. If markets were efficient distributors of resources (a basic assumption of much of economics), reasoned Coase, then there would be no need for an inefficient monster such as a firm.

The technology associated with digital revolution makes better sense when we see its importance in terms of General Purpose Technology (GPT). Literature on GPT by Basu and Fernald (2008), Bresnahan and Trajtenberg (1995), Cantner and Vannuccini (2012), Helpman (1998), Moser and Nicholas (2004) and Youtie et al. (2008) provide interesting insights. One may summarize characteristics of GPT as follows: (1) Pervasiveness, (2) Technological Dynamism, and (3) Innovational complementarities.**1** These three are characteristics of the techno-economic paradigm, which is a broader concept that covers the entire economic system, including the institutional arrangements of the society. But all of these characteristics require a well-functioning market economy, driven by innovative entrepreneurs in search of economic profit. The idea that nanotechnology is a GPT relies on patent and patent citation**2** databases, which captures the inventive stage of the technology cycle (essential in the gestation period) and not the innovative stage (essential in the frenzy and golden age periods). **Pervasiveness** in the market occurs because of the diffusion of the many complementary innovations after the new techno-economic paradigm is already in place. Let us look at computers, smart phones and internet as GPT for the time being as it requires a critical detailed discussion. If so, one of the subject matters for Digital Sociology may be computers, smart phones and internet as GPT and its impact in institutions and individuals.

Let us look at what the digital sociologists are doing. The first Digital Sociology Conference was organized as a „mini-conference" in conjunction with the Eastern Sociological Society (ESS) in New York, USA on February 27-28, 2015. The conference was co-organized by Jessie Daniels, Karen Gregory and Tressie McMillan Cottom. The conference was a great success. It received 60 submissions from scholars spread in 11 countries. I strongly argue that internet, smartphones and computers must be looked upon as GPT. In this background, the next section, I propose to discuss what needs to be done by the Digital Sociologists.

II
Children in Digital Era: Internet and e-Safety

There are around 3.49 billion internet users in the world. Out of 8.5 billion, over 41 percent of the world population is interconnected through the use of internet. The most common language in the online medium is English, which is preferred by over 26 percent of the total number of internet users. According to UNICEF estimates (Livingstone, Carr, and Byrne 2015) one third of Internet users globally are children. The proportion of Internet users is likely to be higher in lower income countries where the Internet is rapidly penetrating all spheres of public life. Statistics by the ITU show that in developing countries, young people aged between 15 and 24 outnumber the general population by 2 or 3 times (ITU 2013: 150). Children"s experiences worldwide are increasingly informed by their use of digital technologies. The realization of their rights will depend on both their physical and virtual environments. Their access and use of information, knowledge and resources will depend not just on their level of digital literacy, but also on the availability, safety and quality of the online content. However, the Internet can also be a place where children encounter risks such as unwanted sexual solicitation, bullying and harassment or even inappropriate marketing and advertising. The risks to their privacy from both corporations and governments need to be weighed carefully when data are collected from online sources. The internet is used by some to facilitate research, to seek information, for interpersonal communication, and for business transactions. On the other hand, it can be used by some to indulge in pornography, chatting for long hours, excessive gaming and even gambling.

There has been an explosive growth in the use of internet not only worldwide but also in India since the last decade. A report by the Internet and Mobile Association of India (IAMAI) and Kantar IMRB says with 59 per cent penetration, urban India is expected to see a slowdown. Rural India is clearly the next area of growth. Overall, mobile internet users are estimated to reach 478 million by June 2018, of which urban users will be around 291 million and rural users 187 million. Mobile internet users increased by 17.2 per cent from December 2016 to reach 456 million in December 2017.The report said emergence of newer forms of services and apps, along with availability and quality of mobile data, determine the usage of mobile internet. Online communication and social networking have been the top purposes for the past few years. In 2017, India had 331.77 million internet users. As of January 2018 there are 462 million active internet users in India. The majority of India's internet users are mobile phone internet users, who take advantage of cheap alternatives to expensive landline connections that require desktop PCs and infrastructure. As of 2016, India had 320.57 million mobile phone internet users, which increased to 430.3 million in January. In 2016, 29.55 percent of the Indian population accessed the internet: up from 7.5

percent in 2010. Despite the huge, yet-to-be utilized potential, India is already the second-largest online market worldwide. China is ranked first with 772 million internet users, more than double the amount of third-ranked United States with just over 312 million internet users.

In India, use of internet is enormous, especially in the young population. As more and more adolescents use the Internet and mobile technologies, research based evidence of both the opportunities and benefits that the Internet brings, and their associated risks and harms, is increasingly becoming important. It is necessary to study pattern of internet usage in adolescents in Indian setting and its relationship with their mental and physical health. It is also important to study and understand the psychosocial and legal response mechanisms when the harm is caused to the adolescents due to problematic internet usage. In this background, the million dollar questions: "What is internet usage pattern among children?", "What is Internet Addiction?", "What are the issues children face in internet usage?", "What is Online Safety and Why is it Necessary?", must be addressed. There are various possibilities to address these issues. However, DQ (Digital Intelligence) are global standards for digital literacy, digital skills and digital readiness. It is a global movement to empower every child with digital intelligence. It aims to set global standard of digital citizenship for all children around the world. DQ is research based award winning world e-learning programme. It offers free high quality education for children of the age-group 8-12 to learn the 8 digital citizenship (netigen) skills to enable students to self-learn in a relevant, holistic, and engaging way. DQ has identifies the following issues for children which need attention: (a) Screen-time Management, (b) Privacy management, (c) Cyber Bullying Management, (d) Digital Citizen Identity, (e) Digital Foot Print Management, Internet information about the user (you) (f) Cyber Security Management, (g) Critical Thinking, Good /Harmful Content Or Trustworthy / Questionable Contacts Online (Manuel Castell‟s information versus disinformation) and (h) Digital Empathy Insensitivity to the needs and feelings of Others when Online. DE is digital skill that empowers children to be empathetic towards one‟s own and Others‟ needs & feelings online. Teachers and parents can introduce this skill to children. It empowers them to become informed and discerning digital citizens. It is recognized by UNESCO, World Economic Forum and OECD. These may be further elaborated as follows.

(a) Screen-time Management: Digital media and technology are evolving rapidly regulated by the three laws discussed above. Children in the twenty-first century are using the Internet to explore and create and in ways never imagined. But with such extraordinary opportunities also come real risks for young children. One such risk is excessive screen time, which can negatively impact immediate and future wellbeing. Screen Time Management is a must-have digital skill that empowers children to use digital technology with awareness and self-control. Teachers and parents can introduce this skill to children by having them complete Zone 1 of DQWorld.net. Covering topics such as controlling multi-tasking, balancing screen time, preventing game addiction and more, these online lessons enable students to self-learn.

(b) Privacy management: Privacy Management is a must-have digital skill that empowers children to protect their and their contacts‟ personal information. Teachers and parents can introduce this skill to children following guidelines of the DQ. Topics such as personal information, keeping privacy on social media, protecting others‟ privacy and more, DQ online lessons enable students for self-learning.

(c) Cyber Bullying Management: Cyber-bullying Management is a must-have digital skill that empowers children to detect cyber-bullying situations and to handle them wisely. Teachers and parents can introduce this skill to children by having them complete Zone 3 of DQWorld.net. Covering topics such as detecting cyber-bullying, types of cyber-bullying, diffusing a cyber-bullying situation and more, these online lessons enable students for self-learning.

(d) Digital Citizen Identity: Digital media and technology are evolving rapidly, and children today are using the Internet to explore and create and in ways never imagined. But with such extraordinary opportunities also come real risks for young children. One such risk is online dishonesty, which can negatively impact immediate and future wellbeing. Digital Citizen Identity is a must-have digital skill that empowers children to build online Person as with integrity.

(e) Digital Foot Print Management: One such risk is digital footprints, which can negatively affect immediate and future wellbeing. Digital Footprint Management is a must-have digital skill that empowers children to be aware of

and to manage the trails of information that they leave online. Teachers and parents can introduce this skill to children by having them complete Zone 5 of DQWorld.net. Covering topics such as what digital footprints are persistence of digital footprints, impacts on digital reputation and more, these online lessons enable students to self-learn.

(f) Cyber Security Management: One such risk is online scams, which can negatively affect immediate and future wellbeing. Cyber Security Management is a must-have digital skill that empowers children to create and maintain strong passwords and avoid cyber-attacks. Teachers and parents can introduce this skill to children by having them complete Zone 6 of DQWorld.net. Covering topics such as creating strong passwords, managing SPAM and scams, observing mobile security and more, these online lessons enable students to self-learn digital citizenship principles of in a relevant, holistic, and engaging way.

(g) Critical Thinking: One such risk is exposure to false and/or inappropriate content, which can negatively affect immediate and future wellbeing. Critical Thinking is a must-have digital skill that empowers children to distinguish between good and harmful content as well as trustworthy and questionable contacts online. Teachers and parents can introduce this skill to children by having them complete Zone 7 of DQWorld.net. Covering topics such as true vs. false info, online friends, how to critique content and more. These online lessons enable students to self-learn digital citizenship principles of in a relevant, holistic, and engaging way.

(h) Digital Empathy: One such risk is insensitivity to the needs and feelings of others when online, which can negatively affect immediate and future wellbeing. Digital Empathy is a must-have digital skill that empowers children to be empathetic towards one‟s own and others‟ needs and feelings online. Teachers and parents can introduce this skill to children by having them complete Zone 8 of DQWorld.net. Covering topics such as by-standers vs. up-standers, listening with empathy, empathy for cyber victims and more, these online lessons enable students to self-learn digital citizenship principles.

Postscript

Digital Sociology has taken birth after the discovery of Si material, which may be recognized as GPT. Ever since there has been a paradigm shift in the technology itself as well as its impact in the society. One visible impact is among the children of the world. Various issues encountered by them need to be properly understood and e-safety measures may be undertaken as remedial measures. Digital sociologists will have to evince their interest in this domain for a better society in the digital era.

End Notes

1. The claim that that nanotechnology is an emerging General Purpose Technology (GPT), however, is premature.
2. 2. Arguments based on patent and patent citation databases, such as Youtie et al. (2008), describe the interdisciplinary nature of nanotechnology and confirm the idea that it is being applied in several fields of technology, but they do not capture the dynamic productivity effects that appear after the GPT asserts itself during a technological revolution. This criticism applies equally to Moser and Nicholas (2004), who use a patent citation database to claim that electricity is not a GPT.

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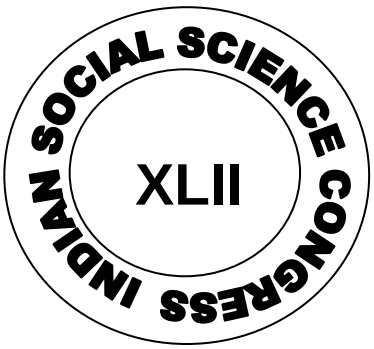

PART IV

THEMATIC PANELS' CHAIRPERSONS' ADDRESSES

ON

HUMAN FUTURE IN DIGITAL ERA

PART IV

THEMATIC PANELS' CHAIRPERSONS'ADDRESS

05. GLOBAL WARMING AND CLIMATE CHANGE

0405019 TRIPATHY, BAISHNAB C (School of Life Sciences, Jawaharlal Nehru University, New Delhi 110067). **CLIMATE RESILIENT INDIAN AGRICULTURE**

The concentration of carbondioxide in the post-industrial era has tremendously risen due to high anthropogenic activities and is expected to reach upto 585 μmol mol^{-1} within next 50 years. The impact of elevated [CO_2] (585 μmol mol^{-1}) on chlorophyll a fluorescence, photosynthetic electron transport reactions, CO_2 assimilation rate of Rice was grown inside free air carbon dioxide enrichment (FACE) ring installed on the campus of Jawaharlal Nehru University, New Delhi, India. Rice plants were grown in ambient (400 μmol mol^{-1}) or elevated [CO_2] (585μmol mol^{-1}), in open field conditions. Chl *a* fluorescence measurement revealed that ambient- and elevated-CO_2 -grown plants had almost similar Fo in plants. The Fm was slightly higher (4.7%) in elevated-CO_2-grown rice. The maximum primary photochemical efficiency of PSII, which was measured as Fv/Fm, was slightly higher (3%) in rice grown in elevated CO_2. The electron transport rate (ETR) (μmol electrons m^{-2} s^{-1}) of PS II increased in response to photosynthetic active radiation. The light response curves demonstrate that ETR was higher by 16% in rice grown in elevated [CO_2]. The ETR in ambient- and elevated- CO_2 grown plants saturated at almost similar light intensity. The NPQ was reduced in plants grown in elevated [CO_2] at all light intensities measured. The increase in the ETR and Fv/Fm of leaves suggests that the PS II was modulated by high CO_2.

The diurnal variations of rate of photosynthesis in rice grown in ambient and elevated CO_2 were recorded from 8 AM to 6 PM. Carbon assimilation rate attained maximum value between 10 AM and 3 PM. In rice, the rate of photosynthesis (μmole CO_2 assimilation m^{-2} of leaf area s^{-1}) in high-CO_2-grown plants increased by 29%. Stomatal conductance (g_s) (mmol H_2O m^{-2} s^{-1}) decreased by 20% in high-CO_2- grown rice plants than grown in ambient CO_2. The decreased stomatal conductance resulted in reduced transpiration rate (mmol H_2O m^{-2} s^{-1}) (5%) in high CO_2. The water use efficiency (WUE) (μmol CO_2 m^{-2} s^{-1} / m mol H_2O m^{-2} s^{-1}) increased due to increased photosynthesis and decreased transpiration rates in high CO_2 by 35%. To understand the impact of elevated CO_2 on carbon assimilation and light utilization, the light response of net CO_2 fixation was monitored in attached leaves of rice plants by IRGA. The net photosynthesis rate of high-CO_2-grown plants at saturating light intensity was higher than that of ambient-CO_2-grown cultivars. High-CO_2-grown rice had higher photosynthesis rate than that of ambient-CO_2-grown plants. Photosynthesis rate of rice saturated 95% at ~1000 μmol photons m^{-2} s^{-1}. Our results reveal that not only photosynthesis rate but photosynthesizing surface, i.e., leaf area per plant and leaf area index increased by 50% in high [CO_2] indicating a strong morphogenic effect of CO_2 on leaf initiation. The number of tillers per plant increased by 40% in elevated CO_2. The increased photosynthesis rate coupled with a higher leaf area per plant led to increased biomass under elevated [CO_2] by 40%. Therefore, in the absence of nutrient limitation, rice is highly responsive to elevated CO_2 whose yield potential shall increase in changing climatic conditions.

08. LABOUR IN ORGANIZED AND UNORGANIZED SECTORS

0408020 BEHERA, MINAKETAN (Centre for Informal Sector and Labour Studies, School of Social Sciences, Jawaharlal Nehru University, New Delhi-110067). **DISABILITY AND EMPLOYMENT IN INDIA: ISSUES AND CHALLENGES**

The World Health Organization defines disability to be an umbrella term, that covers impairments, activity limitations, and includes participatory restrictions. According to UN CRPD, disability results from physical or mental impairments, and also attitudinal and environmental barriers which hinder complete participation of people in the society on an equal basis. The United Nations Convention on Persons with Disabilities and its Optional Protocol was adopted on December 13, 2006. The Convention is in fact aimed at being a functional human right instrument with an explicitly intended social and developmental dimension. It also adopts a fairly broad categorisation of persons with disabilities and reinstates that people with all types of disabilities are entitled to all human rights and fundamental freedoms. The Convention even clarifies how all categories of rights actually apply to the disable people and identifies areas where some adaptations and adjustments have to be made to aid in the effective exercising of these rights. The whole logic behind this convention is to "promote, defend and reinforce" the human rights to which all the disabled people are equally entitled to. People with disability are those who have long-term physical, intellectual, sensory or mental impairments, which when combined with various barriers can hinder their effective participation.

As per Census 2011, in India, out of the 121 Cr population, about 2.68 Cr persons are 'disabled' which is 2.21% of the total population. Work or employment is one of the most important aspects of the lives of individuals, especially for the persons with disabilities. Not only does it provide fulfillment, but it also serves usually as the economic foundation for our existence. People with disabilities are socially excluded in India. Most service providers, governments, markets and places of employment are not equipped to enable the full participation of those who have a disability and, as a result, disabled people in India find themselves excluded from many aspects of day-to-day life including health services, economies and educational establishments. Despite The Persons with Disability Act (1995) mandating a 3% reservation in governmental jobs, various National Centre for Promotion of Employment for Disabled People (NCPEDP) incentives and awards, the reality of underemployment is grim. The International Labour Organization (ILO)'s 2011 report 'Persons with Disability and The India Labour Market: Challenges and Opportunities' states that 73.6% of the disabled in India are still outside the labour force. Of these, those with mental disability, disabled women and those in rural areas are the worst neglected. The aim of the paper was to understand the current scenario vis-à-vis 'Employment of Disabled People in India'. Besides this, I will try to emphasis on budget allocation, different schemes & their utilization and key concerns. It is based on secondary data which includes annual reports, document, report, paper prepared by Government, NGO and individual.

15. POLITICAL ECONOMY OF INDIA

0415021 DIWAKAR, D M (A. N. Sinha Institute of Social Studies, Patna, Bihar 800001). POLITICAL ECONOMY OF EXCLUSION AND RESISTANCE FOR INCLUSION IN DIGITAL ERA

Introduction

Process of digitisation is as old as existence of human being, but its forms and contents have been evolving with varying time and space. In order to connect and interact with nature, significance and wisdom of society about numerals expanded and grew in forms and contents to make lives easier and activities defined and classified with experience of social lives. Primitive social lives contributed wisdom of counting with fingers and limbs that still continue with common practices. However, since then enormous changes took place in this sphere. Process of digitization went on expanding from fingers counting to pieces of bones, symbols, Sindhu-Arabic numerals (i.e., natural, rational and irrational integers), etc. Digitization gradually emerged into a science of numeral system for social lives with various branches of knowledge, such as, Mathematics, Physics, Statistics, Computer Science, etc., and their interdisciplinary interactions, such as Biophysics, Biochemistry, Econometrics, Socio-metrics, Psychometrics, Bio-Technology, etc. Science of Computation added with techno numeral system through electronic gazettes, such as, calculator, computers with various generations, smart phone, etc., with various applications, such as auto teller machine (ATM), auto counting machine, online transactions and service, artificial intelligence, etc. Society in this process has been able to create huge information for informed planning and execution, and monitoring for better living conditions with basic amenities, (i.e., food, shelter, clothes, education and health) and their supply and demand. On the one hand digitization has reduced hardships and facilitated lives with informed decisions through a vast network with plurality, as technology seldom discriminates so long it is not dominated and controlled by interest groups or class. But fact remains that the technology has seldom been class neutral. Question of access to and equity remained a serious challenge before the science and technology. Computer as a science is less pervasive than a technology and applications. Many of us have computers grossly underutilised. We seldom compute except word processing except a few minority of those who have been trained with different machine languages. Others have been the consumers of hardware and software packages, a market for producers. Technology has hence, dominant centre/class has been reaping the benefits and periphery/deprived has been kept waiting and resulted into exclusion and victim of digital divide. This situation created contestant environment, where deprived resisted for inclusion through time and space. As it is rightly said: “The history of all hitherto existing society is the history of class struggles baring primitive society.” (Marx & Engels, 1872:40). This paper is an attempt to underline the conceptual framework, perspectives, status of exclusion in India, indicative resistances and intervention for inclusion in India followed by imperatives and option.

Conceptual Framework and Perspectives of Exclusion

The word exclusion is relatively new in academic debate. It is usually attributed to Rene Lenoir, then Secrétaire d’Etàt a l’Action Sociale in the Chirac government, who published *Les Exclus: Un Francais sur dix*, in 1974. It has been defined as "the process through which individuals or groups are wholly or partially excluded from the society in which they live". Social exclusion is not coterminous with poverty (e.g. it is possible to be ‘excluded’ without being poor), but many poor people are ‘excluded’; and fastening attention on exclusion allows a broader view of deprivation and disadvantage than is allowed by a consideration of ‘poverty’ narrowly conceived. With reference to other poverty debates, the concept of social exclusion has been linked to notions of ‘relative poverty’, Amartya Sen’s work on ‘entitlements’ and the ‘vulnerability’ approach forwarded by Robert Chambers (de Haan, 1998: 14-15). The term gained popularity in France during the 1980s (Silver 1994), the period of economic crisis and restructuring, the crisis of the welfare state, and various social and political crises. Silver traces the diverse lineage of the concept back to the founders of Western social theory, particularly Weber, Marx and Durkheim (e.g. Weber’s notion of ‘closure’ helps explain the different ways in which social groups monopolize both power and resources; see Jordan, 1996). As such, the concept offers researchers a means of reconnecting development studies with one of its original purposes: the project of understanding ‘development’ as a historical process’ by exploring

the character of the changing patterns of modernity and the forms of social change associated with it (Bernstein 2005).

The term exclusion was used to refer to various types of social disadvantages, related to the new social problems that arose: unemployment, ghettoisation and fundamental changes in family life (Cannan, 1997). In the French Republican tradition "exclus" signified the condition of being outside of the social contract and, as such, a threat to it. It is connected with the national and regional social reality for an economic and social cohesive structure. It is broadly being defined as exclusion from an active part of the economic, social and political life of the community. Philosophically, social exclusion draws from two traditions that are embedded in European history: social Catholicism and social democracy (Chamberlayne, 1997). The influence of social Catholicism (and Émile Durkheim) can be seen in social exclusion's concern about what we might call "the strength of small ties": bonds in the family and community and the importance of horizontal relationships and the most micro-level institutions (Daly 1999).

The history of social exclusion has more or less been understood and explained as the history of necessary efforts to give the best possible and available support and help to different groups in socially at risk situations. The social democratic credentials of the concept reside in its interest in problematizing social divisions, particularly, as these are affected by relations among social classes (although social exclusion represents a move away from class as a way of understanding social division (Chamberlayne, 1997: 2)). These do not exhaust the influences of the concept, however, and to focus on them would be to underestimate the extent to which the concept has had an intellectual ancestry and resonance over time in diverse national settings in Europe (Silver, 1994). The understanding of solidarity that informs this interpretation of social exclusion is of a contract based on reciprocal responsibilities, in contrast to the social democratic tradition whereby solidarity is directly linked to redistribution and social rights (ibid).

This concept was intended to provide a wider canvass than that of the notion of poverty, which focused excessively on the lack of access to material resources in a given time and space, rather than the dynamic social processes that perpetuated the lack of social participation and contribution to the workings of society (Finer & Smyth, 2004). Exclusion, material or otherwise occupies significant place in the debates of transformation and development of a society. Plenty of literature on exclusion directly or indirectly has been generated. Broadly exclusion indicates denial of access to opportunities, well-being, entitlement failure because of shortage of income and purchasing power (Sen, 1981), prudentially absence of valuable key items (Shaffer, 1998); lack of accessibilities and possession of material and otherwise needed resources; sub-human conditions and facilities required for survival, which are customary or at least widely encouraged and approved in the society to which they belong (Townsend, 1987:125-126). It is a value-based concept, which includes unmet entitlement and distributive injustice linked with growth process, as every growth process has a specific production, exchange and distribution process. Moreover, process of development decides patterns of growth, which in turn decides the process of distribution and investment.

It encompasses various dimensions, forms and degrees but material and human exclusions have *inter-alia* attracted many researches, such as poverty, unemployment, and various other forms of exploitation and bondage, health gaps, illiteracy, lack of access to basic amenities and infrastructure, - clean water, education, health, economic environment, etc., and other forms of material, social, cultural, and political exclusions. However, it is difficult to draw a distinct line for material and otherwise.

Archbishop Heldar Camera of North East Brazil says: "When I give bread to the poor, people call me a Saint. But when I ask why they have no bread, people call me communist." Views of the Commission of Inquiry into Poverty (1975, viii) needs attention: " If poverty is seen as a result of structural inequality within society, any serious attempt to eliminate poverty must seek to change those conditions which produce it." There are studies on psychological indicators of exclusion such as, powerlessness, voicelessness, dependency, shame and humiliation, etc. (World Bank Group, 2000). In view of vast area of literature, it is not possible even to enumerate most of the available information on exclusion. However, an effort is made to sketch out broader perspectives and framework, streams and indices, which have been developed in this area.

Analysis of various dimensions of exclusion has been captured through different perspectives and frameworks. These perspectives may be classified broadly in two categories — liberal and radical. Liberal framework of analysis of exclusion deals with both absolute and relative exclusion but assumes exclusion as non-class or what their proponents claim 'more than class'. In this framework of analysis class is not considered sufficient to capture all dimensions of exclusion (Payne, *et. al*., 1996). This can be traced even in classical writing. Aristotle talked about freedom of life. Adam Smith talked about "necessaries" for freedom to live non-impoverished or "ability to appear in public without shame" (Smith, 1776, vol.II, Book v ch.2). It depends on welfare state to take care of exclusion through effective implementation and liberal democratic institutions. In this framework one may consider to include *inter-alia*, the concept of entitlement and freedom of choice of Sen (1981), lack of opportunities to meet basic needs (Streeten, 1981; Stewart 1985; Dreze and Sen (1989, 1990), gender dimensions of exclusion (Shaffer, 1998), exclusion beyond class (Payne et.al, 1996), Wilson (1987), Murray (1990), Jenks and Peterson (1991), Westergard (1992), Gallie (1994), etc. These studies represent the stream of non-class interpretation but are concerned for inequality, discrimination and exclusion. However, there is another stream of liberal thought which argues the perspectives of propertied class, i.e., excluded themselves are responsible for their misery, for example in the analysis of Scott (1985) dominant class characterizes peasants as thieves, dishonest and criminal and exaggerated to the cause of exclusion from the propertied class perspective. However, Carter viewed that such exaggeration is a strategy of the dominated class to defend exclusion of rights and comforts to a community. There are studies of exclusion with perspectives of gender equity also. It was found that female-headed households have different relations with poverty than male-headed households (Shaffer, 1998).

However, in radical framework of analysis exclusion is considered as a product of social process linked with labour process of the mode of production. In this sense, if one attempts to trace its spirit and essence, this concept has been as old as human civilisation and realisation of which has created a basis of resistance and therefore, exclusion and resistance has a long history of creating basis for social transformation. It takes Marx as its pioneer for his analysis of class based exploitation. In Marxist sense of the term, exclusion is the product of exploitative relations of production, which drives out the labour away from the means of production and subsistence, through expropriation of surplus from labour (Marx & Engels, 1962:165). Material exclusion is the basis for all other forms of exclusion, which creates a bipolar society of exploiter and exploited, and oppressor and oppressed. Underlining the significance of the history of struggle Marx in its opening sentence of the *Manifesto of the Communist Party* analysing bourgeois and proletarian he further elaborated: "Freeman and slave, patrician and plebeian, lord and serf, guild master and journeyman, in a word oppressor and oppressed, stood constant opposition to one another carried on an uninterrupted, now hidden, now open fight, a fight that each time ended either in a revolutionary re-constitution of society at large, or in the common ruin of the contending classes." (Marx, 1872:41).

So long the process of alienation of producers from the means of production continues and they are kept away from the control of the means of production, exploitation will exist in such a society except in primitive and egalitarian. It suggests that exclusion is inevitable in an exploitative process of development and growth. Nature and forms of exploitation and expropriation of surplus vary with nature and form of production relations as every mode of production has its own system of distribution, which decides the forms of exclusion/inclusion of labour, from the means of production, which in turn decides the extent and level of misery, oppression, slavery, degradation and exploitation. Thus, process and scale of exclusion is dependent on a particular mode of production. This suggests that in order to comprehend the process of exclusion it appears necessary to look into the process of exploitation and exclusion through an analytical framework of production relations.

Unlike liberal framework of analysis, radical framework takes account of all dimensions of exclusions together instead of looking into material or otherwise exclusion in isolation. However, main criticism against radical framework of analysis is on account of lacking non-material articulation and absence of non-class analysis (Pyne *et.al*, 1996). In their interpretation exclusion can be dealt effectively through more than class and material, value based moral and prudential dimensions, i.e. demand for right, justice, failures, etc. Thus, "determination and assessment of well-being/ exclusion is a social process influenced by social expectations and conditioned by life experiences." Not strictly in terms of production relations, but taking exclusion close to class relations framework.

Townsend (1987) developed concept of relative deprivation emphasizing on aspects of distribution as we can see in Westergard (1995). Thus, liberal framework of analysis identifies forms of exclusions and moves through passionate strategies to overcome them. However, radical framework of analysis identifies historical genesis of exclusion and reflect upon scientific relations and remedies.

Forms of exclusions have been horizontal as well as vertical through social, economic, political, cultural, hegemonic, and market dominance. Elaborated accounts of Eric R Wolf (1982; *Europe and the People without History*, UCP) provide ample evidence of enslaving people through pawnship, judicial separation of person from protection of his lineage and warfare for captives in Africa even before the Europeans entered (p.207). Pawnship was used to settle debts, right over labour, reproductive activities, and progeny for the period of pawn. Expansion of slave trade and trade of Dutch, Portugese, and the English made the colony bad to worse. Reading of People's history of the world by Chris Harman (1999:250), suggest that worst forms of exclusions by European colonisers in terms of wage free indentured slave and servant for three to seven years contract were on massive scale for the commercial cultivation of tobacco and sugar in their colonies. Emergence of nation state, industrial revolution and competition towards hunting for colony, non-renewable resources and hinterland leading to World Wars, integrated the finance capital with new strategies. Resistances against exploitations were also getting consolidated against local powers and the imperial masters. International institutions and governance was put in place. Towards decisive fight against colonial rule forced them to wind up their rules. Local aspirations of developing nations towards liberation were realising for many of them. Andre Gunder Frank has rightly argued that capital had to find new strategies for exploitations and exclusions and the centre was designed to grow at the cost of periphery within national boundary.

Indian Contexts of Exclusion

Contextualizing this framework of analysis for India suggests that regional disparities were widened under the British colonial rule as investment was focused on developing infrastructure for creating markets for industrial production, to carry out raw material from India, and to maintain military control over colonial administration to continue exploitation of surpluses. Pioneering this exercise, Dada Bhai Naoroji provided a systematic analysis of draining out of resources from India and caused deprivation and poverty of masses, which formed strong basis for freedom struggle. Another study by Rajani Pam Datta inter alia provided sharper analysis of colonial exploitation. Even after independence, horizontal and vertical exclusion has been concerns of development experts and policy makers, which led to the introduction of the concept of micro planning in the development strategies. Although many initiatives have been introduced to reduce disparities and inequalities, they remained serious issues and concerns till date.

Recent studies suggested that inter state regional inequalities in India in terms of SDP and per capita income increased significantly between 1980s and 1990s (Bhattacharya and Sakthivel, 2004). There was little evidence to suggest that any convergence is taking place amongst the states in India in post reforms period. On the contrary, the evidence pointed at divergence rather than convergence (Noorbakhsh, 2003). Dreze and Sen (1995) found remarkable diversities in economic and social development amongst the Indian states. Datt and Ravallion (1998:34) referring to major states in India concluded that endowment of physical infrastructure and human resources appeared to have played a major role in explaining the trend in poverty reduction and in another study (Datt and Ravallion, 1993:91) they found that disparities in living standards among regions and between urban and rural sectors had long raised concern in India. Another cross-state study (Ravallion & Datt, 2002) of poverty in 15 major states in India they concluded that, a substantial difference of the elasticity of poverty index to non-farm output between the state with the lowest elasticity, Bihar, and the state of Kerala, was due to the difference in literacy rates between these states.

Process of economic exclusion in India was closely linked with social exclusion. Brahminical social order was a designed process of exclusion if one reads *Bodhayan Grihsutra*, G N Jha's treatment in *Purva Mimansha*, Maxmuler's *History of Ancient Sanskrit Literature* (1860), and *The Secred Book of the East*, Kane's *History of Religion*, and *The Founder of Maratha Swaraj* BRAmbedkar's *Untouchables* and *Downfall of Shudras (1998)*. These treatments suggest that the so called shudras and women were deliberately excluded and alienated from knowledge and property in pre history era. This design of exclusion was continued and further reinforced through

imposition of revenue farming over tributary mode of surplus appropriation as an institutional arrangement in Mughal India also, which was not only the root of inequality and poverty but also the seed of the growth of the Zamindar class (Tandon, et.al., 1936: 2, Habib, 1995:81). In fact, peasant uprisings occurred even during the late Mughal period (Habib, 1963: 340-2). Resistance witnessed in medieval period had broadly been an outcome rooted in increasing revenue demand (Habib, 1995:107). There were inherent regressive tendencies to aggravate inequality between the rich and poor in the countryside (Raychaudhuri and Habib, 1982, Vol.I, Ch.IX, see also Ch.VII). This mechanism of revenue collection was further reinforced by the company government, which entered into agreement with Zamindars (Tandon, et.al., 1936: 2-3). In this process small peasantries were subjected to exploitation, which led to ejection of large section of small peasantry, who lost their right of ownership on land and forced to be subordinated as tenants at will to Zamindars. Rampant exploitation of the peasants during colonial rule resulted into a series of peasant resistances, which led to consolidation of anti-imperialist national freedom struggle.

India gained political freedom and was still to ensure socio-cultural and economic freedom, which Indian Constitution guarantees through Fundamental Rights and different provisions for equality and Justice (Diwakar, 1998). Abolition of Zamindary System was one of major initiatives for agrarian institutional reforms, which was enacted with various provisions of land redistribution for poor to reduce inequality in assets. Partly it was implemented also but summarily it remained unfinished agenda and pushed to back seat. As a result landlessness restricted access to other entitlement and facilities for basic amenities. Technology for so-called development remained production centric and labour saving instead of employment centric. It has inherent capital and industry biases and the tasks of employment generation got day by day reduced to a far-fetched dream. Policies for agriculture, irrigation, inputs, markets, pricing, etc., remained partly addressed. Hence policy fatigues deprived the majority of small and marginal farmers and landless households remained deprived from employment and income that could keep them excluded from the opportunities for capacity building to enter into skilled labour markets (Diwakar, 2007; 2009; 2017).

Major Resistances against Exclusion

Major resistances against exclusionary practices has a long history consolidated around the globe. A few important resistances among many, *inter alia*, were Peasant War in Germany, Civil War in France and England, October resistance in Russia, Peasant resistance against Japanese preoccupations in China, Vietanami resistance against imperialism, etc., were a few among many others. Exploitative colonial rule in league of landlords in India witnessed several peasant resistances (Natrajan, 1999). A few among them are: Shamsher Gazi Resistance in Tripura (1767-68), Rangapur Resistance (1772), Vishnu Nagar Resistance (1778), Kolkata Peasant Resistance (1780), Jaisor Peasant Resistance (1783), Santhal Peasant Resistance (1811, 1820, 1831), Mopla Peasant Resistance (1836-1896), Indigo Peasant Resistance (1860) and Pobna and Bogra Peasant Resistance (1872) in Bengal, Ahmadnagar and Poona Maratha Peasant Resistance (1875-76), No Rent Campaign (1930), and Tebhaga Movement in 1946-47. Tebhaga Movement of sharecroppers in West Bengal against exploitation of tenants by zamindars was considered 'first attempted revolt by a politicised peasantry in Indian history' (Dhanagare, 1983: 155) which germinated the seeds of *bargadari* system of cultivation and subsequently culminated into operation barga (Dhanagare, 1983; Sen, 1979 a,b,c; Sarkar, 1979). Telangna Movement continued even after transfer of power (1946-51). Naxalbari Movement started in late 60s, West Bengal and later spread in Bihar, Jharkhand, Andhra Pradesh, Madhya Pradesh, Chhattisgarh, and Orissa (Luis, 2002; D'mello, 2018). Madur dalit women movement against liquor to land, anti-POSCO resistance, recently peasant resistance in Tonk (Haryana), Nandigram and Singur (West Bengal) against SEZ, farmers resistance at Nagpur, Mandsaur, where six farmers were killed in police firing, farmers Nagpur to Mumbai march, Tamil farmers protest in Delhi, united farmers mobilisation for Kisan Sansad for MSP, Farmers Pension, loan wave, etc., mobilisation of more than 200 associations of farmers for special session on farmers issue in Parliament (November, 29-30, 2018), etc. Cumulative effects of concerted and consolidated resistances of these kinds - organised or sporadic – not only repose confidence in people to resist further and compelled the ruling classes to amend their ways of exploitation and appropriation of surplus to contend the resentments even if they were not willing to do so but also resulted into changing relations of production. Recently published report of the Expert Group of the Planning Commission has acknowledged categorically the contribution of radical movement in

implementation of land reforms while dealing with land related factors responsible for social tensions and suggested *inter alia* regularisation of adverse possessions (GOI, 2008:45-46).

Peasant Resistance has been crucial in changing colonial rule in India, which was built up on series of social resistance to bring excluded into mainstream. Narayanguru, Mahatma Phule, Periar, Gadgeji Maharaj and Dr. BR Ambedkar were the icons of social movements against social exclusion. Later Kanshiram took the flag to organise Dalit and its leadership and Mayavati emerged as a strong leader of Dalit. They recognised historical exclusion of knowledge and therefore, they advocated education as beginning for liberation. Gandhian peaceful resistances beginning with the Champaran Satyagraha against colonial exploitation of peasantry provided a new horizon for freedom struggle. He argued for nonviolent noncooperation and harmonious prescription for solidarity away from class antagonism. However, perspectives and consciousness of radical group led by Bhagat Singh and his comrades were different, and therefore they pursued their contribution differently closer to Marxist analysis. Peasant movement was so strong that none of the political groups could ignore the agenda of the exclusions of peasants. All these inputs of resistance raised aspirations of the excluded common masses and the leaders of freedom struggle were forced to take up agenda of land to the tillers, right to work and decent living conditions, which came forward towards building a modern nation state. However, most of the agenda except abolition of zamindari remained almost unfinished even today. Policies and programmes for redressal of exclusion through target approaches suffered on delivery counts and urban biases for development were put forward which had inherent biases of regional disparities and exclusions. Rural living conditions in general and socially and economically excluded in particular remained neglected. Failures to deliver the Constitutional guarantees were acknowledged time and again by different hegemonic regime.

Macro Redressal Policies, Programmes and Outcome

Capitalist development with inherent contradiction has been perpetuating marginalisation. Many indices and measures were brought in for objective analysis, such as HDI, HPI, GEI, GDI, GHI, etc. India has been sliding down in terms of HDI, which implied that literacy, health and per capita income of the country lagged behind. GHI and SHI had alarming threats of exclusions. Recent trends in NSS data on consumption expenditure suggest rising deficiency in terms of calorie intake below 2400 kcal in rural India. Upward revision of poverty estimates is self speaking evidence of growing exclusions. Growing unemployment, depressed wage rate, gender differentials, children out of schools, etc., have been major challenges of exclusions. Government interventions and public provisions have left much to be desired. Exclusionary policies and programmes in the reforms period provided space to SEZ, WTO, labour reforms, etc. These failures gave impetus to resistance against exclusionary policies and outcomes beyond Constitutional framework. Increasing base of radical movement is a testimony of failure of inclusive policies. On this backdrop a different approach is needed to understand history of exclusion and resistance, away from mainstream dominant intellectual discourse.

In order to attain the set goals through the promises of Preamble and constitution of India, many policies and programmes were initiated under broad umbrella of Welfare, Development, Empowerment, Participatory and Inclusive framework respectively. Many policies and programmes were launched to bridge the gaps of inequalities. Important interventions among them were *inter alia* Abolition of Zamindary System, Five years Plans, Community Development Programmes, Green, White and Blue Revolutions, Target, nationalisation of Banks, Basic Needs, and Right Based Approach, etc., on the one hand which sound pro people and import based technological adaptation for transport, intermediaries, and services, market friendly liberal lisencing, and economic reforms, i.e., liberalisation, privatization and globalisation of market, demonetisation, goods and services tax (GST) to facilitate corporate houses on the other hand were production centric and capital friendly. Emphasis on inclusiveness is an acceptance of exclusion so far. However, despite having plethora of macro polices for inclusion, those turned merely remained lip services and left much to be desired mainly because of exclusionary in nature. These policies necessarily remained segmented and instrumental to create divergence instead of convergence.

Broad Indicators and Outcomes of Exclusions

India has travelled far since independence on different fronts of promises that have been made through Preamble of our Constitution. Still there is long way to go to achieve the set goals. Among many indicators *inter alia* landlessness, inequality, poverty, illiteracy, malnutrition, hunger, etc., can provide insights about the forms and extents of exclusions that are prevailing after experiments of seven decades of democratic development. There are many official reports, which may explain the forms and extents of inequality and exclusions that are yet to be addressed. Indian Agriculture Census and NSSO provides data on landlessness, which show that majority of farmers are marginal farmers and landless labourers. Inequality in land distribution has been reduced to some extent but still exists at unacceptable level as basic need of shelter is yet to be addressed and homelessness has been increasing. Rangrajan Committee Report on Poverty suggests that total 29.5 per cent of households are poor. About 30.9 per cent rural and 26.4 per cent of urban households are poor. Ratio of poverty in Madhya Pradesh was 44.3 per cent, Jharkhand 42.4 per cent and Bihar 41.3 per cent (Rangrajan, 2014). Despite the fact that per capita income, literacy and life expectancy has increased in India, the country has still been slipping down among the countries in terms of human development indicators. In terms of Global Hunger Index (GHI) South Asia and Africa have been still worst and among South Asian countries India stands third after Afganistan and Pakistan (GHI, 2017: 11). In terms of Multi Dimensional Poverty Index (MPI) which includes (i) health (nutrition and child mortality), (ii) Education (years of schooling and school attendance), and (iii) living standards (coocking fuel, sanitation, drinking water, electricity, housing and assets) the data show that 612 millions are MPI poor and 46 per cent are severely MPI poor in the world. Global child poverty is as high 49.9 per cent, i.e., 666 million children are MPI poor in the world. This figure is 64 per cent in Sub Saharan Africa and 39 per cent in South Asia. In India 60 per cent are MPI poor followed by Sub Saharan Africa by 56 per cent. Among states Bihar is the worst with 20.8 million MPI poor (UPHDI, 2018). Under nourished people in India is 14.5 per cent and wasting among the children under five has increased to 21 per cent. Stunting among children under five is as high as 38.4 per cent (GHI, 2017:34). Infant mortality rate (IMR) during 2015-6 was 41 per cent and in rural area it was still higher (46 per cent). Under five IMR in India was still higher, i.e., 50 per cent and for rural area 56 per cent (NFHS-4).

Digitisation for Inclusion and Exclusion

Fact remains that despite having Right to Information, Education, Work and Food, etc., inclusive capacity building remains serious challenge. Inclusion and access to facilities, effective delivery mechanism and transparency remain an uphill task. Steps for digitisation were initiated to ensure accessibility, transparency, availability, and accountability of transferring benefits to the people. Contrary to the assurance, demonetisation without comprehensive preparation aggravated the process of exclusion (Diwakar, 2017b). Digitisation was introduced to enhance transparency in subsidised Public Distribution System (PDS) with one of the focused targets and weed out fake beneficiaries. Global positioning system (GPS), Aadhar, Biometrics, direct bank transfer (DBT), etc., to beneficiary were implemented for many schemes. Similar is the case with voters identity card for exercise of adult frenchise. Jan Dhan Yojana was introduced for financial inclusion of the poor. Ujjwala was introduced for green kitchen. Sanitation programme was introduced for green environment. Digitzation has remained the basis for transferring subsidies. There are tall claims about these initiatives too. But counter claims are also validated by responses and modifications by the government herself. For example, Jan Dhan Yojana could open saving banks accounts on mass scale and subsidies through direct bank transfer (DBT) to beneficiary were implemented for many schemes. Now the government is in the process of rolling back DBT. Adhar was linked to many schemes including opening of a saving bank account, admission in the schools, despite repeated cautions by the Supreme Court and now withdrawal of Adhar is in offing. Demonetisation to cashless and less cash, online transactions, etc., might have been instrumental to increase the transaction through the point of sale (POS) machine. Online banking initially might have been thrushed upon common people even in absence of online digital literacy, as Paytm could be seen at remote places for the time being, but ultimately cash rules the informal sectors. The Reserve Bank of India has acknowledged that the volume of currency has increased still the liquidity crises in remote places are enormous which constrained revival of informal sector employment (Diwakar, 2017). Findings on implementation of food security scheme by Jean Dreze and Ritika Khera (Dreze, 2016; Dreze et. al., 2017) for Jharkhand and Nikhil Dey and Aruna Roy (2017) for 25 lakh family were unable to get through PDS, 10 lakh family did not get jobs in

MNREGA, 5 lakh social security in Rajasthan have been testimony of digital Divide, where poor households were deprived from their entitlement because of finger mismatch. Govt of India has been reducing proportionate budgetary share of expenditure on social sectors (Diwakar, 2018), which may have serious implications towards aggravating exclusionary process. Why does it happen? There could be many probable answers to this question. Whether our education or training for skills to manage is faulty? Whether our education itself is a problematic and remained responsible for exclusionary process of development and society.

Exclusionary Education

System of education is a reflection of vision of a society that is to be created through education. That is why education concerns every conscious mind, intellectual, policy maker and social activists and society across the world, as it is considered as one of the effective tools for resolving problems of unemployment, poverty eradication and an equalizer to create an egalitarian society. Many experiments have been carried out, which contributed significantly to the development of civilizations and humanity. India is not an exception. Modern education system in India marked many monumental achievements in terms of institutions, agencies and hard and soft infrastructures of education, training, research and development.

In 1901 only 5.36 per cent of 23.6 crore population was literate in India, where female literacy was merely 0.6 per cent. India has travelled far remarkably since then. It could achieve 74 per cent plus literacy rate and female literacy has also improved significantly from 0.6 per cent in 1901 to 65.46 percent in 2011. Besides Elementary and secondary schools destination with every village or nearby with exceptions, number of universities and colleges which were merely 25 and 700 respectively in 1947, has increased to 799 and 39071 respectively. Out of 799 universities, India has 101 Technical, 50 Medical, Agriculture 64, Law 20, Women 14 and Language 7 universities, besides stand alone institutions of national importance (GoI, 2016:5). These institutions have delivered remarkably towards development of society and nation.

Education has contributed substantially towards generation of knowledge, create better human conditions and amenities, skill formations, opportunities for better employment, etc., but fact remains that effective education to all has been a serious challenge before humanity to shape up modern education system in such a way that it ensures equality and resolves social, economic and political contradictions. Quality concerns of elementary education have been acknowledged through series of Annual Status of Education Reports (Pratham, 2016). The World Bank Report 2017 on education also expressed concerns on standard and quality of education in India. Concerns of discrimination and exclusion are still far more serious, instead of self-confidence, fear, distrust (Gandhi, 1917: Vol.14: 16, 94) and depression often resulting into alarming casualties of suicides (GoI, 2015:ch.2).

On the one hand, the country is burdened with a vast pool of unemployed army of deprived people in absence of opportunity to work, struggling for their survival with minimum basic needs and on the other hand a handful of elite educated people with non-comparable salary and wealth despite over seven decades of democratic development of our country. One of the reasons *inter alia* behind such failures is continuation of colonial system of elitist education. "The foundation that Macaulay laid of education has enslaved us… It is worth noting that, by receiving English education, we have enslaved the nation… It is we, the English knowing Indians, that have enslaved India (Gandhi, 1938:79-80)."[i] Although modern education has been addressing many complex problems of lives for a small section of the people but at the mass level it has been compounding unemployment, accentuating discriminations, poverty and misery as an inevitable outcome. India has been creating many excellent institutions for redressal of the chronic poverty, unemployment, intra-regional disparity. However, these efforts are yet to be sufficient to address. Governance with discriminatory access to education is another problem despite our adherence to growth with equality and justice. Education remained largely production centric and yet to become employment centric. Moreover, instead of eradicating gaps of mental and physical labour modern education widened hierarchical gaps further. Globalization of capital and technology have deprived and excluded them from the labour markets.

Moreover, at the lower level of technology the profession considered sub human and left to so called lower castes, but when the profession is upgraded through better technology, soon it becomes different cup of tea for skilled labour irrespective of the social hierarchy and people from traditional occupations are driven out. Exception

apart, there are numerous examples of these phenomena, such as wooden ploughing with oxen is a social taboo for upper castes but not tractor ploughing, it is rather prestigious, weaving is another example, we can hardly find weavers son as textile engineer or manager in textile industry, son of a mason seldom gets an opportunity for architectural or building civil engineering, working with leather of dead carcass is considered beneath the dignity of upper castes but profession of leather engineering and management hardly goes to caste based occupation. We can hardly find engineers and managers in Bata or Khadim from cobblers because of their traditional skills. Similarly manual scavenging and sweeping have always been left for particular sub groups of scheduled castes, but they can hardly find places ranging from engineering, managers of Sulabh International or Minister of Sanitary Department. Excluded group of tribes known as Nuts have been surviving on gymnastic demonstrations, but hardly gets chance to become modern athlete, a son of fisherman seldom get a chance in navy because of his skills on water lives. It is precisely because of complete disconnect of professional expertise of occupational skills in education.

Other side of stories is far more dangerous. *Bhill* tribes of Sarguja district of Madhya Pradesh may have skills of metallurgy and may understand how to melt iron ore at what level temperature just by feeling of heat physically directly, but they do not have literacy of thermometer or certificates, hence they can not get a professional job for survival. A metallurgy engineer trained with tools can be helpless without tools but still skilled and certificate holder, a person trained in swimming pool may not swim anti current into river to save a drowning person still have a certificate to participate in athletic competition, but a son of fisherman can save a drowning person from river but have no certificate, he or she can not participate in athletic competition or even for admission in that competition in absence of formal certificates. A midwife in the village having no formal certificate has been serving society on the basis of her traditional skills but can hardly get an opportunity of formal training on the basis of her traditional skills. ANM workers have replaced them from their jobs. Exception apart, those, who have certificates, hardly posses skills, and those who have skills hardly posses certificates.

Let us ask ourselves questions for mismatch of certificates and skills. What certificate did Kabeer have, who contributed for humanity? Had he been today with us, can present system of formal education appoint him a teacher? Not at all. Noble laureate Gurudev Ravindra Nath Tagore was not having any formal degree. So was with legend singer Lata Mangeshkar. Even Sachin Tendulkar could not pass matriculation. Larry & Paes were denied opportunity to work on web search engine. Can we calculate the skills of Dashrath Manjhi, the Mountan man? What certificate did he have? Numerous such examples can be put on record (Diwakar, 2017c).

Imperatives and Options

Going through the series of Subaltern Studies, one can grow with changing contours of understanding history. Deconstruction of historiography through the perspectives of the history of domination and exploitation rather than modes of production has been discussed in the series of subaltern studies. Recognising different sub-layers of production relations and functional change in orientation from religious to militant, crime to insurgency and many other changes in sign in system resulted into locating the change of agent in insurgency or subaltern (Gayatri111 Chakravorty Spivak, 1985, vol. iv). Problems of subaltern consciousness and reformulation of Western Marxist approach through Marx's notion of un-alienated practice or Gramsci's notion of ideologically coherent, or Althusser's new practice of philosophy to transform philosophy itself, in the debate of history and philosophy, i.e., the British style of history teaching to French style of philosophy teaching (E P Thompson) or Michael Foucault's refusal to represent, etc., towards historiography as strategies provided new dimensions to understand history with different perspectives. Dealing with rumours extensively subaltern studies provided richness and access to subaltern transmitter's domain for writing history. But considering women independently for gender discourse in history writing still needed to be focused. Guha (1989) dealt at length about the historiography through dominance without hegemony. He dispelled the myths of ideological neutrality and brought fact home that history of dominance overshadowed the history of subalterns and political economy never transcended beyond their respective mode of production. Fact remains that the bad faith of western dominance of capital could not influence many autonomous movements in society. However, dissecting historiography from dominance of capital is a real challenge in this era of globalisation.

In view of the above analysis one has to consolidate the realities with acknowledgement of historically systemic genesis of exclusion through surplus misappropriation by varying relations of production. Thus, from above analysis one may say that political economy of exclusion and resistance need a reoriented articulation in the history of exclusion and resistance irrespective of liberal and radical perspectives through subaltern perspectives of historiography to address the challenges of exclusion in history writing itself. Despite the fact that education and inclusive intervention have changed a lot much more are required to be done. Challenges have been growing to contextualise exclusion and resistance of Dalit, women and marginalised category with radical movement from subaltern perspectives.

Resistance played a significant role in liberating from the then exclusionary process and exploitation in a certain relations of production. Freedom struggle and democratic space after independence has provided considerable affirmative actions after intervention from the government. However, there is a long way to go and much is left to be desired, as the policy makers and programme executers remained indifferent to address the issues effectively because of inherent class biases. Moreover, during the neo-liberal regime process of exclusions has been aggressive through different forms in the name of normative development, such as transparency, and governance. State has taken a back seat and finance capital through market has taken over centre stage, which is necessarily exclusionary, be it displacement for land acquisition for corporate, automation in the name of efficiency to throw out labour from the employment, drive to privatisation of basic amenities (education and health) denying quality access to poor without purchasing power in absence of meaningful employment and closing the door for future capacity building to enter into labour market. These phenomena have aggravated horizontal and vertical socio-economic distress and exclusion despite lip services of pro poor affirmative agenda. Therefore, restructuring the process of distribution and capacity building of citizens is an imperative need of the hour. However, this may not be expected from the neo liberal regime. Therefore, only concerted and protracted mobilisation for decisive resistance may change this course of exclusion towards inclusive social order.

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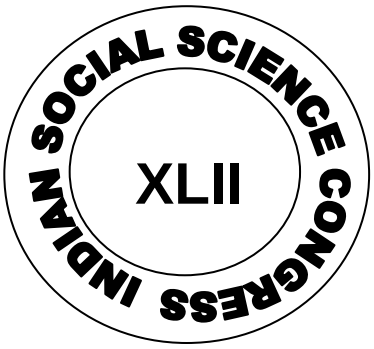


PART V

RESEARCH COMMITTEE'S PAPERS

ON

HUMAN FUTURE IN DIGITAL ERA

V. ABSTRACTS OF PAPERS OF RESEARCH COMMITTEES

01. AGRICULTURAL SCIENCE

0501022 BODA, MANOHAR (Development and Labour Studies, Jawaharlal Nehru University, New Delhi). CAPITAL ACCUMULATION, CLASS RELATIONS AND THE QUESTION OF AGRARIAN DISTRESS IN INDIA

The agricultural sector is one of the crucial aspects of Indian society and economy. Agriculture in India is a major economic enterprise where more than half of the population is dependent upon. However, the share of agriculture to GDP has tended to come down yet close to 60 per cent of the workforce where half of whom are wage labourers continue to depend on agriculture. The nature of agrarian structure and relations however are not homogenous across the country, it is differentiated by its 'regional variations,(Joshi 1975: 200) however there are certain common essence to these differential structures, such as the land acquisitions, grabbing by the state machinery and the policy of green revolution. The Green Revolution in India undoubtedly has revolutionized the irrigation system by reforming the traditional cultivation methods with technology and high yielding varieties. But it also has some drawbacks and is evident from the experiences of UP, Haryana and Telangana. The period, post-green revolution actually raised the input cost of agricultural products for cultivation that increased the difficulty in the livelihood sustainability of small and marginal farmers. With the high input cost on cultivation, a large proportion of land came under the control of capitalist farmers, who acquired the lands below the market rates from small and marginal farmers. Due to high input cost, the small and marginal farmers had to sell off a considerable amount of land mass. There is a structural change due to green revolution in the economic and social relations of production in the mentioned regions and beyond. The new structures led to a different forms of accumulation. This paper attempts to understand the complexities of class structure in India in the context of India's agrarian structure and production relations. This will be analyzed in the specific context of the advent of Green Revolution and Neoliberal policy and its impact on agriculture sector.

The Neoliberal policy of India adopted in the last decade of twentieth century seems to have worsened the situations through compression of small and marginal farmer's income. Further, it has changed the structural composition of agrarian markets in the country. Small peasants were squeezed having to increasingly find off- farm incomes, largely through precarious wage labour activities, so as to make a living leading towards creation of an abundant reserve army of labour. It is increasing the possibility of counter- movement to neoliberalism in the country. The various land reforms in India failed in redistributing the land resources to the tenets, small and marginal farmers. The trajectories of development are often ridden with the narratives of alienation, disempowerment and poverty to the small peasants. Therefore, the Agricultural Markets in India has grown in size and complexity over the years, not only in terms of volumes and commodities traded but also in terms of regulatory reforms and proliferation of new marketing channels and arrangements, with the new and evolving roles played by both state and private players. A new generation of theoretically grounded empirical research is urgently needed to make sense of these rapidly changing agricultural markets and their linkages. This paper is theoretically limited as it enhances more upon the conditions of labour than the agrarian markets.

0501023 CHAUDHARY, JYOTI, VINODHINI C, GAUTAM, YASH, AND SINGH, H P (Department of Agricultural Economics, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi 221005) ROLE OF TECHNOLOGY IN AGRICULTURE MARKETING IN THE ERA OF ENAM

In a dynamic and growing economy like India, the agricultural marketing plays a pivotal role as it acts as a linkage between the farm sector and non-farm sector. Since independence, India has become self-sufficient in the agricultural commodities as the foodgrains production has increased tremendously from 50 million tonnes during 1950-51 to 273.4 million tonnes in 2016-17. But, there is no substantial growth in terms of farmer's income as they

are not able to find the right market to sell their produce at right time. The present study conducted to access the role of technology in agricultural marketing in the era of eNAM and is based on the secondary data. The Electronic National Agricultural Marketing (eNAM) launched during April 2016, is an online market which connects farmers directly to buyers without the involvement of middlemen. Initially, it was launched in 21 mandis of 8 states for the trading of 24 commodities, at present it has covered all the 585 mandis in 16 states and 2 union territories and common tradable parameters have been developed for 90 commodities. The total quantity traded through eNAM platform till now is 1,86,15,139 MT. More than one crore farmers and one lakh traders have registered on eNAM portal so far but the number need to be increased as higher number of traders would help in the creating a competitive environment which further will secure higher income for farmers. It also helped in the reduction of the transportation and licensing cost and further helped the farmers to get remunerative prices for their produce. But there are some drawbacks in the functioning of the which need to be taken care of. The lack of training to the farmers as they do not have the proper knowledge and access to the modern technology. Poor internet connectivity in the mandis is also a major problem as internet speed is necessary to operate eNAM app. Though middlemen are eliminated completely on the e-NAM platform but they are still active in offline trading that is undertaken in the mandis. Most of the mandis are still ill-equipped and there is no proper procedure for the grading and quality checks for the commodities hence buyers are not getting assured information regarding the quality of commodities. Thus, the government need to take desired actions to provide the required facilities in the mandis which will help in the smooth functioning of eNAM.

Keywords: eNAM, technology, agricultural marketing, middlemen.

0501024 DHAWASKAR, AKSHAY AND NEUGI, SHUBHAM N (H.No.- 181 Indiranagar, Kopardem-Sattari, Goa). DIGITISATION AND FARMERS' WELFARE IN GOA

Farmers' welfare is a multi-dimensional issue as the lives of farmers are affected by decisions taken by a long list of ministries that affect agricultural production and farmers' welfare directly and indirectly. These ministries more often operate in isolation. The sufferings of farmers is not only due to the vagaries of the monsoon, but also due to the low prices of their produce.

Digital technology can be used to improve the welfare of farmers by making agriculture a profitable and attractive occupation. Creating digital infrastructure, enabling digital delivery of services in rural areas and promoting digital literacy among farmers is expected to help empowering rural communities, especially famers. Digital technology would facilitate tailor based recommendations to farmers on crop, planting date, variety sown, real time localised observed weather and projected market prices. The Direct Benefit Transfers system and the unique identification number, Aadhaar, would facilitate transfer of government subsidies to farmers. Mobile money can provide opportunities for safer and low cost money transfers, savings and access credit for the farmers.

Goa, unlike other parts of India, has a small size of population dependent on agriculture. As per the census data, only around 6 percent of the total workers are cultivators. The Goan farmers face severe shortage of labour. The high labour cost, small size land holdings, uncertainty regarding production and prices, drives the Gaons away from farming. However, it is highly essential to improve agriculture for food safety, increasing employment and income, better utilisation of land and sustainable development. Therefore, improving the farmers' welfare is urgent. Unless, farming is made attractive, the sustainability of farm sector would be difficult. The Government has introduced various schemes for farmers like, *Paramparagat Krishi Vikas Yojana, Deen Dayal Antyodaya Mission, Soil Health Card Scheme, National Gokul Mission, Atal Pension Yojana and Pradhan Mantri Fasal Bima Yojana*. In this background the present paper attempts to explore the use of digitalisation in the implementation of various farmers' welfare schemes, the opportunities and challenges of digitalisation in enhancing welfare of farmers in Goa. The study makes use of secondary sources of information. It also makes use of information collected directly from sample village panchayats and farmers. Simple statistical techniques are used to analyse the collected data.

Key words: Digitisation; Farmers' welfare; Opportunities; Challenges; Goa

0501025 GAONKAR, SIDDHESH R AND GAWAS, NEHA N (.No.: 265/3, Soliye- Honda, Sattari –Goa). DIGITISATION OF AGRICULTUREL IN GOA: OPPORTUNITIES AND CHALLENGES

The agriculture sector is forced to produce more with less due to the growing population and limited land resources. Under the digital world, Smart Farming could be used as the key to increase agriculture productivity. Digitisation of agriculture or e-agriculture can help to increase agricultural and rural development through improved information and communication processes. Digitization in Agriculture refers to ICT and data ecosystems to support the development and delivery of timely, targeted information and services to make farming profitable and sustainable. ICT-based initiatives can help farmers access to information about agricultural value chains, risk management, market and price information, advisory services, policies and provide data for agricultural research.

Goa, the smallest state of India is located between the Arabian Sea and the Western Ghats, To meet the increasing demand for agricultural products, Goa has to depend on neighbouring states of Karnataka and Maharashtra due to lack of enough cultivable land to feed its own population. Under this situation, digitization of agricultural sector becomes more vital. Rice and fish being the staple food of the Goans, paddy is the principal crop in Goa. The other important crops are ragi, maize, jowar, bajra and pulses. Cash crops like coconut, cashew-nut, arecanut, mango, jackfruit, banana, pineapple are also grown in abundance.

For digitisation of agriculture it is essential to create digital Infrastructure, provide various digital services, and promote digital literacy in rural areas. This would facilitate farmers to increase production, improve storage and connectivity with the consumers for better supply and profit. This paper attempts to analyse the initiatives taken by Government for providing digital infrastructure and examines the opportunities and challenges in the use of ICT enabled services for improving agriculture productivity in Goa. The study uses secondary sources of data and information collected directly from the selected village panchayats.

Key words: Digitisation; Agricultural productivity; Opportunities; Challenges; Goa

0501026 GHIMIRE, SARTHAK, KAMALVANSHI V, BASYAL SUDARSHAN AND KUSHWAHA SAKET (Institute of Agricultural Sciences, Banaras Hindu University, Varanasi). INETERNATIONAL LABOUR MIGRATION AND ITS IMPACT ON RURAL AGRICULTURE: A VILLAGE LEVEL STUDY IN WESTERN NEPAL

Agriculture is the primary source of livelihood in rural Nepal. But, the trend of increasing international labour migration from rural Nepal in the present time with the opening of new labour destinations, has emerged as the important source of livelihood. Majority of migrants are unskilled labour and belongs to the weak socioeconomic background, about two-thirds of them had been involved in agriculture prior to migration. Value of remittance flow into Nepal is about one-third of total GDP. Despite the larger amount of remittance flow into the rural part of the country, there is still debate whether remittance is ban or boon to the Nepalese agriculture. Some argue that remittance increases the production capacity of farming household resulting in higher return from agriculture. Other, argue that outmigration has resulted in decreased the labour availability, and on the other hand good income from abroad has demotivated farming household to engage in agriculture; both resulting negative impact on agriculture. Using the primary data collected from both migrant and non-migrant households, this paper tries to present the impact of international labour migration on rural agriculture of western Nepal.

Keywords: International labour outmigration, Rural Agriculture, Nepal, Socioeconomic impact

0501027 MANGA, B V L A (Department of Political Science, Maharajah's (Autonomous) College, Vizianagaram – 535002). DIGITAL INNOVATIVE TECHNOLOGIES FOR AGRICULTURE – AN OVERVIEW

Agriculture is very important for Indian economy and society. It is the means of livelihood for half of the population, if we also count in the ancillary activities. The country is embarking on a new phase with agriculture becoming a pivot for the all round development of Rural India. As the country moved on an economic growth path

in the post independent era and the rural economy diversified, the dominance of agricultural sector in the overall economy has slowly declined over the years. The agricultural experts neglected and ignored the farmer's closer association with soil, water, cattle, seed, season cycle and the surroundings of society and geography. The agricultural experts developed new farming methods with the help of technology resulting in loss of social fertility that led to farmer's suicides, which the country has witnessed. The very reason for this is that the focus of our economic policies so far has been on increasing farm production rather than the farmer himself. This paper throws a light on the factors that led to Green Revolution India. Further, it makes an attempt to examine how science based technologies enabled agriculture sustainability through reduced resources use.

While observing the benefits gained by the farmer, the setbacks like lack of access to many of the tools needed to be successful such as modern irrigation practices, crop management products, fertilizers, post harvest solutions, improved seeds, mobile technology, as well access to information and extension services were also highlighted.

Now the government is focusing on providing solutions through technology which rural people can afford on sustainable basis. To face the challenge of establishing synergy among new initiatives, Rural Technology Action Groups (RTGAs) have been conceptualized. RTGAs activity is helping towards dissemination of refined technologies and address the need based up-gradation of technologies with the help of Indian Institute of Technology has come a long way and designed several useful interventions addressing the problems in rural areas. While designing the technological interventions, care has to be taken to ensure that locally available materials are utilized and local people are engaged in the best possible manner. Hence, the need of the hour is to empower farmers. Through digital technology it reduces drudgery and health problems of the farmers and enhances agricultural productivity along with efficiency. We need to support that full array of innovative solutions that are available to farmers, including agricultural biotechnology, to meet global food demand.

0501028 SHAH, MUHAMMAD MAROOF, (.....) REVISITING THE DEBATE ON ENVIRONMENTAL COSTS OF LIVESTOCK SECTOR

According to the United Nations report called Livestock's Long Shadow animal agriculture is "a significant contributor to every major environmental problem -from the smallest and most local to the largest and most global" – estimated to be responsible for "about 18 percent of global climate change, which is roughly 40 percent more than all of the airplanes, cars, trucks, and other forms of transport combined." The livestock sector is argued to be probably the largest sectoral source of "water pollution, contributing to eutrophication, "dead" zones in coastal areas, degradation of coral reefs, human health problems, emergence of antibiotic resistance and many others" besides affecting "the replenishment of freshwater by compacting soil, reducing infiltration, degrading the banks of watercourses, drying up floodplains and lowering water tables." If factory farming continues, it is apprehended that in just a few short years "our water supplies will be depleted, all of the rivers and streams will be completely polluted as our air quality destroyed. We are essentially turning the globe into a giant cesspool directly linked to factory farming." Since it requires 9, 15 and 23 calories in the form of plant sources feeding to the chicken, pig and beef to get one calorie back out meaning eating chicken requires throwing away 800, 1400 and 2200 percent of the food that's produced" it is unimaginably wasteful and environmentally stressful. Given increased stress on environment from many other sources, it is thus extremely unreasonable from a purely environmental point of view to continue current practice of animal agriculture at the current face. Read in conjunction with arguments from ethics, health, economy and others, it may be asserted that a major shift in animal agriculture is called for with focus on raising animal protein in lab and other measures presumably less wasteful or stressful for environment.

Key words Livestock, environment, pollution, animal potein

0501029 VINODHINI, C; CHAUDHARY, JYOTI; SINGH, RAKESH AND SRIVASTAVA, AJAY KUMAR (Department of Agricultural Economics, Institute of Agricultural Sciences, Banaras Hindu University, Varanasi 221005). IMPACT OF TECHNOLOGY ON THE JOBLESS GROWTH OF INDIA

This paper discusses one of the most important issues India going through, that is, jobless growth. The study is based on secondary data from various sources of the government. In case a country's employment rate is not growing as fast as its GDP growth, then we call this phenomenon as jobless growth. Moreover, it is the paradox of growth which does not provide enough employment. This happens when a large number of people lose their job, the recovery will be insufficient to absorb all the unemployed, underemployed and new employees entering in the labour force. A recent survey by the Centre for Monitoring Indian Economy (CMIE), India's leading business information company, in partnership with the Bombay Stock Exchange (BSE), has said that the unemployment rate in the country's urban areas in the fourth quarters of 2017-18 has risen steadily from 4.7 per cent in the first quarter to 5 per cent in the second quarter, then 5.7 per cent in the third quarter and finally 6.6 per cent in the last quarter. Though there are various reasons for the jobless growth, the agriculture labour and rural landless who want to move from primary sector to secondary sector do not have required skills which can help them to find a job. Service sector being the largest contributor to the GDP it producing the least jobs. Though the Small and medium enterprises (SME) has the potential to create more jobs but it is unable to do so because of the poor infrastructure, lack of skilled labour and difficulty to access to loans. A World Bank research has shown that automation threatens 69% of jobs in India. The era of economic reforms and liberalization brought not only the higher levels of investments but also the latest technology which was more akin to automation. The tax incentives, subsidies, depreciation allowance all are solely linked to the amount invested and not to the number of jobs created. Many harmful effects are obvious due to unemployment. Due to the lack of job and income, domestic consumption expenditure declines and it would have a negative impact on investment. The people who are unable to find a job in the formal sector joins the informal sector, thus increasing high rate of informality is an obstacle on the country's economic development. Solution to jobless growth lies in policy initiatives that will promote manufacturing and services sector. Policies like Make in India, Made in India, Skill India are solely initiated with an eye to create huge employment opportunities in the country. On the whole, Indian government has sown the seeds of change but still more areas to be focused like Agriculture, Infrastructure, Export Oriented Industries that are manpower intensive, Reforms in Education Sector, Public Investment in Health, Police and Judiciary. The experiences of developed countries have demonstrated that the growth of smaller businesses can drive employment generation.

Key words: Indian economy, jobless growth, automation, employment.

02. ANTHROPOLOGY

0502030 ARCHANA, R (Department of Anthropology, University of Hyderabad, Gachibowli, Hyderabad, Telangana-500046). THE POST-AGRICULTURIST SUICIDES IN MADDUR TALUK OF MANDYA DISTRICT IN KARNATAKA

The Phenomenon of agricultural suicide is predominantly discussed by economists from distinct areas of India. However, they have been given a passing mention on social issues of agricultural suicide. So, it becomes the concern of sociologists and social anthropologists to analyse the social causes of agricultural suicide. Here, the researcher would like to use the term agriculturists instead of peasants or farmers due to their incompatibility nature. Studies on farmers' suicides have consistently given an impression that the causes of farmers' suicides are due to indebtedness, crop failure, and volatility of market price. On the other hand, the social causes of agricultural suicides are mentioned feebly. As a result, this study tries to understand the socio-economic problems faced by agriculturist widows, mothers, and children. Their situation after the death of a family head and various cope-up strategies these deceased families adapt to overcome this unprecedented situation. This paper mainly deals with the issue of social causes of agriculturists' suicides, its impact on deceased families. And how do they cope-up from this situation will be described in this paper? Further, this study analyses how the Durkheinian model of suicide helps to explain agricultural suicide in the context of Maddur taluk of Mandya district.

The fieldwork for this study was conducted in Maddur taluk of Mandya district in Karnataka state. This study collected detailed life histories of thirty-three cases of farmers' suicides in Maddur taluk in 2015. Particularly Maddur Taluk was selected for the reason that it accounted highest agriculturist suicides at Taluk level in spite of possessing a fine canal irrigation from Krishna Raja Sagara Dam. This paper is a part of the researcher's MPhil thesis.

The findings of this study show that of agricultural suicides are essentially small and marginal (holding 0-2 acres of land) agriculturists. They largely belong to the dominant caste of Karnataka state i.e. *Vokkaliga* caste and their caste occupation is farming. Structural inequalities confronted by the deceased women after losing their husband/father/son are accounted predominantly. Survival of these women after the death of the male breadwinner of the family, without the support of any affinal and consanguine relatives, is arduous. Increase in the compensation amount of farmer's suicide from 2lakhs to 5lakhs by the Karnataka government in the year 2015 has actually increased fraudulent and altruistic kind of agriculturist suicides in Mandya district. The politics are being played by the family members and their neighbours on dead people with the desire to obtain compensation amount. This also resulted in the manipulation of natural deaths, homicides, and accidents as farmer's suicides which were very tricky.

0502031 KUMAR, RAJEEV KAMAL (Division of Sociology & Social Anthropology, A.N. Sinha Institute of Social Studies, North Gandhi Maidan, Patna, Bihar). IMPACT OF EXTERNAL EXPOSURE ON TRIBAL COMMUNITIES OF WEST CHAMPARAN (BIHAR)

India has considerable population of Scheduled Tribes. As per the 2011 Census, 8.6 percent of total population of the country belongs to ST. After the bifurcation of Bihar state and formation of Jharkhand, Bihar is left with very less tribal population, but it still has almost 1.28 percent ST populations. Present study has been conducted among two tribal communities, namely, Tharu and Oraon of Bihar. The study area is two villages, namely, Manguraha and Rupauliya in Manguraha block of West Champaran district. Manguraha is predominantly a Tharu village while Oraons are mainly concentrated in Rupauliya village. Among the two communities, Tharus are more dominant as they are the original settlers of the land and also economically well off.

The main purpose of this paper is to understand the changes brought to due to the constant exposure to the outside world, what are the main factors of change such as exposure due to the migration for earning livelihood, modern means of communication, development intervention by the Government, etc. The study is based on primary data which is collected with the help of structured interview schedule, observation and focused group discussions. The study area and respondents are selected through purposive random sampling method. Secondary sources such as the census report, Annual report of MTA, and research papers in different journals, books and articles were

also used to supplement the field findings. A total of 140 families (Tharu-74 and Oraon-66) were covered in the study.

The findings reveal that both these tribal communities are still economically backward and living in abject poverty; however, the socio-economic condition of Tharus is better than Oraon. The status of formal education of both these communities is poor as nearly half of them (45.4 percent) are illiterate. These tribal villages have been witnessing stressed migration as more than half (54.29 percent) of the respondents migrate seasonally in search of work. Percentage migration is more in case of Oraon (69.70 percent) as compared to Tharu (40.54 percent). Monthly income of these respondents is also very low, as more than 90 percent manage their family in less than Rs. 10,000/ per month. It has been found that these tribal societies have also witnessed changes, albeit the rate of change is a bit slow. The main factors of change identified are exposure to the outside world, new age information and communication technology, migration to the cities, development interventions, etc. However, these changes have not much affected their quality of life. They are still lagging far behind on most of the parameters of development.

03. ARCHAEOLOGY, HISTORY AND CULTURE

0503032 ASWATHY, A S (Department of History and Archeology, Central University of Haryana) CONSERVATION AND PRESERVATION OF ENVIRONMENT FROM PREHISTORIC TO VEDIC PERIOD

Environment exploitation is the most deliberate issue these days. India is one of the most affected countries which faces lot of problem related to environment degradation. Many NGO's Governmental, Non-governmental and other associations were actively participating for curing this issues but its result is comparatively lesser. Because of environmental exploitation lots of natural disasters happened and these resulted in loss of life and ecological features. The best example for this was what Kerala faced recently. India is a country with geographical diversity so it is very difficult to handle natural calamities.

The exploitation of nature is not a new phenomenon; it started from Prehistoric period itself. When man started settled life he exploited nature for livelihood but now reached its zenith. But in ancient time's man's fear for natural calamities leads to the worship of natural forces like water, wind, sun, fire etc. and also they made many rules and punishment for protecting environment. This study is mainly focused to find out, from where the concept of environmental exploitation started and how the ancient Indian society tackled these issues.
Objectives of the study

- To find out various traces of environmental exploitation present in prehistoric to Vedic period.
- To co-relate ancient environmental calamities to the modern ones.
- Differentiate the depth of natural calamities from ancient to modern India.
- Give awareness and knowledge to approaching generation about how ancient man protected and tackled various issues related to environment.

0503033 CHATTARAJ, MOHOR (Faculty of History, Civil Cervices Academy, Kolkata) CHANGING STATUS OF WOMEN IN EARLY INDIAN SOCIETY

In Indian society we consider our ancestors as 'Purbapurusha' that is forefather not foreparents. We never admit to our foremothers as being our ancestors. The present paper is an attempt to give a shape in changing status of women to every aspect of life in ancient India special emphasis on the Vedic age, the Later Vedic age & the Epic age. In the early Vedic period women enjoyed freedom of education, and the liberty to choose their grooms. Since later Vedic age the position and status of women gradually degraded. Society became more patriarchal. Discriminations between men and women revealed in ancient texts.

The focus of the present paper is the changing status of women in ancient India in every stage like a girl child, wife, mother, widow, and grass widow. They did not have any scope to deploy themselves in economic production activities like agriculture or industry.

The basic objective of the paper is to create awareness among the present generation regarding the freedom of the women which is achieved after a long struggle.

The objectives of the paper :

- **Birth and childhood of a girls**: Since Vedic age the Birth of a girl was not desired and welcomed. We rarely find any description of childhood activities of girls in ancient times.

- **Education and Occupation** : Evidence shows that in early Vedic period women enjoyed the freedom of education. But in the later Vedic age women lost the right to acquire knowledge in Vedic studies. However in epics we see the women of crown families were allowed to get educated in Vedic studies. Limited

occupational opportunity for women in Vedic age has been noticed. In later Vedic age they lost the right completely. In the Epic period the scenario was almost the same.

- **Status of women after marriage** :
  I. Social status of married women
  II. marriage rituals
  III. concept of divorce

- **Motherhood and infertility**: Social status of a woman with child (especially son) and position of infertile women in ancient India.

- **Widow and grass widow** :
  I. Position of widows in early Vedic age.
  II. Social degradation of widows in later Vedic age.
  III. Widows regained their position to some extent in epics.
  IV. Deplorable consequences of grass widows.

- **Right to property** :
  I. Property rights of unmarried women
  II. Married women
  III. Widow
  IV. Grass widow.

- **Women and Tolerance:** Since ancient times society demands more and more tolerance from women.

- **Conclusion :** In spite of living in 21st century the birth of a girl child is considered a taboo. They are still lacking equal opportunities of education, employment and choosing their partners. The need of the hour is to generate the social awareness.

Keywords: Ancestors, freedom, degraded, discrimination, social status, rights.

0503034 CHITRAN, C AND SHANOJ U (Post Graduate Govt Victoria College, Palakkad, Kerala). THE PLACE NAMES HISTORY MIGRATED SOCIAL GROUPS IN PALAKKAD DURING THE MEDIEVAL PERIOD.

In India there are different types of cultures and peoples lived in different towns,cities,rural and remote areas.These towns and cities are called differently with the speciality of that areas.These place names mainly originated from Colonial era,Islamic rulers age and ancient India.The study of place names,their origins,meanings is called toponomy.the etymological division being between the names of natural features and the names human settlement.The settlement of human dependence mainly on food,shelter,occupation etc.Later this people divided on the basis of occupation,culture,belief etc.This social groups called on their features in that specific area.In modern times people travelled and migrated in different town and areas for their opportunities.But the place names still continue.

0503035 DALAVI, HEMANT (Mythic Society, Bengaluru). ADAPTATION OF NEW DIGITAL TOOLS FOR EFFECTIVE ARCHAEOLOGICAL DOCUMENTATION

Around 1960's a significant shift occurred in archaeology, Science found its way into the subject and produced worthwhile results in an Archaeological framework. Since then variety of scientific inventions and technologies are applied as tools for archaeological research, explorations, dating methods and conservation of artefacts and monuments. In recent years scientific innovations are effectively adopted into the field of archaeological documentation. Advanced digital devices and applications like Photogrammetry, GIS, 3D-Scanners,

GPS are successfully implemented in this regard and they have been proven to be powerful tools for an accurate mapping and recording of the archaeological sites.

This paper is an attempt to present a new composite device (Distometer, Lino Lesser, Digital Angle Finder and Inclinometer and related software's applications) and its application in fast and accurate documentation of archaeological remains. Through this devise 2D and 3D modelling and mapping of different archaeological features like Rock Shelters, Rock cut Caves, Temples, Excavated sites and other archaeological remains can be efficiently achieved with a minimal knowledge about Modelling, Digital Photogrammetry, GIS and CAD systems. The added advantage of this device is that the accuracy of the results can be verified on site itself.

Keywords: Digital devices, Mapping and Recording, 2D & 3D modelling, Photogrammetry.

0503036 JADHAV, SUMEET AND SINGH, SAURABH, (.....)USE OF DIGITAL TECHNOLOGIES IN ARCHAEOLOGY

This paper mainly focuses on the use of digital technologies in the field of Archaeology for the sole purpose of documentation, preservation and further research. Any research carried out on field or in labs needs detailed documentation, which leads to further research.

As a known fact, Archaeological excavation is destruction of human past, extensive excavations are carried out throughout the country each year by various institutions and organisation. With the use of digital technology such as 3D mapping, photogrammetry, Ortho -mosaic, contour mapping and 3D photography, the sites can be digitally preserved with much more information than the conventional ways of documentation. This hence can make research more precise and understanding better.

In a similar way photogrammetry of various historical sites, such as temples, tombs, caves etc, can digitally preserve the site and help research scholars globally to carry out research without always wanting to visit the site.

Archaeological artefacts are fragile in nature, keeping this in mind we need to digitally preserve them by using these methods, making it more accessible and informative without harming the object.

0503037 KUMAR, KARN (प्रा भा इ संस्कृति पुरातत्व विभाग काशी, हिन्दू विश्वविद्यालय, वाराणसी-221005) जलवायु परिवर्तनः एक विश्लेषणात्मक अध्ययन

मानव सभ्यताएं और संस्कृतियां प्रकृति के सान्निध्य में ही पुष्पित, पलल्वित और विकसित हुई हैं। किसी भी प्रदेश के पर्यावरणीय जानकारी हेतु तत्कालीन जलवायु का अध्ययन करना नितांत आवश्यक है क्योंकि जलवायु से न केवल मानवीय क्रियाकलाप अपितु प्राकृतिक वनस्पति जीवजन्तु भी प्रभूत मात्रा में प्रभावित होते हैं। जलवायु विज्ञानवेत्ता एण् मिलर के अनुसार जलवायु परिवर्तन का चक्र 35 वर्षों में पूर्ण होता है। अतः जलवायु परिवर्तन को समझने के लिए न्यूनतम 35 वर्षों का न्यूनतम आंकड़े एकत्रित करना चाहिए।

जलवायु चक्रों का अध्ययन जब हम मानवीय संदर्भ में करते हैं तो हमें पुरातात्विक व भूगर्भीय प्रमाणों का वैज्ञानिक दृष्टिकोण से विश्लेषण करना आवश्यक प्रतीत होता है। इसके पुरातात्विक प्रमाण हमें भूमिगत जमावों के उत्खनन के परिणामस्वरूप प्राप्त होते हैं। आदि मानव का क्रमिक विकसित स्वरूप जलवायु परिवर्तन का ही उल्लेखनीय परिणाम है पुराप्रस्तर युग की समकालीन जलवायु अत्यधिक परिवर्तनशील थी। मानव की उत्पत्ति के दृष्टिकोण से प्रातिनूतन काल अत्यंत महत्वपूर्ण है।प्रातिनूतन काल में जलवायु चक्रों के संदर्भ में हमें दो प्रकार के पुरातात्विक प्रमाण वैश्विक संदर्भ में मिलते हैं। प्रथम जो उच्चांश एवं पर्वतीय क्षेत्र थेए वहां के जलवायु चक्र हिमयुग एवं हिमप्रत्यावर्तन युग के रूप में विद्यमान थे। वहीं दूसरी ओर उष्णकटिबंधीय प्रदेशों एवं निचले इलाकों में ये अतिवृष्टि और अल्प वृष्टि के रूप में प्राप्त होते हैं। इन जलवायु चक्रों का सीधा प्रभाव समकालीन वनस्पति व पशुओं की स्थानांतरण प्रवृत्ति पर दिखाई पड़ता है।चूंकि आदि मानव पुरा प्रस्तर युग में आखेटक जीवन व्यतीत कर रहा था अतः वह इन जलवायु चक्रों से विशेष रूप से प्रभावित हुआ। चूंकि यह काल हिमयुग का था अतः उसने भरण पोषण हेतु नदी घाटी के क्षेत्रों का चुनाव प्रमुख रुप किया क्योंकि उसे अपने

उपकरण निर्माण के लिए पाषाण खण्डों का चुनाव इन्हीं नदी घाटी से किया। साथ ही उसे प्राकृतिक आवासों के रूप में पहाडों का आश्रय भी प्राप्त हो गया । विषम जलवायु परिवेशों में सीमित शारीरिक क्षमताओं के साथ पुरापाषाण कालीन मानव पूर्ण रूप से पाशविक जीवन व्यतीत कर रहा था।

प्रातिनूतन काल के समापन एवं नूतन काल के प्रारंभ के साथ (लगभग 10, 000 वर्ष पूर्व) मानव जीवन के विकास का एक क्रमिक स्वरूप देखने को मिलता है। नूतन युग जो आज भी विद्यमान हैए इसमें विषम जलवायु चक्रों का विलोप हो गया अर्थात जलवायु पूर्व की तुलना में स्थिर हो गई। इसके साथ ही मानवीय शारीरिक संरचनात्मक विकास का क्रम भी पूर्ण हुआ।

मध्यप्रस्तर कालीन मानव अपनी शारीरिक संरचनात्मक व मस्तिष्क क्षमता में वृद्धि के कारण किसी भी भौगोलिक परिवेश से सामंजस्य स्थापित करने में सक्ष्म था। समुद्रतटीय क्षेत्रोंए बालू के टीले, नदी घाटी के पर्वतीय शैल गृह,मैदानी भाग व झीलों के किनारे सर्वेक्षित व उत्खनित पुरास्थलों से प्राप्त भौतिक अवशेष इसकी पुष्टि करते हैं।इन साक्ष्यों के विश्लेषण से तत्कालीन जलवायु का वैज्ञानिक व वस्तुपरक अध्ययन किया जाता है।

प्रस्तर काल का अंतिम चरण नवपाषाण काल माना जाता है, जिसमें खाद्यान्न उत्पादन की प्रवृत्ति ने मानव इतिहास की दिशा ही बदल दी। यह तभी संभव हुआ जब जलवायु व भौगोलिक परिवेश मानव के अनुकूल हुआ। इस संबंध में पुरातात्विक प्रमाण सम्पूर्ण भारत से प्राप्त होते हैं।

सर्वाधिक महत्वपूर्ण जलवायु परिवर्तन का प्रभाव कांस्य युगीन नगरीय हड़प्पा सभ्यता में दिखता है। पुरातात्विक उत्खननों से यह ज्ञात होता है कि जलवायु परिवर्तन के कारण यह सभ्यता न सिर्फ़ पुष्पित व पलल्वित हुई अपितु नष्टप्राय भी हो गई।

यदि हम बीसवीं शताब्दी की घटनाओं का अवलोकन करें तो हमें प्रतीत होता है कि हमने शाश्वत मानवीय मूल्यों को नजरअंदाज करके अपने सुख समृद्ध ऐश्वर्य और विकास के लिए प्राकृतिक संपदा का अमानवीय ढंग से दोहन किया है।वर्तमान जलवायु परिवर्तन के विशेष संदर्भ में आज के मानव को पूर्ण रुप से सचेत होने की आवश्यकता है क्योंकि पृथ्वी के तापक्रम में अतिशय वृद्धि न सिर्फ़ मानव जगत अपितु सम्पूर्ण पारिस्थितिकीय तंत्र को प्रभावित करेगा।

0503038 NEGI, ASHISH (Department of English, Modern European and Other Foreign Languages, Hamwati Nandan Bahuguna, Garhwal University, Srinagar Garhwal, Uttarakhand). **DIGITAL ERA AND CULTURE CRISIS**

This is the era of scientific invention, where technology has changed the mind set of people and has challenged the cultural values of people. Culture denotes, religion, ideology, custom, belief system, moral laws, art and other habits acquired by human being as a member of community or society. This is a traditional system and set of limits, which is being carried by group of people through generations. In this era of digitization, technological revolution has affected this traditional concept of culture, and it has acquired a new dimension known as emergent culture. Emergent means new meanings, values, belief, practice and relationship which are being created by society. Raymond Williams, who had acute sense of cultural crisis, propounded this dimension, emergent, of culture. He distinguished culture in residual, dominant and emergent. Basically culture is being affected by number of elements like; technology, economy, demography, politics and science. How technology affects culture and constructs a new form of culture, will be the objective of this research paper.

Keywords: Technology, Cultural Crisis, Digitalization, Emergent, Culture, Economy

0503039 PALLAVEE, GOKHALE (Indian Institute of Science Education and Research, IISER Pune, D2 Nirant Colony, Kothari Blocks, Bibwewadi, Pune 411037). **USE OF GEOSPATIAL TECHNOLOGY IN UNDERSTANDING THE HISTORIC LANDSCAPE**

Bajirao Ballal, Popularly known as Peshwa Bajirao 1st moved his base from Satara and developed Pune as capital in early 18th century. Pune became a chosen city for establishing the capital of Maratha Empire. The first

Gazetteer of Bombay Presidency, Poona District, Vol XVIII, Part III (1885), mentions that as of 1881, Poona was a small town comprising mainly of the wards, with less than 1 lakh population spread in less than 10 sq km. Present Pune refers to the modern city with more than 30 lakh population and area of more than 240 sq km. This gives a rough idea as to the expanse of the city that has happened within less than 150 years. There were various important places established and renovated in the city during Peshwa period such as mansions, temples, gardens, places of administrative and public utility, cisterns, aqueducts etc. Understanding their social significance in the contemporary landscape is important because they contributed to the formative years of the city that we live in today. Present project took a geospatial approach for assimilation of this process. Digital map is used as a tool to identify and comprehend the relationships of these features with each other as well as with shaping of the landscape. Some of the compelling observations which emerge from this study shed light on urban problems faced by the city in the present day. These are around the roads and the burning traffic situations, problems around potable water supply, damage to the heritage structures and neighbourhoods due to lack of overall development plan and overall lack of strategy in implementing solutions to preserve the historic essence in the rapid urban transformation.

0503040 SINGH, ABHA (प्राचीन भारतीय इतिहास, संस्कृति एवं पुरातत्त्व विभाग, काशी हिन्दू विश्वविद्यालय, वाराणसी)

मुद्राओं के विशेष संदर्भ में स्वस्तिक : प्राचीनता व महत्त्व

सम्पूर्ण सृष्टि प्रतीकात्मक विशेषताओं से समन्वित है। जीवन का शायद ही कोई ऐसा क्षेत्र हो जो प्रतीकात्मक अभिव्यक्तिओं को ध्वनित न करता हो। प्रतीक निर्माण की प्रवृत्ति का इतिहास कितना प्राचीन है, यह कहना कठिन है। चिन्तन से यह विदित होता है कि मनुष्य को जब से भावनात्मक अनुभूति हुई, उसने रेखाओं को प्रवाहित करना प्रारम्भ किया। प्रागैतिहासिक मानवों द्वारा गुहाओं में विभिन्न भावों का चित्रण प्राप्य है। मनुष्य अपने देश, समाज व संस्कार के वशीभूत होकर ही प्रतीकों का निर्माण करता है, स्वस्तिक भी इसी मनोनुभूति का परिचायक प्रतीत होता है। इसका अंकन सम्पूर्ण ब्रह्माण्ड में विभिन्न रूपों में प्राप्त होता ळें

प्राचीन काल से ही भारतीय संस्कृति में स्वस्तिक को शुभेच्छ मंगल प्रतीकांकन माना जाता है। भारतीय परिप्रेक्ष्य में मनुष्य अपने शुभ कार्यों में इसका अंकन महत्वपूर्ण मानते हैं। स्वस्तिक शब्द से तात्पर्य अच्छा या मंगल करने वाला होता है। मांगलिक चिन्ह स्वस्तिक मानव जीवन का एक विलक्षण प्रतीक माना जाता है। समान दो रेखायें एक दूसरे को 90 अंश के कोण पर बीचो–बीच काटकर अपनी दोनों सिराओं पर विपरीत दिशाओं में एक दूसरी रेखा से जुड़ती हुई, जो आकृति बनाती है, उसे स्वस्तिक कहा गया है।

भारत में स्वस्तिक की परम्परा प्रागैतिहासिक काल से लेकर वर्तमान युग तक निरन्तर दृष्टिगोचर होती है। प्रागैतिहासिक काल में जहाँ मृत्पात्रों पर इनका प्रतीकांकन प्राप्य है, वही सैन्धव सभ्यता की पूर्वगामी संस्कृति के उत्खनित अवशेषों में स्वस्तिक की आकृति निरूपण के प्रमाण भी उपलब्ध हैं। ऐसा प्रतीत होता है कि उत्खनित मृत्पात्रों पर स्वस्तिक का अंकन, अलंकरण प्रवृत्ति के कारण किया गया होगा। स्वस्तिक शब्द सु + अस्ति + क के संयोग से निर्मित है। इसमें 'क' प्रत्यय रूप में संयुक्त है तथा सु + अस्ति 'कल्याण हो' की भावना को अभिव्यक्त करता है। इसका सम्मिलित रूप क्षेम अथवा मंगल के लाभ का वाचक है। इस प्रकार स्वस्तिक कल्याण के प्रतीक की ओर इंगित करता है।

भारतीय संस्कृति में स्वस्तिक चिन्ह को विष्णु, सूर्य, सृष्टि चक्र तथा सम्पूर्ण ब्रह्माण्ड का प्रतीक माना गया हैं। अनेक प्राचीन अभिलेखों का प्रारम्भ भी इसी मंगल प्रतीक से किया गया है। जैन तथा बौद्ध साहित्य में स्वस्तिक एवं अष्टमांगलिक चिन्ह बतलाया गया है। महाभारत के द्रोणपर्व में कहा गया है कि राजदरबार में जाने से पहले धर्मराज युधिष्ठिर जिन मांगलिक द्रव्यों के दर्शन किया करते थे, उनमें स्वस्तिक प्रतीक भी थे। महापुरुष–लक्षणों की गणना में भी स्वस्तिक को संकलित किया गया है।

स्वस्तिक विभिन्न रूपों में कला, वास्तुकला व अभिलेखों के साथ–साथ मुद्राओं पर भी अंकित किया गया है। भारतीय भू–भाग से प्राप्त प्राचीनतम आहत मुद्राएँ जो सहस्रों की संख्या में उपलब्ध हैं, इन पर अन्य प्रतीकों के साथ स्वस्तिक का अंकन भी दृष्टिगोचर होता है। ताम्र आहत मुद्राओं पर इसका अलंकृत रूप प्राप्त होता है। इसकी भुजाएँ दाहिनी ओर मुड़ी हुई तथा गोलाकार रूप में प्रदर्शित किया गया है। आन्ध्र प्रदेश के कृष्णा जिले के सिंगवरम् नामक स्थान से प्राप्त निखात से आहत मुद्राओं के मुद्रा पर दक्षिणावर्त रूप मे स्वस्तिक का अंकन प्राप्त होता है। इसके पश्चात् मौर्य कालीन आहत मुद्राओं पर स्वस्तिक प्रकाश में आते हैं जहाँ इनका अंकन अन्य प्रतीकों के साथ सम्मिलित रूप से किया गया है। अमरावती (आंध्र) से ज्ञात एक भांति के सिक्कें पर वामावर्तित वर्तुलाकार भुजाओं युक्त स्वस्तिक का अंकन हुआ है। मध्य प्रदेश के मंगरोल नामक स्थान से प्राप्त सिक्कों पर भी स्वस्तिक अपने शुद्ध और मूल रूप में प्राप्त होता है। इस प्रकार ऐसा प्रतीत होता है कि मौर्यकाल तक लोक व्यवहार में स्वस्तिक का विशेष महत्त्व नहीं था और जो था भी वह उत्तर की अपेक्षा विन्ध्य के दक्षिण में ही था।

मौर्योत्तर काल में सिक्कों पर स्वस्तिक का अंकन अपेक्षाकृत कुछ अधिक देखने में आता है। एरण, तक्षशिला, कौशाम्बी और अवन्ति से प्राप्त होने वाले अनेक भांति के अभिलेखहीन सिक्कों पर पाये जाने वाले चिन्ह समूहों के अन्तर्गत स्वस्तिक प्रायः अपने मूल

रूप में दृष्टिगत होते हैं। उज्जयिनी क एक प्रकार के सिक्के पर एक अन्य प्रकार का स्वस्तिक प्राप्त होता है, जिसके प्रत्येक भुजा के ऊपर दो ब्राह्मी 'म' के बीच त्रिभुज आकृति अंकित है। सातवाहन के मालव और गुजराज से प्राप्त एक प्रकार के सिक्कों पर सिंह के साथ स्वस्तिक दृष्टिगत होता है। इसी प्रकार भींटा से प्राप्त कुषाण लिपि में नन्दि अंकित मुहर पर स्वस्तिक अंकित है। इसी स्थल से प्राप्त गुप्तकालीन लिपि में अंकित 'बिच्छी' लेख युक्त मुहरों पर भी यह चिन्ह प्राप्त होता है।

उपर्युक्त उल्लिखित तथ्यों के आधार पर कहा जा सकता है कि सिक्कों और मुहरों पर मौर्यकाल के पूर्व से गुप्तकाल तक स्वस्तिक का निरन्तर प्रयोग व्यहार में आता है और इसकी प्राचीनता मुहरों के आधार पर सैन्धव सभ्यता युग तक मानी जाती है। इसका वर्तमान परिप्रेक्ष्य में भी धार्मिक महत्त्व है। इस प्रकार गुप्तकाल के पश्चात् निरन्तर प्रयोग के साथ–साथ वर्तमान समय में भी स्वस्तिक की प्रासंगिकता देखी जा सकती है। शुभ पर्वों और त्योहारों पर भारतीय वणिक वर्ग अपने नये वर्ष में इसका अंकन लक्ष्मी के प्रतीक स्वरूप करते हैं।

04. BIOLOGICAL OR LIFE SCIENCE

0504041 BHOR, RENUKA; BAR, CHINMAYEE; ANSARI, SHABNAM; SAHA, BHASKAR AND PAI KALPANA (Department of Zoology, Centre of Advanced Study, SavitribaiPhule Pune University, Ganeshkhind, Pune-411007). EVALUATION OF AGENTS OF DIVERSE ORIGIN FOR THEIR ANTI-CANCER POTENTIAL

Progressively increasing failure rates, high cost, poor bio-availability, poor safety, limited efficacy, drug resistant and a lengthy design and testing process associated with cancer drug development have necessitated alternative approaches to drug discovery. Exploring established non-cancer drugs for anti-cancer activity provides an opportunity to rapidly advance therapeutic strategies into clinical trials. In the current study, we have investigated on anti-proliferative potential of Triphala-guggulu (Immunomodulator), Atorvastatin (anti-cholesterol) on A549 (human lung cancer) and MCF-7 (human breast cancer) cell lines. Effectiveness of these agents on cancer cells were estimated by nitrite levels, ROS generation, Cell cycle arrest etc. The drugs were non-toxic to normal cells as tested by hemolysis assay. The results indicate potential of tested agents for cancer therapeutics.

Keywords: Triphala-guggulu, Atorvastatin, Anti-cancer, A549, MCF-7

0504042 PADHY, LAKSHMI CHARAN (School of Biotechnology, KIIT University, Bhubaneswar 751024, Odisha). THE FRONTIERS OF BIOLOGY- 2018

Dr Vennever Bush had observed in 1945 that “Science the endless frontier.” Commensurate with the observation of Dr Bush, relentless progress has been recorded for the last 73 years in all branches of science, Physics, Chemistry, Biology and Medicine included. The subject of Biology, especially its molecular aspects, was in a nascent stage of development in 1945. However, rapid progress in this discipline became possible when Physicists and Chemists entered into this arena to uncover the physical and chemical principles that governed various living processes. As a consequence, progress in understanding enzyme mechanisms took place, the structural biologists taught us the structures of proteins, enzymes and complex organic molecules having biological significance and explained their mechanisms of action. At the present time, structural biologists are able to deduce the structures of more complex assemblies of biological macromolecular systems to explain their detailed and precise biological functions. The microbiologists and molecular biologists taught us the way genetic information is securely stored and propagated from generation to generation. Random mutations occurring during the propagation generates the genetic-diversity which may provide a selective advantage to some, in case, an adverse environmental condition arises, explaining Darwinian evolution. We now understand that there are many layers of regulation for the genetic information flow to be functional and useful to the organisms, especially when the organism is multi-cellular in nature. These developments have resulted in several sub-disciplines of Biology, each discipline being data-rich. Some notable sub-disciplines of the present time are study of the genomes (genomics), study of the transcription of RNA (transcriptomes or transcriptomics), study of the expressed proteins (proteomes or proteomics), study of the genomes of a collection of organisms functioning in a defined ecosystem, especially microbes (metagenomics), study of metabolism (metabolomics), study of gene expression profiles in relation to epigenetic signatures (epigenomics) etc. To relate such studies to human or animal disease processes there has been sub-disciplines such as cancer-genomics, neuro-genomics, nutrigenomics, pharmacogenomics and immunogenetics. Because it is unavoidable to carry out studies across these sub-disciplines, it becomes not only necessary to store, annotate and retrieve information from vast amount of omics data but also to apply sophisticated computational methods on them to construct models of function or to discover meaningful correlations of the data with respect to specific biological functions. Thus, the two sub-disciplines of Bioinformatics and computational Biology provide valuable tools for such studies at an organism level (organismic biology). In a larger scale, Biology needs to be understood as a viable ecosystem. Still there remains many mysterious biological processes such as, cognition, thought, memory and behaviour to be understood. The origin of life itself is a mystery. The inroads of Physics and Chemistry into Biology have generated new sub-disciplines of Biological Physics and Chemical Biology. The discipline of Biotechnology aims to harvest the knowledge from these to develop new technologies to help us survive better in days to come. It is therefore clear that the study of Biology has become truly collaborative in nature, having endless multiple frontiers.

05. BIOTECHNOLOGY

0505043 BODHALE, NEELAM, SAHA, BHASKAR, CHATTOPADHYAY, DEBPRASAD AND BHATTACHARYA MAITREE (JBNSTS, Rajdanga Road, Kolkata). RESISTANCE TO LEISHMANIA INFECTION IS ASSOCIATED WITH HOST METABOLISM

Leishmania donovani caused visceral infection is characterized by fever, hepato-splenomegaly, hyper-gammaglobulinemia and hypocholesterolemia. The liver is a major organ that plays important role in metabolism, food digestion and detoxification. The hepato-splenomegaly implies metabolic changes in host as effects of *Leishmania donovani*infection. Indeed, several reports showing modulation of metabolic pathways by *Leishmania* parasites are available. But, the dynamics of gene expression in susceptible versus resistant hosts is not studied yet. We, therefore, selected four inbred mouse strains and characterized for susceptibility and resistance to *Leishmania donovani*. We studied glycolytic and cytokine gene expression in splenocytes of the susceptible and resistance mouse infected with *L. donovani*.Glycolytic genes were differentially expressed in *L. donovani*infected splenocytes and peritoneal macrophages of the different mouse strains than uninfected. We checked expression of cytokines with known pro-parasitic or anti-parasitic roles in *Leishmania* infection. These cytokines were also differentially expressed in the splenocytes from the mouse of four different strains. To the best of our knowledge this is the first study showing relationship between resistance and susceptibility with glycolytic gene expression. In future, analysis of other metabolic pathways, including TCA cycle, PPP and mitochondrial ETC need to be performed to establish their role in susceptibility and resistance to *Leishmania donovani.*This study will dictate novel immune-metabolism based strategies to develop non-toxic and efficient drugs to treat Leishmaniasis.

Keywords: Leishmaniasis, metabolism, cytokines, resistance and susceptibility

0505044 CHAUHAN, PRASHANT, PATIDAR, ASHOK, SAHA, BHASKAR (National Center for Cell Science, Ganeshkhind, Pune 411007). ANCILLARY SIGNALS AND EPIGENETIC MODIFICATIONS WITHIN TUMORS: FRIENDS OR FOES?

Cancer immunotherapy using monoclonal antibodies (mAb) targeting specific surface receptors expressed by tumor cells yielded encouraging results in clinical trials. However, tumors intelligently evolved escape-mechanism to circumvent the effects of immune-checkpoint blockade therapies and continue to chastise cancer patients. Therefore, in this context urgent development of alternative therapeutic management options are needed. Negative costimulators of T cells such as LAG-3, TIM-3 CTLA-4, PD-1, TIGIT, HVEM, VISTA including others are now identified as the intensive targets of mAb therapies and many are also approved by FDA. For instance- The success story defined by monoclonal- Ipilimumab (Yervoy^{TM}) which is widely used to activate the immune system by targeting CTLA-4 expressed by T cells. It has also been uncovered that the delicate balance between negative and positive costimulatory molecules expressed on the surface of tumors, and tumor infiltrating immune cells is vital for determining tumor fate (*tumor progression or tumor elimination)* within host organism. The major challenges with current immunotherapy are the initial respondent patients after cycles of treatment relapse with lethal, drug-resistant disease in years to come posing a life-threatening situation. We propose that targeting the coinhibitory receptors in a phase-and-time specific manner would enhance the clinical benefits to patients. Using a combinatorial approach with (pro-costimulatory + anti-coinhibitory) or alone (anti-coinhibitory + epigenetic inhibitors), the therapeutic benefits of monoclonal therapies could be augmented. Such treatments might work in synergy to optimally suppress the tumor progression by either boosting anti-tumor potential of TILs or suppressing tumor promoting cells with tumor microenvironment. Epigenetic modulators may enhance responses to immune checkpoint blockade through several unexplored mechanisms- such as increasing the expression of checkpoint inhibitors on tumor cells, induction of chemokine expression on T cells and diminished pools of immuno-suppressive cells within tumor microenvironment like myeloid derived suppressive cells (MDSCs). The findings shall be disseminated digitally.

Keywords: Monoclonal Antibodies (mAbs), T cells, Epigenetics, Co-stimulatory/Co-inhibitory molecules.

0505045 DAS, SABYASACHI; SAHA B; HATI AK AND ROY, S (Department of Physiology, Faculty of Medicine, Lincoln University College, Kelana Jaya, Malaysia). EMERGENCE OF ARTEMISININ RESISTANT PLASMODIUM FALCIPARUM INFECTION, ASSOCIATES WITH NOVEL GENETIC POLYMORPHISM IN EASTERN INDIA

Spreading of artemisinin resistance in South East Asia has terriblly threatened the malaria control and elimination policies in neighbouring India. Prevalence of sulfadoxine-pyrimethamine resistance, inadequate drug dosing and irrational medication invoked a strong possibility of emerging artemisinin-resistant malaria parasites. Therefore we assessed the probable emergence of artemisinin resistance by evaluating parasite clearance half-life (PCHL), *kelch*13 gene mutations and ex-vivo ring stage survivability (RSA_{0-3h}) in West Bengal, India

This study involved 362 patients with uncomplicated P. falciparum infection from February 2014 through April 2016 who received 4 mg/kg body weight artesunate once daily for 3 days and a single dose of 25 mg/kg body weight sulfadoxine and also 1.25 mg/kg body weight pyrimethamine on the first day of drug administration. Therapeutic efficacy was monitored from day 1 to 42. Parasite clearance half-life, plasma dihydro-artemisinin (DHA) concentration, ring stage survival assay and polymorphisms of *kelch13* gene were assessed by standard protocol to evaluate the ACT efficacy.

Increasing parasite clearance half-life (>5hrs) was observed in 12.78% of isolates majority of them contained *kelch13* polymorphism. Presence of parasitemia after 72hrs of treatment was observed in 25 (6.9%) patients and corresponding *P. falciparum* isolates represented very high PCHL (mean PCHL=5.6±0.4; 95%CI 5.4-5.8), who were primarily designated as Early ACT failure cases. Re appearance of parasite within 42 days of treatment follow up was found in 31 patients (8.56%); these are classified as late ACT failure Following WHO guideline, we have identified nineteen (5.3%) partial artemisinin resistant isolates for the first time. Polymorphism at R539T and G625R codon of the *kelch* propeller domain were highly associated with increase in median parasite clearance half-life (>5hr), ($p < 0{\cdot}006$) as well as with high RSA_{0-3h} ($P<0{\cdot}001$). We have identified a novel validate mutation (G625R) for artemisinin resistance.

Identification of the Artemisinin resistant parasite for the first time in Eastern India together with new mutations and increasing combination therapy failures blow alarms for urgent malaria control.

0505046 KUMAR, SUNIL; PATIDAR, ASHOK; SHUKLA, DIVANSHU; ZUTSHI, SHUBHRANSHU; BODHALE NEELAM AND SAHA, BHASKAR (National Centre for Cell Science, Ganeshkhind, Pune, India). LEISHMANIA MAJOR MAPK10 OFFERS CROSS-PROTECTION AGAINST L. DONOVANI INFECTION

Leishmania donovani, a protozoan parasite caused by different eukaryotic species of dimorphic, obligate, protozoan flagellated parasites of the genus *leishmania* belongs to the order kinetoplastida and the family trypanosomatidae. *Leishmania donovani*, has characterized by splenomegaly and hepatomegaly inflicts a severe visceral disease, which is potentially fatal if left untreated. In the host body, these *Leishmania* parasites reside and multiply within the host macrophages, which serve the dual function of being the principal host cells for the parasites as well as the cells primarily involved in parasite elimination. Host-parasite interactions thus play key role in determining outcome of infection. The available drugs are toxic and a prophylactic vaccine for human use is unavailable. Despite these problems an effective anti-leishmanial vaccine remains elusive. As *L. major* expressed MAPK10 showed significant host-protective effect in susceptible BALB/c mouse model of experimental cutaneous leishmaniasis, we tested whether the same gene would offer cross-protection against *L. donovani* infection. We report that MAPK10 DNA vaccination using a mammalian expression vector significantly reduce the splenic and hepatic parasite burden, accompanied by host-protective T cell functions but not the antigen-specific antibody isotypes. T cell response to the challenge *L. donovani* infection was associated with heightened Th1, but reduced T-reg responses as suggested by reduced expression of IL-10 and Foxp3, a transcription factor involved in Treg cell expansion. We observed increased production of IL-12, which induces IFN-γ, a T_H1 cytokine along with T-bet, a transcription factor involved in T_H1 cell expansion. These findings clearly suggest the cross-protective vaccine potential of LmjMAPK10 against *L. donovani* infection. The findings shall be disseminated digitally.

Key Words: MAPK10, Leishmania, visceral leishmaniasis, anti-leishmanial vaccine, host-protective immune response

0505047 MISHRA, SNEHASISH, SINGH, JAGRITI, PAL, SREYASI, SINGH, PUNEET KUMAR, SHUKLA POOJA, NAIK, KALYANI AND CHOUDHARY, ABHISHEK (School of Biotechnology, Kalinga Institute of Industrial Technology, Bhubaneswar, Odisha, 751024). **INTRINSIC MOLECULAR INSIGHTS TO ENHANCED BIOMETHANATION FROM RICE STRAW USING HYDROTHERMAL ALKALI PRETREATMENT**

The demand for utilization renewable energy sources has significantly increased with the increasing concern for the safety of the environment and the atmosphere from the harmful effects of the non-renewable energy sources. The renewable energy sources include the use of eco-friendly raw materials derived from the ecosystem and their waste. Biogas, as a renewable energy source has been recognized as a most promising and reliable source of energy derived from the biomass of the fresh waste material including the agrowastes. The current study analysed and optimised the concentration of NaOH for hydrothermal-alkaline pretreatment of rice straw (RS) for biogas production. Regular investigation is being done by researchers to develop new methods for pretreatment of KR to enhancing production of biogas. In view of these points, this work describes a promising approach of pretreatment of RS using autoclave assisted alkaline pretreatment in order to achieve higher biogas production and analyses first time the process at the molecular level by *in silico* approach. In this experiment the benefits of hydrothermal assistance in the process were evaluated for enhancement in biogas production from RS. 100g of RS was suspended in 300ml NaOH solution of different concentrations (0, 0.2, 0.4, 0.6, 0.8 and 1.0%). The reagent bottles with RS Suspended in NaOH were kept in autoclave at normal operational condition (121℃, 15psi pressure for 20min). After the pretreatment alkali solution was filtered with help of vacuum filter and washed with tap water. Total solids (TS), volatile solids (VS), ash content, fibre analysis, physical characteristics (FTIR, TGA), acid/base buffering capacity, swelling capacity and biochemical methane potential of untreated and treated RS were evaluated.

Molecular dynamics was also performed to investigate the molecular level changes leading to the higher biogas production in autoclave assisted NaOH pretreatment method. 0.6% pretreatment results in highest volatile content (85%), reduced ash content (2.5%), improved cellulose (58%), hemicellulose (32%) and decreased lignin (8%) of TS were found when compared to untreated RS. Biogas (320ml/g VS) and methane (205ml/g VS) yield were recorded to analyze the benefit of hydrothermal pretreatment in biogas production efficiency. Lignin was found to be degraded and this helps reduction in recalcitrant nature of RS after hydrothermal pretreatment. The swelling capacity of 0.6% pretreated RS was fount 7.5g/g of water which denotes that maximum microbial accessibility might be there during methanogenesis. The acid buffering capacity of the substrates increases with increasing concentrations of alkali, in 0.6% it was found to be 0.50ml which helps the substrate to be resist towards the pH drop down during the hydrolysis and acidogenesis in biomethanation. The study, thus provided in detail about the optimum use of NaOH for pretreatment of RS substrate with an emphasis of using hydrothermal pretreatment for enhancing of final yield in biogas production. Being an eco-friendly energy source the generation of biogas from the wastes would reduce pollution with effective waste collection and management with a significant reduction in greenhouse emission. Thus, in turn it leads to improvement in the environment, sanitation and hygiene.

Keywords: Biomethanation, Hydrotharmal Molecular dynamics, pretreatment, Rice straw, Swelling capacity

0505048 MORE, VASUNDHARA, SAHA, BHASKAR AND SARKAR, ARUP (Trident Academy of Creative Technology, Bhubaneswar). **UNDERSTANDING THE ROLE OF MITOPHAGY IN METABOLIC REPROGRAMMING OF MACROPHAGES DURING INTRACELLULAR PATHOGENIC INFECTION**

Mitochondria are the dynamic organelles which can modify their function, distribution and structure in response to metabolic state of the cell. Mitochondrial selective autophagy, known as ‘Mitophagy’ maintains mitochondrial population by eliminating impaired organelles and thus mediates cellular survival and viability in response to injury/trauma and infection.

As energy metabolism plays pivotal role in dictating the fate and function of innate immune cells,the maintenance of integrity and activity of mitochondrial network is important for immune system homeostasis. In immune system, macrophages are one of the major phagocytic cells that orchestrate both pro-inflammatory and anti-inflammatory responses as well as involved in maintenance of tissue homeostasis and repair during infection. These extreme heterogeneities lead to broad transcriptional and metabolic alterations in macrophages beyond their energy demands. Only recently it has been found that the metabolic signature supporting macrophage activation has been associated with mitochondrial clearance through mitophagy. Therefore, mitophagy regulation is crucial for the proper determination of macrophage phenotype and function. Although macrophages are potent phagocytes but also acts as the host for many intracellular pathogens like *M. tuberculosis, Leishmania* etc. During such infections macrophages undergo dynamic metabolic changes or reprogramming. However, actual crosstalk or relation between these infections, macrophage reprogramming and mitophagy is still unknown. Altogether mitochondrial homeostasis and mitohagy are crucial for macrophage functional behavior. Therefore better understanding of connection between mitophagy and macrophage fate and function in response to such intracellular infections could be helpful for more detailed understanding of pathogenesis.

0505049 MUKHERJEE, ARKAJYOTI, DANDAPAT, JAGNESHWAR, SAHA, BHASKAR AND SARKAR, ARUP (Trident Academy of Creative Technology, Bhubaneswar). REGULATION OF IMMUNOMETABOLIC INTERNODES THROUGH PKC

Protein Kinase C(PKC) is a family of serine-threonine kinases that play pivotal roles in transmitting receptor signals to the nucleus and coupling to cellular response. Till date,twelve PKC isoforms,which can be grouped into four subtypes, have been described whileimmune-metabolomics deciphers concurrent regulation and inter–dependence between immunity and metabolism.To get a proper immune response,immune cells must be intrinsically rewired in its metabolism. In between the surface of immunity and metabolism there are some internodes or checkpoints existed to govern the whole immune-metabolic profile of immune cells.These immunometabolic internodes include energy- sensor AMPK(AMP activated Kinase), hypoxia regulating HIF proteins, NO generation through iNOS,many more enzymes and metabolites also. Here in, we will describe the regulation of some of these check points by PKCs in macrophages and we will raise some unsolved fundamental questions regarding these regulations. We will also discuss the regulation of these internodes during leishmaniasis, a fatal disease caused by parasite *Leishmania spp*.

0505050 NAIK, KALYANI; SRICHANDAN, HARAGOBINDA; SINGH, PUNEET KUMAR AND MISHRA, SNEHASISH (School of Biotechnology, Kalinga Institute of Industrial Technology, Bhubaneswar, Odisha 751 024) EFFECT OF A MICROBIAL FORMULATION ON THE GROWTH OF GREEN GRAM (VIGNA RADIATA)

With an objective to assess the effect of biotic community augmentation on the wellbeing and yield of green gram (*Vigna radiata*), soil samples were collected from five different rice fields in and around Bhubaneswar, Khurda, India. To ascertain their candidature as effective microbial (EM) formulation and the potential as plant growth promoting microbes (PGPM), various microbes were isolated from the farmers' field. These isolates were subjected to biochemical characterisation. The 16S RNA sequencing of the potential growth promoting microbes confirmed the bacterial isolates as *Bacillus subtilis*, *Bacillus thuringiensis*, *Enterobacter hormaechei*, and the fungal isolate as *Aspergillus niger*. These were used for microbial (EM) formulation. The crop experiments with *Vigna radiata* in semi-controlled trial pot (with red soil) were carried out. The EM was applied to the soil at different concentrations, *viz*., 0.5%, 1.0%, 1.5%, and 2% (v/v). Besides, two positive controls (one organic compost (OC) and other diammonium phosphate (DAP)) and a negative control (without any application whatsoever) were included in the study. The phytoparameters considered were shoot height (SH, cm) at one week interval, leaf length (LL, cm) and leaf width (LW, cm), fresh mass (FM, g/plant) and dry mass (DM, g/plant) of crop and pod yield (g/plant) at end of experiments (60^{th} day). At the end of experiment, the SH was increased by 40.0, 6.1, 5,1, 26.0, 29.0 and 14.7% for positive control with OC, positive control with DAP, 0.5, 1.0, 1.5, and 2% EM as compared to negative control. The mean LL and LW increased by 74.3, , 28.6, 48.5, 51.4, 48.5 and 76.9, 11.5, 53.8, 73.0, 57.7% for OC, 0.5, 1.0, 1.5, and 2% EM, and decreased by 23% and 7.7% for DAP as compared to negative control. Likewise, The FW and DW were increased by 104.0, 30.8, 57.2, 80.7, 78.0, 75.0 and 101.2, 28.3, 54.3, 77.8, 75.3, 72.8%/plant for OC,

DAP, 0.5, 1.0, 1.5, and 2% EM as compared to negative control. Lastly the pod yield increased by 187.0, 77.0, 22.8, 96.5, 136.8, 164.91 and 163.15%/plant were collected for OC, DAP, 0.5, 1.0, 1.5, and 2% EM as compared to the negative control. Thus, it is concluded that the positive control (combined application of OC and EM formulation) were effective compared to the other controls. Further, among various EM concentrations, 1.5% was found to be most effective. Further increase in the EM concentration didn't have any discernible effect attributable to no further beneficial PGPM effect. Hence, among all the combinations tried, combined organic compost and 1.5% EM application could be recommended for field applications.

0505051 NAIR, ARATHI, SRIVASTAVA, ANKITA, CHAKRABORTY, SUSHMITA AND BHASKAR, SAHA (National Centre for Cell Science Ganeshkhind, Pune 411007). FUNCTIONAL SPECIFICITY OF RAS ISOFORMS

Ras, a small cellular GTPase, is key regulator of cellular responsiveness. Despite the 20kDa G-domain structural identity, the convention of considering Ras isoforms a single entity fails to address the involvement of different isoforms in different types of cancers and the fact that K Ras but not H or N Ras deficiency is embryonically lethal. The isoform's functional specificity is reflected in a disease model like *Leishmania major* infection, wherein CD40 signaling module driven by one isoform leads to disease exacerbation while another module leads to anti-leishmanial effects. Host cell surface located toll-like receptors (TLRs) are the first to recognize pathogens such as *Leishmania major*, so we hypothesized that TLR2 selectively altered Ras isoforms expression in *L. major* infection. TLR2 ligands recapitulate this selective modulation in the expression of Ras isoforms and this effect was reversed on using TLR1/2 short hairpin RNA, blockade antibodies and in Knockout models. The findings shall be disseminated digitally.

Key words- GTPase; Ras; CD40; TLRs; Leishmania; Signaling; isoforms

0505052 NAYAK, KAUSTUV (International Centre for Genetic Engineering and Biotechnology, Aruna Asaf Ali Marg, New Delhi-110067). INDIA'S WAR WITH INFECTIOUS DISEASES- WHERE SHOULD WE HEAD?

India is plagued by a wide array of infectious and communicable diseases including HIV/AIDS, TB, malaria, dengue, filariasis, chikungunya etc. India's distinctive demographic profile and location imparts a very big challenge to infectious disease management. India is one of the world's most populated nations, with a substantial proportion of the population living in areas that are underprivileged, giving the infectious diseases a chance to spread exponentially. The problem of managing these diseases run along with the practices that lead to this lack of resilience. These epidemics are a menace, but also an opportunity to learn and act to contain it. While there has been considerable progress in developing India's health system in recent years, there are still critical health systems gaps, to address in public health and infectious diseases scenario. Few challenges to India's health system are lack of surveillance of infectious diseases, lack of reporting and lack of point-of-care solutions. Further it is essential to ensure that public health programmes do not remain concentrated in the most privileged areas, as they have only a limited impact. India lacks the endeavour for faster immunodiagnostics and point of care solutions. We need the scientific/medical gaps in knowledge and opportunities to be filled. To support, a robust databank is of great importance, as this will lay a strong foundation for any further investigation/intervention. Thus there is a priority area for associating virologists, Clinicians, entomologists, geographers, political scientists and economic strategists to come together and enhance the know-how and work towards a sustainable and robust discovery and development of news drugs and immunodiagnostics.

0505053 NAYAK, KAUSTUV (International Centre for Genetic Engineering and Biotechnology, Aruna Asaf Ali Marg, New Delhi-110067). FACING INFECTIOUS DISEASES IN THE ERA OF ADVANCED LABORATORY RESEARCH

The ICGEB-Emory Vaccine Centre is an unique partnership between Emory Vaccine Centre,Atlanta, USA and International Centre for Genetic Engineering and Biotechnology, New Delhi, India with the goal of understanding human immunity to infectious diseases of public health importance to India.

India is a global leader in multiple domains, but when it comes to basic health care and research we face major roadblocks.The range and burden of infectious diseases that we face are enormous. The wider effects of infectious diseases extend beyond the risks of infection and health care. These pose a threat to global economic output. ICGEB-Emory Vaccine Centre focusses on two of the major vector-borne disease that plaques India-Dengue and Chikungunya. India is estimated to have up to 32 million cases of Dengue infections. Chikungunya fever on the other hand has re-emerged with a 390% increase in last few years.The mechanisms due to which dengue infected individuals present either mild or severe disease is poorly understood. Chikungunya infection leading to a robust immune response, gets cleared possibly imparting a lifelong immunity. The pathogenesis is very heterogeneous while, few patients retain long lasting joint pain and swelling, many others do not. We have no understanding of this host response.

There is a great deal of research in the area dengue &chikungunya in India,though all these do not commensurate with the scale of the problem. Current research is focused on developing a vaccine (Both therapeutic and preventive), vector control, studies on host pathogenesis and viral evolution.The talk will focus on various immunological techniques to understand antigen specificity and/or function during an acute infection. The techniques that will be discussed in detail are (1)Enzyme Linked Immunosorbent Assay (ELISA) (2)Enzyme Linked Immunosorbent spot (ELISpot) (3)Flowcytometry(4)Memory B cell assay(5) Production of human monoclonal antibodies. (6)Epitope Mapping by peptide matrix technique. This talk is mainly aimed at inculcating the understanding of the basic immunologyand being able ask simple questions to understand infectious disease Immunology.The talk is aimed at young scientists and help them to be able ask and handle simple research questions to pitch-in to India's global health issues. The group of scientist mentoring the talks will facilitate young minds to encourage/initiate grant writing, prepare young minds to get connected to larger research hubs, and thus make baby-step contribution to India's research output.

All said and done, end of the day we know as a scientist whatever we do today, is not going to help anyone tomorrow. It is a long journey that we have taken and will always keep choosing. It takes ages before, we get to see something that reaches from bench-top to bed-side. Thus at present all of us should look for issues related to the local problems and educate the mass in a pyramidal manner.We should be working towards small solutions at a time before thinking of completely eliminating a problem.

0505054 PATIDAR, ASHOK, SELVARAJ, SATHISHKUMAR, CHAUHAN, PRASHANT, SAHA BHASKAR (National Centre for Cell science, Ganeshkhind, Pune). TLR2-ACTIVATED DENDRITIC CELLS PREVENTS TUMOR GROWTH

Immune system eliminates neoplastic transformations induced by various carcinogens, but loss of tumor antigens and APC dysfunction eventually promotes tumor succession. As solid tumors grow, the hypoxia-induced angiogenesis promotes outward traffic for tumor cells but inward traffic for the immune cells, resulting in tumor growth and mortality. Vaccination with tumor antigen-pulsed dendritic cells (DCs) or administration of the ligands for Toll-Like Receptor 3 (TLR), TLR7 and TLR9 led to significant declining in tumor burden in challenge experiments. Herein, we show that the elicitation of the anti-tumor immune response by priming with tumor antigen-pulsed DCs accentuated by further stimulation of the DCs with TLR2 ligands. However, the efficiency of the TLR1/2 or TLR2 or TLR2/6 ligands in eliciting host-protective anti-tumor response differed. The TLR2 ligand peptidoglycan (PGN), when used to stimulate tumor antigen-pulsed DCs, induced complete resistance to tumor challenge. The protection was associated with reduced T-reg cell and Th2 cell numbers and heightened CTL functions. Although the angiogenesis was reduced, the factors that regulate angiogenesis were not significantly altered. These observations suggest that stimulation of tumor antigen-pulsed DCs with an appropriate TLR2 ligand can enhance the anti-tumor memory response and completely prevent tumor growth. The findings shall be disseminated digitally.

Key words: Angiogenesis, Anti-tumor vaccine, anti-tumor immune T cell response, dendritic cells, Toll-like receptors.

0505055 PATIL, TEJASWINI, DANDAPAT, JAGNESWAR, SARKAR, ARUP AND SAHA, BHASKAR (Utkal University, Vanivihar Bhubaneswar). EPIGENETIC AND METABOLIC COORDINATION OF HOST CELLS DURING LEISHMANIA INFECTION

Leishmaniasis is an endemic, protozoan, vector borne disease, caused by the genus *Leishmania* which manifests a variety of diseases ranging from cutaneous to visceral leishmaniasis. Leishmania mainly infect macrophages thus macrophage activation is critical immune response for leishmaniasis. In order to overcome the host challenges, pathogen adopts many strategies. One of the major strategy is to hijack host's metabolism and utilize its nutrients for better survival. This is achieved due to dynamic metabolic coupling between host and pathogen's metabolic pathways which play important role in macrophage polarization also. The molecular mechanisms behind such strategies often involve epigenetic changes by chromatin remodeling, histone modifications, and/or DNA methylation leading to regulation of cellular gene expression. Recent finding also shows that *Leishmania* infection enhances its own survival by regulating the methylation events of many target genes of host DNA. Thus upon infection host cells undergo metabolic reprogramming and there might be some epigenetic regulations. As the independent role of metabolic pathway and epigenetics expand in immune cell biology but the link between metabolism and epigenetic is still unexplored. Thus it is interesting to explore which global change in metabolites will have impact on epigenome of host cells and what is the role of epigenetic changes in regulation of the host metabolome for modulation of immune responses?

0505056 POTBHARE, RENUKA; MUKHERJEE, SITABJA; CHAUHAN, PRASHANT; KAR, SANTOSH KUMAR AND SAHA, BHASKAR (National Centre For Cell Science, University of Pune Campus, University road, Ganeshkhind, Pune 411007). EFFECTS OF DIFFERENT POTENCIES OF HOMOEOPATHIC FORMULATIONS OF NANO-CURCUMIN ON PLASMODIUM BERGHEI INFECTED MICE.

Malaria is a vector-borne infectious disease and the two major concerned areas are control on multidrug-resistant property of parasites and development of new drugs. Curcumin is naturally occurring compound obtained from rhizome of *Curcuma longa*. It used to treat many diseases, as it has been shown to possess anti-inflammatory, antioxidant, anticancer and anti-malarial properties. In the present study, homoeopathic formulation of Nano-Curcumin and its dose potency for control of malaria was estimated. Male C57Bl6 mice of aged 6-8 weeks were selected. Each mouse was infected with ($1x10^4$) *Plasmodium berghei ANKA* infected RBCs and treated with different potencies of Nano-Curcumin formulation. Patterns of parasites progression were observed by preparing mice blood smears and mice survival was plotted. In vivo, oral doses of Nano-curcumin 6C twice daily for 6 days resulted in resistance to parasite infection and able to extend survival of mice as compared to other potencies of Nano- Curcumin treated groups. The findings will be disseminated digitally.

Key words: Malaria, *Plasmodium berghei,* Nano-Curcumin, Homoeopathic formulation

0505057 RAY, SUVENDRA KUMAR (Department of Molecular Biology and Biotechnology, Tezpur University, Tezpur–784028, Assam). BACTERIAL DISEASES IN PLANTS AND THEIR BIOCONTROL: RALSTONIASOLANACEARUM AND TOMATO SEEDLINGS AS A MODEL STUDY

Ralstoniasolanacearum causes a lethal bacterial wilt disease in more than 200 plant species belonging to 50 botanical families. Its broad host range, wide geographical distribution, long term survival in soil and water, high genetic diversity among the strains from different geographical regions, and lethal nature of the disease resulting heavy economic loss have attracted many scientists in the world to understand its pathogenicity as well as to control the disease.

It is a vascular pathogen. It enters the host plant through root and then colonizes the xylem tissue of the entire plant before wilting it. How the bacterium colonizes efficiently in different host organs and how it overcomes the other plant associated bacteria residing inside the xylem during infection is not known. To have a better

understanding of the bacterium interaction with its host plant during the disease, we have developed simple pathogenicity assays under gnotobiotic condition in tomato and brinjal seedlings[3,4]. Different transcription regulator mutants such as *hrpG*, *hrpB* and *phcA* have been created to confirm that the seedling pathogenicity can mimic the pathogenicity assay in grown up plants.

We have observed that tomato seedlings germinated under sterile condition carry bacteria. Some of these bacteria we have tested as *R. solanacearum* antagonistic. Out of 24 different bacteria we have isolated from tomato seedlings, five are able to inhibit *R. solanacearum* growth on solid medium. All these five bacteria are non-pathogenic tomato seedlings and can protect tomato seedlings when mix inoculated with *R. solanacearum*. All the seedlings isolated bacteria we have observed to be deficient for twitching motility as well as for extracellular cellulase.

One of the *R. solanacearum* antagonistic bacteria has been identified as *Pseudomonas putida*, which we named N4T strain. We have proved *P. putida* N4T, is an endophyte. Upon coinoculation with *R. solanacearum* in tomato plants, *P. putida*N4T, protects tomato seedlings as well as grown up plants from bacterial wilt.

Plant carries resistant genes from generation to generation to fight against its pathogen. It may be that plants also carry seed colonized bacteria from generation to generation to fight against its pathogen.

0505058 SAHA, BHASKAR, CHAUHAN, PRASHANT AND NAIR, ARATHI (National Centre for cell Science, Ganeshkhind, Pune 411007). INFECTIOUS DISEASES: THEIR DIAGONOSIS, DEMOGRAPHY AND CONTROL IN DIGITAL INDIA.

India is a huge country with diverse environment that support different pathogens to survive and transmit the infections specific to each of those environs. Therefore, it is imperative to derive a precise correlation between environment, pathogen transmission, disease burden and control modes. This precision can be achieved by digitization of these processes. With a staggering and escalating population of 1.3 billion people, India stands as the second most populated country in the world and contributes to ~18% of total global population. Approximately 27.5% of its population lives under poverty, in marginalized conditions of poor sanitation and nutrition. Being a tropical country India is a geographically vulnerable target for many communicable and vector-borne diseases. These diseases incudes- Tuberculosis, Malaria, Leishmaniasis, Diarrhoea, Cholera and Enteric diseases etc. Digitalization can drastically improvise the health sector. The current implemented programs includes- e-Healthcare that would cover online medical consultation, medical records, and the supply of medicines overall and, pan-India exchange for patient information, etc. e-Hospital@NIC is an open source, configurable, easily customizable Health Information Management System (HMIS) with multi-tenancy support. The aim of this portal is to deploy in cloud infrastructure to manage multiple hospitals seamlessly. The generic application addresses all major functional areas of a hospital (which covers complete treatment cycle of OPD as well integrates clinical, administrative, and billing/insurance activities). In addition to these, we propose further schemes that could be implemented for the digital augmentation of healthcare sector. For instance- the medical meteorological database that would design disease prediction models, retrieve, analyse and display different types of geographical and spatial data based on weather parameters. Digital databanks could be created for maintaining immunization catalogues and regional information centres that provides information on prevention and diagnosis of communicable diseases could be setup. This would ensure a rapid response and controlling of outbreaks in the hour of need. Here we discuss an organized approach from disease detection to disease prevention using digital medium. We believe the collation of these digital networks will enhance the efficacy of health sector.

Keywords: Digitalization, Pathogen, Infectious Diseases

0505059 SAHA, BHASKAR (Laboratory-5 National Center for Cell Science, Ganeshkhind, Pune 411007, Maharashtra). BIOTECHNOLOGY CONSORTIUM ABSTRACT: PREVENTION OF HUMAN IMMUNODEFICIENCY INFECTION: PROMICES AND PITFALLS

HIV was discovered as human T cell leukemia Virus about four decades ago. Discoveries on virus-T cell integration led to targeting CD4 molecule for blocking the infection and many viral molecules as potential targets vaccine antigens for prevention. Researchers are continually working towards finding a ways to eliminate the latent viral reservoir in resting CD4+ memory T cells. On reactivation, transcriptionally silent provirus in memory CD4+ T cells can give rise to active infection. Latency reactivating reagents identified through high-throughput screening including- Histone deacetylase inhibitors (HDACi); Cytokines and chemokines; DNA methyltransferases inhibitors (DNMTI); Histone methyltransferase inhibitors (HMTI); Protein kinase C (PKC) activators; P-TEFb activators etc. Currently the unavailability of a primate model that represents latent HIV infection, the inefficacy of a single reactivation drug and its cytotoxicity pose a major issue. These issues can be resolved by using a well-characterized disease model for evaluation of combinatorial therapy using different reactivation agents alongside the HAART therapy. A detailed downstream cytotoxicity profile of these reactivating reagents should be assessed. Despite billions of dollars spent on discovering the preventive measures, HIV continued to conquer all efforts to eliminate it. Clearly, these failures indicate that we need to find a new path to its cure. Here, I shall discuss how a balance between HIV latency and HIV reactivation can determine the outcome of any therapeutic or preventive approach.

0505060 SINGH, PUNEET KUMAR, SHUKLA, POOJA, SRICHANDAN, HARAGOBINDA, MISHRA, SNEHASISH, NAIK, KALYANI, SINGH, JAGRITI AND PAL, SREYASI (School of Biotechnology, Kalinga Institute of Industrial Technology, Bhubaneswar 751024Odisha) **CALCIUM HYDROXIDE PRETREATMENT OF RICE STRAW FOR ENHANCED BIOMETHANATION**

The growing global human population coupled with industrialisation has led to the ever-increasing energy demand. The energy demand is still primarily met by conventional fossil fuels. The bleak future of fossil fuel along with its attached environmental issues have increased the interest in alternative fuels like the biogas. Currently the quest for economical, renewable and environment friendly sources of energy to take over the conventional sources like coal and petroleum is among the most focused areas in the field of research. Biomass resource in the form of crop residues is abundant and readily accessible renewable resource. Around the globe major cereal crops like wheat, rice, maize are the major sources of residual lignocellulosic biomass in the form of straw. In India, this is generally burnt and left untreated, is thus underutilized. Using thermal and biochemical processes these residues may be harnessed for bioenergy production. The present study is an attempt to generate and enhance biomethanation potential (BMP) of rice straw (RS) through (1, 2, 3 and 4%) calcium hydroxide pretreatment by exposing lignin using chemical pretreatment. The test was carried out in lab-scale 2L capacity glass batch digesters at 40°C for 30-day period with untreated and pretreated RS. The proximate analyses of the substrates were performed as per standard APHA protocol. The pretreatment changed the volatile solids (VS) content significantly, but not the total solids (TS). The VS was found around 90% compared to the untreated one (75%) in 2% pretreated substrate. The swelling capacities (g/g) were found to be 6.5, 7.8, 7.6, 7.5 and 7.0 with 1, 2, 3, and 4% calcium hydroxide pretreatment, respectively. Also, the acid buffering capacity of the substrates increased (maximum 0.55ml) as the calcium hydroxide concentration increased whereas the base buffering capacity (0.075ml) and there was no base consumption was recorded after 1% pretreatment. The neutral detergent fibre and acid detergent fibre contents were highest (65 and 36% respectively) with 2% pretreatment. The biogas (370ml/g VS) and methane (240ml/g VS) production maximised in 2% calcium hydroxide pretreatment attributable to the positive buffering as well as the surface modification of the fibre. Surface modifications as observed under high-resolution microscopy confirmed the latter possibility. Thus, a controlled (2%) calcium hydroxide pretreatment enhanced the biomethanation potential of rice straw.

Keywords: Biomethanation, Calcium hydroxide, Pretreatment, Rice straw, Swelling capacity

06. CHEMICAL SCIENCE

07. COMMERCE

0507061 JOHN, JOSHI AND JOHN, BRIJESH GEORGE (Department of Business Administration, Marian College Kuttikkanam, Idukki District, Kerala 685531). CONSUMER BEHAVIOUR IN ONLINE SHOPPING

Analyzing online consumer behavior is not a new phenomenon in the western world. However, online retailing is relatively a new retailing medium in India and even though there are many studies about online consumer behaviour all over the world, there is a paucity of such studies in the Indian, and especially in the Kerala context. The online consumer behaviour and buying patterns of shoppers in a consumer state like Kerala was not studied elsewhere. Insights to online marketers and e-vendors regarding the factors that influence online shopping is very important.

Kerala is well ahead of the rest of the states in e-matters and the digital development of Kerala is exemplary. Kerala has the highest mobile penetration in the country and about 57% of the mobile subscribers access the internet (second highest in India). Kerala has been declared as a 'First complete digital state' in 2015. The factors that pulls the state to e-commerce needs to be identified. In order to increase market shares, develop reasonable marketing strategies and, thus better promote products in this promising online market, marketers should understand what factors influence online purchasing behaviour and the extent to which they do.

300 Respondents were selected on a random basis from the list of internet shoppers shared by courier companies. Data of Internet Shoppers are collected from the local offices of top five courier companies in India. After removing incomplete and unreturned questionnaire and the ones with invalid answers, a total of 271 samples are selected from 9 units for the Analysis. So the total sample size for the study is 271.

The behaviour of Online Consumers is changing dramatically. Online Shopping has truly revolutionized and influenced the Kerala society. The availability of high speed data at lower rates, cheap smart phones and the use of technology has opened new doors and opportunities that enable for a more convenient lifestyle today. Competitive prices, anytime, anywhere, availability, variety, choice, convenience, quick and better services, offers and discounts are some of the significant reasons that influenced Kerala consumers to prefer online shopping.

0507062 PANDA, RAJESH KUMAR AND DAS, BISWAJIT (School of Management, KIIT University, Bhubaneswar). ADOPTION OF E-COMMERCE BY TRAVEL AND TOUR OPERATORS IN INDIA: ISSUES AND PROBLEMS

E-Commerce is a part of E-Business. E-Commerce is the selling and buying of goods and services through internet. It is a revolution that has changed the way of buying and selling. In this digital age and globalization era, people want to purchase goods and services from any part of the world and operating from home to save time and cost. The recent changes in market conditions like globalization, customer awareness, competition and changing demographic factors have forced business houses to adopt E-Commerce.

Due to the low-cost smart phones and growing use of the internet, India has shown tremendous growth in E-Commerce. The travel portals' share in the online business is around 50% of the online market. The online travel sales worldwide has attained 650 billion U.S. dollars in 2018. Further, an annual growth of 15% has been anticipated annually in the travel portals alone. E-Marketers forecast that online travel sales worldwide will be more than $800 billion in 2020.

Internet marketing strategy plays a significant role in the success of E-Commerce. We cannot start a business without a business plan. One cannot place yellow pages advertisement in an irrelevant category expecting anyone would call. One cannot also spend lakhs of rupees on a billboard advertisement placed where there is no traffic. Businesses are very careful when it comes to spending marketing rupees, but the truth is that most businesses have neglected the most effective marketing tool that they have, which is the strategic planning of their internet presence. It's not a problem to spend thousands of rupees to pay for the design and development, but the planning

process and strategy building has been neglected. So many E-Commerce portals have been closed due to wrong marketing strategy. Internet Marketing is an integral part of e-commerce.

The article covers the issues and problems in adopting the e-commerce by some travel portals in India and how those problems can be resolved. This study will encourage the travel agencies to adopt e-commerce and find the new techniques for marketing through internet. The finding of this will help to improve the current strategies so that the marketplace increases and reduce the marketing expenses of the business and thereby maximize the profit and sustain in this competitive global market.

Keywords: E-Commerce, Internet, Marketing, Travel, Adoption

0507063 RENJITH, R AND JOY, V S (Govt Arts College, Thiruvananthapuram). BRAND SWITCHING TENDENCIES OF STUDENTS: A CASE OF MOBILE TELECOM INDUSTRY IN KERALA

Mobile telecom industry in India witnessed tremendous growth in the last decade. Availability of smart phone at a cheaper rate and low rate of mobile services are the two main pillars of growth of telecom industry in India. Usage of mobile phone is very high, both in rural and urban areas because of penetration of mobile phone and availability of telecom services in every nook and corner. Subscribers are allowed to choose their preferred network based on such aspects as quality of service, customer care, value added services and the cost of communicating on the network while retaining their telephone number. A customer can change their operator without changing their mobile number through mobile number portability facility. Any customer can switch to a new operator without much time, money and effort. Intra-service area Mobile number portability (MNP) was implemented first in Haryana service area w.e.f. 25.11.2010 and in the rest of the country w.e.f. 20.01.2011. Inter-Service Area MNP has been implemented in the country w.e.f. 03.07.2015. Now, the wireless telephone subscribers can retain their mobile numbers when they relocate from one service area to another. In Kerala six operators are currently providing mobile telecom services and received 9.45 million porting request as on July 2018. Among the mobile service subscribers of Kerala, student community is the first in number of users. This study seek to establish the factors which influence customers to switch the operator.The purpose of the study is to investigate the factors affecting brand switching tendency of students in telecommunication industry of Kerala. A quantitative approach has been employed to measure the relationships between the variables of the study. To have a regional representation of the sample, three districts of Kerala each from north, central and south zone were chosen to collect data. Samples of the study consist of 248 students and questionnaire is used for collection of data.Regression analysis is performed to know the relationship between variables. This study will help the telecom industry managers to formulate their strategies specifically suited to esteemed customer and leads towards customer retention.

Keywords: Mobile number portability, switching intention.

0507064 SAHOO, PRATISHRUTI (BJB AUTONOMOUS COLLEGE). EFFECT OF TECHNOLOGY THE ECONOMY AND HOW IT CAN BE USED TO ERADICATE UNEMPLOYMENT

The labour market is harshly affected by the technology advancement, specially the migrant skilled and unskilled labourers. The introduction of machineries took away their jobs and employment is on cloud nine. These workers either have to be taught vocational courses or jobs have to be created for them.

Let’s concentrate on building a model of increasing employment and eliminating hunger by using technology. In Odisha, the state government introduced the “Below poverty line” advantages. Supplying food like rice, kerosene, sugar,etc essentials at minimum price. We can adopt this model in all states only at a condition that the unskilled workers need to work for certain hours to avail the scheme and his attendance these can be monitored by skilled workers by using computers and internet . A website is to be created to moniter the number of workers and what jobs they are to be assigned. A job card and a registration number will be the access code for the labourers information in the website. Additional support like free lunch and free education for their children at government schools will help increase the literacy rate and also encourage them to work.

Taking the case of India, it has to be made mandatory to do any kind of job to avail any kind of support by the government. The youth of age group 25-35 year old are often depressed and fed up by scarcity of jobs. Even if they manage to get work, it is not permanent. Poverty is an extended leg of unemployment. These labourers are never able to drag themselves out of poverty as they dont have consistency in Income so saving and investment is a dream.

0507065 SHAFEEK, S (Ideal Arts and Science College, Cherpulassery, Palakkad District, Kerala). **NEED FOR CONSUMER AWARENESS IN THE DIGITAL ECONOMY**

Technology and innovation have always been dynamic in nature, bringing both opportunities and difficulties for consumer. Consumer's confidence to support digital opportunities could increase, only if they are aware that digital business providers meet established standards and accompanying safeguards if things go wrong. Internet has revolutionized the way we buy and sell goods, with many of us enjoying the benefits of online shopping. Problems in commerce are unavoidable. We are all familiar with complaints of faulty goods, poor services, fake or counterfeit goods, substandard or dangerous products, poor service delivery or goods contrary to promotional advertisement description, etc. the market is flooded with variety of goods and services with attractive design and it is very difficult to know which one is genuine. Consumer protection and empowerment regulation, for digital medium users is fundamental to address online complexity of security, liability, incompatibility and affordability. Protecting consumers from fraud and unfair online treatment, the authority or government has to take necessary steps to keep the trade forward and smooth. More importantly a regulatory mechanism –keeping pace with the pervasive nature of any technology change , that also make sure that consumers are clear on their ownership and guaranteeing rights to fair use ,due process and proportionality are essential elements, in building trust and confidence among consumers.

The first step towards change is awareness. The second step is acceptance- NATHANIEL BRANDEN

KEY WORDS: Consumer Protection, Empowerment, Confidence

08. COMMUNICATION AND JOURNALISM

0508066 ABSAR, SANA (Deptartment of Journalism & Mass Communication, Banaras Hindu University, Varanasi 221005) MOBILE JOURNALISM: A TECHNOLOGY ALL SET TO RULE THE FUTURE OF JOURNALISM IN INDIA

With the advent of each new technology, major shifts are taking place in the field of Journalism. Mobile Journalism (Mojo) is one of those technologies which are shaping the newsgathering and disseminating process. This study aims at understanding the Mobile Journalism in India and its future in the digital era. The objective of the research is to find out whether the Mojo is taken as a serious kind of journalism, Does it adversely affect the quality of production and is it considered helpful for the future of journalism in the digital era. A review of the available research literature suggests that it is basically an emerging kind of lifestyle journalism, being used by few journalists but these journalists are never less in expertise since these journalists do not use traditional production technique, the question of de-professionalization occurs? This study, therefore, examined whether the Mobile Journalism (Mojo) is considered as a serious news gathering technique by journalists working in electronic and web media outlets in India and if they find Mojo something that is de-professionalizing the news content, along with its future in the mainstream Journalism. To conduct the study, survey method was used as the design of study with the sample size of forty (40) journalists from eminent media organizations such as ABP News, India TV, Zee News etc. in India. The respondents were selected with the help of convenient sampling method and they were asked to give the response on a questionnaire based upon the Likert scale to find out the attitude and opinion of the journalists about Mobile Journalism in India. The finding of the research suggests that Mojo is moving from lifestyle form of journalism to serious journalism as 38% of all the journalist consider it a serious form of Journalism. It is not only fancy, steady but also dependable as only 20% of journalists are either strongly agreeing or agree that mojo is de-professionalizing of TV news work. 75% journalist consider mojo as part of their job and using Mojo as an important and influential tool to gather speedy information and disseminate the same. The study, therefore, finds that the future of mojo is radiant and promising, helpful for journalists, it does not make journalists unskilled and thus it will have a prominent effect on the human future as well.

0508067 AGRAWAL, KRITIKA AND SINGH, GOPAL (Department of Mass Communication and Journalism Babasaheb Bhimrao Ambedkar University (BBAU), Lucknow) SOCIAL MEDIA: USE AND PSYCHOLOGICAL DISTRESS AMONG INDIAN YOUTH

Social networking sites, a subset of new media, have become a democratic means of communication. Earlier when traditional media used to set agenda of public discourse, the generation Y is now looking forward to new media for breaking the news. With easy availability of internet, it is a common sight to see the future torch bearers of the country engrossed in updating their profiles on social networking platforms like Facebook and Instagram. While social media provides a platform to youngsters where they can freely involve in 'emotional sharing', thereby creating a virtual interacting space for them, its psychological implications cannot be ignored. Many studies have identified the significant implications of social media use in terms of perceived social support and social relationships etc. but relatively few studies have examined how/if use of social networking sites results in psychological distress among youngsters in the Indian context. The current study fills the gap by examining the relation between the use of social media and psychological distress (anxiety, depression) among college students pursuing higher studies based in Lucknow. Using purposive sample technique, participants from both public and private, university and institutions were anonymously surveyed. The questionnaires were sent to them online. The respondents were questioned in terms of time spent, their purpose and context of using social networking sites. The stress levels of the respondents were measured using the Stress Perceived Scale. The paper recognised if use of social media induces tendency of depression and anxiety among young India.

Keywords: Anxiety, Depression, Facebook, Instagram, Psychological Distress, Stress

0508068 AHMED, FARIDA (Department of Home Science, Faculty of Science, University of Allahabad, Allahabad). HEALTH COMMUNICATION IN RURAL INDIA: A POLICY PERSPECTIVE

Health communication is the process by which health information is communicated from a sender, such as Frontline Workers (FLWs) to a receiver, community or beneficiary with the idea of changing the community's health behaviour. This involves the formulation of policies or strategies for the implementation of health communication. Keeping this in view a mix method of quantitative and qualitative research study was carried out in nine high priority districts (declared by the Government of Bihar) of Bihar and in-depth interviews of state and district level officials in Uttar Pradesh. This paper highlights the health communication system and provides practical suggestions for the current health policy in rural India and monitoring services. The combination of communication methods and strategies were adopted by the Government of Bihar and Uttar Pradesh States for the individual and community health behaviour change.

In rural Bihar and Uttar Pradesh States of India, health services related to RMNCH+A (reproductive, maternal, newborn, child and adolescent health) were mainly provided by the VHSNC (Village Health Sanitation Nutrition Committee) members or Frontline Workers (ANM, ASHA and AWW) during Village Health Sanitation Nutrition Days (VHSNDs). VHSNC supports to VHSND for delivering ANC (Antenatal Care), PNC (Post-natal care), immunization and counseling services at the village level. FLWs through a combination of communication approaches and strategies like interpersonal communication, group meetings, digital media and using IEC (Information, Education and Communication) material communicating target messages to the women, men and girls that foster the change in community health seeking behavior. State governments also developed various IEC materials and BCC (Behaviour Change Communication) strategies to support health programmes. NHM (National Health Mission) had also introduced AFHS (Adolescent Friendly Health Services) programme to provide counseling service to the adolescent boys and girls. Under AFHS programme separate AFHC (Adolescent Friendly Health Clinics) for adolescent boys and girls were developed.

SIFPSA (State Innovation in Family Planning Services Project Agency, UP) implemented few digital media health services like radio drama series *Sunhare Sapne aur Sawarti Raahein*' programme, '*Sehat Sandeshwahini*' (Mobile Video Van), 'Mobile *Kunji*', '*Meri Sehat Mera Nirnay',* '*Aao Batein Karein*' to generate demand for reproductive health services. It had oriented various folk troops like puppetry, *Nautanki, Kawwali,* magic show, folk songs on family planning and health and sends them in villages. More than 3000 shows were implemented by NHM in 2017. HNBC (Home Based Newborn Care) a mobile based monitoring programme, showed positive results in health seeking behavior in Bihar and UP rural community and people took interest to avail RMNCH+A health services.

The IEC and BCC strategy covers only rural and urban and excluding large urban slum areas, which have different developmental issues and social dynamics from the rural and urban. Therefore, for decreasing the unhealthy slum condition 'urban slum-specific IEC materials and BCC plan' need to be developed. The major challenge for developing and implementing IEC materials and BCC strategy is the capability of the government health officials. The IEC materials and BCC strategy also seeks to address the following gaps- lack of coordination at various level, lack of focus strategic planning, lack of service provider orientation, lack of PRIs involvement, lack of counseling, lack of proper doctor-patient communication, lack of monitoring, lack of male involvement, lack of behaviour centered strategy, religious and cultural norms, lack of VHSND infrastructure and resources, lack of IEC materials for urban slums, improper monitoring and evaluation activities etc.

Therefore, before the finalization of IEC materials and BCC strategies pre-testing exercise should be carried out. However, a detailed recommendation for operationalization of IEC materials and BCC strategies for interpersonal, group and mass communication or digital communication activities is provided in the paper. Priority was given to improve modernize the health communication system, recruitment of qualified and skilled human resource, recruitment of family counselors, appreciation and awards for ASHAs, address religious and cultural norms, faith-based health BCC strategy, NGOs involvement, urban slum-specific IEC and BCC plan etc. The convergence of line-department is also important to promote the involvement of wide range of health stakeholders.

It was also proved in the research study that the effectiveness of interpersonal communication in comparison to mass or digital media for availing health related information in rural India was very high. Therefore, research findings indicate that penetration of mobile phones, television, radio and other digital means is still very less in

number in rural areas. Hence, more focus must be given to improvising the capacity of the local frontline workers for providing health information and improvising rural health status through the mix method of communication i.e. interpersonal and digital communication methods.

0508069 ANAGHA, M A (Media Studies Department, Thunchath Ezhuthachan Malayalam University, Tirur, Kerala). MEDIA AND SEXUAL VIOLENCE : A SYSTEMATIC REVIEW BASED ON ISSUES, REPRESENTATION, AND FRAMING

National Crime Records Bureau (NCRB) recorded that in 2016, 106 rape cases were happening each day in India and the report says 40% of the victims were children. 94.6% of the recorded cases, criminals were brother, father, grandfather, son or somebody known to the victims. 38947 cases were registered under POCSO law and IPC section 376. The report says the numbers of cases are increasing every year. *2568 rape cases and 16960 crimes against women were reported in the year 2016.*

"2568 rape cases and 16960 crimes against women have been reported in Kerala in the year 2016. According to the statistics in 2015, 1263 women and 720 children became the victims of rape. In 2016 the number increased to 1644 women and 924children.

The mass media reports on sexual assault can influence the perception of the people towards such activities, the victims and the accused.

This paper made a systematic review of 'media and sexual violence', including; 'Issue', 'representation' and 'Framing'. The study addressed here is that of how mass media represents sexual violence. Media framing of sexual violence is another significant facet which study explored. This paper has reviewed 20 studies using systematic search on electronic databases.

Key Words : sexual violence, issue, coverage, framing, representation, rape, rape culture

0508070 BASU, SURHITA (Department of Journalism & Mass Communication, Women's College, Calcutta, West Bengal, Kolkata, India). STUDENTS MOVEMENTS AND SOCIAL MEDIA PASSIVE REVOLUTION AND DIGITAL CAPITALISM

The Hok Kolorob students' movement of Jadavpur University in Kolkata, started as a peaceful demonstration against an administrative decision in September 2014, was blown out of proportion after a clash with the police inside the campus. In 2018 July, the students of the same university organized hunger strike again against the decision of the administration which earned support even from the teachers. In January 2018 students' protests against the university decision on evaluation process rocked Calcutta University. Calcutta Medical College students in July 2018 staged a 14-days' long hunger strike against an administrative decision. Presidency University in August 2018 witnessed students' agitation against the administration which eventually led the university to organize its convocation in a separate location without the presence of any student.

The stream of students' protests as unfurling in Kolkata, along with many other factors has one thing in common – the use of social media platforms to communication, organize and spread of the message. Digital communication, particularly social media platforms have successfully been integrated in global revolutions and movements of recent past. Prominent examples of social media integration include Zapatistas of Mexico, the Catalans of Spain, Arab revolution spreading from Tunisia, 2011's anticorruption movement of India, from 2013's Shahbag protest to August 2018's students' movement of Bangladesh and many more. Few of these were revolutions ousting the governments of the country, few established terrestrial control refuting the government access. However, more were movements that achieved an immediate goal, few merged itself with higher cause for gradual social change. The latter cases of passive revolution, the concept as developed by Antonio Gramsci, witnessed a structural and functional evolution incorporating the virtual public sphere. The utopian conceptualization of Habermas' public sphere reached the best possible actualization with the democratic nature of

digital communication, particularly of social media. However, following P. D. Thomas' criticism of the nature of passive revolution, the nature of recent movements comes under scrutiny as whether the global capitalism in its digital form is manipulating the passive revolution for sectional interest.

The present study in its analysis of Kolkata's students' movements and the role of digital platform in it attempts to understand the nature of the passive revolution in background of the digital capitalism. Through in-depth interviews of students' movements' participants and organizers, the study explores the objective, strategies and policy of the movements and scans the actual success in achieving its goal. The role of social media is weighed in its contribution to the actual achievements against its contribution to the illusion of achievements. Further the long term implication of the movements is explored through its continuing functions. The paper stands unique in its sample of a city from a developing nation which is facing continuous students' unrest and in its evaluation of the role of digital capitalism and virtual public sphere in this scenario.

0508071 CHEEROTHA, ANTO P (Department of Communication Journalism, University of Mysore, Mysuru 57006). **CLIMATE CHANGE ISSUES IN ENVIRONMENTAL MAGAZINES: A STUDY ON MEDIA FRAMING IN 'DOWN TO EARTH' CLIMATE CHANGE NEWS REPORTS**

Environmental magazines play a significant role in the public perception and understanding of climate change issues. Media Communication about Climate Change has been emerged as a major academic cum research domain, especially since last decade. This research paper tried to explore the media framing of climate change reports in the environmental magazine 'Down To Earth'. The study took random selection of climate change news reports from Down To Earth magazine during the period July – September 2018. The study has set core objectives including; identifying the frames adopted by the magazine in their news stories relating to climate change issues, what frames were most/least prominent in the coverage of climate change news stories and also investigate the news source pattern to climate change coverage. For this, study has adopted using the prevalence of the five generic frames developed by Semetko and Valkenburg (cited in their research article titled Framing European politics: A content analysis of press and television news, Journal of Communication: 2000). A content analysis was conducted (three units of analysis including; climate change indicators/causes, adaptation & mitigation and Consequences of climate change) and the results were examined and compared towards various framing aspects of climate change issues, like attribution of responsibilities, human interest, conflict, morality and economic consequence. Study found that Down To Earth increased to give attention to climate change issues, but they were not giving emphasize to its remedial/problem solving aspect of climate change. According to framing data, magazine reports were largely emphasized the 'consequences frame', which representing the economic consequences/ financial losses/ degree of expense of climate change issues. Study also found that most of the news stories dealt with climate change issue reflected anthropogenic (human induced) reasons behind the phenomenon.

Key Words: Media Communication, Climate Change, Media Framing, Ockhi Cyclone, Online Newspapers

0508072 KUMAR, GOVIND (Department of Journalism and Mass Communication, Banaras Hindu University, Varanasi, Uttar Pradesh, 221005). **A STUDY OF IMPACT OF FAKE NEWS ON HUMAN FUTURE**

This paper intends to mainly focus on its focal theme "Impact of Digitized Communication on People, Society and Social Cohesion". Since the digital communication technology has come people have become dependent on the internet for the information. If they go to internet to find any news they find hundreds of relative content of their interest. Nowadays we are living in digital communication era and the fake news has become a serious problem to concur with. In recent times several worst accidents have been seen e.g. mob lynching in Rajasthan whereby a man was killed by mob in doubt of carrying beef with him. These type of content is misleading the people and driving them in the wrong direction. The fake viral news was the main reason behind this accident. These type of content is misleading the people and driving them to the wrong direction. The authenticity of viral content is a big issue for the country and the world as well. Now the media houses are taking this issue very seriously and running a campaign to concur with the situation. ABP news is running a programme since a long time on its channel "Viral Sach" this program does the investigation of a viral content. It tries to find out the truth behind

the viral content. Recently BBC News Hindi also did a programme in Lucknow University "Beyond Fake News" whereby they had invited senior journalists, Politicians and Police Officers to discuss on the issue of the fake news. There they shared their experiences of some accidents and discussed the consequences and possible solution of fake news. The campaign "Beyond Fake News" is still going on.

The researcher wants to find out the reasons of fake news and the possible solution of this problem. Researcher will conduct a sample study in Varanasi to assess the impact of fake news on the human future in this digital communication era. For completing his study research would take help of primary and secondary data sources.

Keys Words: Fake news, Viral Content, Digital Technology.

0508073 MISHRA, LAXMI (Department of Journalism and Mass Communication, Banaras Hindu University, Varanasi, Uttar Pradesh, 221005). USES OF EDUCATIONAL APPS AMONG SCHOOL STUDENTS IN VARANASI WITHIN THE FRAME OF TECHNOLOGY ACCEPTANCE MODEL (TAM)

With the development of information technology (IT) and information communication technology (ICT) and its penetration into every aspect of our life, has made it an inevitable part of our life. ICT encompasses broader components apart from computers and telephones which are related to digital technologies such as Smartphone, digital TVs and Robots recently. According to a US-based news agency Zenith, the ownership of Smartphone mobiles will be 530 million in 2018 in India. In 2015 government of India launched the 'digital India programme' which envisages increasing mobile phones penetration as a tool for the social and economic development in India. Accessibility of Smartphone by the adult as well as children will not only connect them but also will enable them to use various kinds of Apps which are launching in any other day.

Advances in mobile technology have brought different kinds of Applications to use, such as health apps, beauty apps, lifestyle, news, and many others. This list is ever going but how many apps are acceptable by users and why. This is also an important issue to know that how consumers use apps. This paper will focus on especially educational apps which are used by among school students (10 to12). This research will be descriptive in nature based on Technology Acceptance Model (TAM) given by Davis in 1989.

0508074 PANI, AMRITA (DDCE Utkal University, Bhubaneswar) IMPACT OF DIGITALIZATION ON HIGHER EDUCATION SYSTEM: A STUDY OF OPEN UNIVERSITIES IN INDIA

In this present competitive scenario, innovation through digitization has become a strategic mantra to cultivate global competitiveness and quality sustenance for each and every organization. Over the last few years Information and Communication Technology (ICT) has transformed the world into a versatile global village where technological revolution has brought massive diminution in time, distance and cost .Accordingly, the higher education system in India has also undergone a paradigm shift, particularly in the post-independence era, to grow as one of the biggest system of its kind. Open and Distance Learning is the latest system to facilitate education through distance mode for the students who are unable to pursue regular courses. There are seventeen Open Universities in India at present among them one national and sixteen state open universities. Open universities including IGNOU; have developed various innovative practices to strengthen higher education as a powerful tool to create a knowledge-based idealistic modern society of the 21st Century. In order to cultivate growth inclusivity and quality sustainability these open Universities have been performing multi-faceted roles, like creating new knowledge through research, sourcing and exploring new talents and generating brain capital reservoirs, through innovative teaching pedagogy, focusing on research, industry interface and other innovative activities so as to balance both the need and the demand, fulfilling the protocol and guidelines of UGC. The main purpose of the paper is to focus on role of digitalization in Higher Education Institutions for quality sustenance. This paper highlights on the implications of different forms of digital technology in Open Universities in India. The study also highlights on the various challenges in front of Higher Education System in India. Based on the data collected through secondary sources, this paper makes an assessment of the extent of innovativeness and responsiveness of higher education

system through Open Universities. The scope of the study is limited to Open Universities in India. In the concluding section, limitations of the study have been discussed and recommendations provided for undertaking more detail investigations in this area.

Key Words: Digitalization , Innovation , E-Learning ,Open Universities ,Global Competitiveness

0508075 MOHAN, RAJEEV R (Head, Department. of Media Studies, Thunchathezhuthachan Malayalam University, Tirur, Kerala). **IDENTIFYING NEW MEDIA ENCAPSULATING IDEAS FOR SOCIAL ACTION IN A TECHNOLOGICALLY AFFECTED SOCIETY OF KERALA: CASE ANALYSIS**

Society at large is a formulation from several deliberations of socially, politically diverse groups that coexist in a same geography. Moreover, to become a considerate society several factors like ethics, law & order and living practices of diversified groups conglomerate to find an unique space to agree in common. It can be identified as a country, state of other jurisdictionally accepted exercise approved on the basis for a peaceful coexistence. India is the largest democratic country in the world that encompass diversities in a liberal ground. Kerala is the southernmost tip of the country which rarely resembles any other states in India. Value education, gulf money, matriarchy, communism, renaissance movement, social philosophical thinkers et al transform the entire cultural traits of the state into a new one. Media has been a part and parcel of the society at large regardless of any discriminations. New media have effectively attracted the proactive youth in Kerala. Access to media is directly an access to the general public. Likewise the social movements happened the political affiliations of people right from the studentship in schools churn out a politically vibrant person. The new public sphere of people happens to be the social media platform where every act of the government, private, political, religious, gender and all other sorts of critical discussions emerge.

This study focuses on the social media driven incidents that have uplifted the level of common man into an active respondent of events. As an open media platform people habituated to interact on any issues with respect to their own ethical upbringing. Every person turned to be a producer as well as a consumer of message to become a prosumer. Five different issues that have occured recently, Hanan Hameed issue, Watsapp Hoax Hartal, Sreejith 764 day strike, Bishop Franco abuse and Kerala floods are taken for an in depth analysis. Peer group influences, like-mindedness, political influences are the factors chosen for studying the active reasons for these participatory involvement. An open interview with the active users of various social media groups and individual accounts are administered along with. The social media news, key terms, common practices administered by the users are significantly tabled for a thematic analysis of the rational and emotional approach of the participants.

Keywords: Social media, New Media, Digital era, Prosumer, New media Activism, Kerala, Media Democracy

0508076 MONISHA, M AND HARI, M SRI (Department of Communication and Media Studies, Bharathiar University, Coimbatore) **A STUDY OF KNOWLEDGE, PERCEPTION AND ATTITUDE ON MENSTRUATION AMONG MALE STUDENTS IN MARUDHAMALAI AREA AT COIMBATORE, TAMIL NADU, INDIA**

Menstruation is a physiological process which takes place between the age of 10-19 years known as adolescence (World Health Organization). Majority of people lack scientific knowledge about menstruation, (puberty) and have a negative attitude towards it. Menstruation is invisible to men and, therefore, it becomes necessary to educate men to have an awareness of women's physiological process. This paper attempts to highlight the knowledge level, perception and attitude of PG level students.

Keywords: ***Menstrual knowledge, Education, Male perspective, Attitude***

0508077 PANDEY, NEHA (Dept. of Mass Communication & Media Technology, Khallikote University, Berhampur- 760001, Odisha). SOCIAL MEDIA, A MEDIA OF PERSONALIZATION? A CONTENT ANALYSIS OF 2017 INDIAN STATE LE GISLATIVE ELECTIONS

Internet, Web 2.0, SNSs, Facebook, Twitter, YouTube, all these are relatively not very old words to the Indian political scenario. The parliamentary election of 2014 was the first election in India in which parties and their members widely exploited social media for campaigning and reaching out to citizens and made great use of it in a true sense. But now, Internet and politics have become inseparable. Both together has reduced the barriers of free flow of information between the political parties and the public. Among the many social media platforms, so-called microblogging service Twitter and Facebook respectively is probably the most popular and well known. Research from around the world suggests that social media is one of the causes of increased personalization of politics in recent years.

This paper seeks to ascertain facebook and twitter usage pattern based on State legislative election in seven states by conducting an analysis of twitter and facebook account. This study explores the use of both the platforms activities during the election campaign by the parties. This paper finds out how often tweets are being posted from the official account of parties accounts. What are contents tweeted and posted about?

This paper presents a content analysis of entire tweets sent by the members from the official account of parties for the entire period. To collect these data twitter advanced search option and for Facebook netvizz application was used. The unit of analysis is the individual tweets/posts. Tweets and posts were analysed by coding them into different categories. The researcher has also interviewed 10 respondent which includes politicians, and media professionals from both sides of the political divide to know the structure and functioning of media cells of theses political parties.

0508078 PAUL, SUBHAJIT AND PEGU, UTTAM KUMAR (Department of Mass Communication and Journalism Tezpur University). NEW MEDIA AND AUTHENTICITY OF NEWS: GATEKEEPING AND AGENDA SETTING IN THE NEW MEDIA ENVIRONMENT

The main focus of this paper is to analyze the process of dissemination of political news through the use of Twitter hashtags. Traditional news production process, in the context of political communication, was primarily dominated by the interaction of media and the political elite. Though the new media environment may not have completely democratized the news production process, it has made the influence on the news production process multidimensional. Since users can assess information from multiple sources beyond the traditional media, the new media environment consists of multiple gates and multiple agendas. On one hand, anonymity of source provided by many new media platforms paves the way for free expression of opinions, on the other hand it also creates the scope for creation and spreading of misinformation from otherwise untrustworthy sources. This paper essentially explores the pushing of various agendas or news by specific individuals or pressure groups based on their affiliation or political interests through the use of the selected hashtags which are trending at a particular point in time and hence visible to a wider audience. The study involves an analysis of 50 randomly selected tweets posted on Twitter with the hashtags #CBI4KathuaCase and #KarnatakaVerdict through the frame of Van Dijk's Ideological Square.

Keywords: New Media, #CBI4KathuaCase, #KarnatakaVerdict, Agenda Setting, Gatekeeping, political communication

0508079 PERIYAKANNAN, K AND SRIRAM, ARULCHELVAN (Department of Media Sciences, Anna University, Chennai 600 025) A STUDY OF ONLINE ABUSE AWARENESS AMONG CHILDREN IN CHENNAI

In this contemporary world, online is an important medium of digital communication. In the research problems stated that most of the children are actively using online which has both merits and demerits, how they are using the online content and the environment depends on them to make use effectively. Some are ambiguous and dangerous opportunists it allows the children to get online relationships negatively. Qualitative technique was

adopted and this study aims to find out the level of awareness among children's towards digital access and how they are accessing digital media safely, and digital rights usage.

This study was conducted to check the awareness of children about online abuse. A survey was conducted among 250 school students aged 14-17 years and questionnaire is based on whether children are aware of abusive content; whether they have shared or discussed about online abuse with others or not; whether they has been attending any awareness programme on online abuse in their schools, their knowledge of the child helpline number, etc.

The hypothesis tested in this study stated that children are having lack of awareness about online abuse. The results show that most children used the internet without parental guidance. Children in India are not aware of online safety and their rights. Parents and teachers do not provide online awareness to the children. Additionally the children are also not aware of the types of online abuse, though they are undergoing in various forms. Children are inability to identify online abuse hinders the process of seeking help. It concluded that most cases of child abuse goes unreported and its continuing in the same way with no proper guidance by parents or teachers.

Keywords: Internet, Online abuse, awareness, Addiction, Children, Parents.

0508080 PINTO, MELWYN S (Department of Journalism and Mass Communication, St Aloysius College, (Autonomous) Mangalore 575003). MASS MEDIA AND AGENDA SETTING: DID LOCAL NEWSPAPERS INFLUENCE OUTCOME OF ASSEMBLY ELECTIONS IN COASTAL KARNATAKA?

May 2018 Assembly elections in Karnataka brought forth unprecedented results for the coastal district of Dakshina Kannada, even as there was a fractured mandate in the state. Out of the total eight assembly seats in Dakshina Kannada, the BJP won seven and the Congress just one. The period around the time of elections had seen a high-pitched campaign orchestrated by different parties. The extensive coverage of this election by local media has also come under the scanner for being partisan as they were seen subtly supporting and patronising certain political parties (Shenoy, 2018).

It is to be noted that over the years, the coastal district has unfortunately grown as a communally sensitive region. The clashes among different religious communities due to varied reasons have increasingly put the citizens and the local administration into a lot of pressure. Communities have been polarised on religious lines, and such a polarisation has been used by different political parties to garner electoral gains.

In such a context, the proposed study seeks to explore the agenda-setting role played by the local media during the Karnataka elections with a special reference to local print media in the coastal district of Dakshina Kannada. Taking a cue from the significant Chapel Hill study by McCombs and Shaw (1972), the study will explore through content analysis and survey method whether the issues highlighted in the media prior to the elections were considered important by the electorate, and whether such evaluations by the voters influenced their voting decisions. The outcome of the study is expected to throw light on the media effects on citizens in the process of democratic participation.

Key words: Agenda setting, media influence, communal polarisation, electoral politics, democratic participation

0508081 PRAKASH, MANISH (Department of Mass Communication and New Media, Central University of Jammu, Jammu and Kashmir-181143). RE-IMAGINING DISCUSSION ON CELEBRITY LIFE IN NEWS CHANNELS

This paper tries to understand the role of news channels in broadcasting content on celebrities and their life on national television. The significance of this medium can be observed in the contemporary scenario. Most of the people switch their television to get some news about happenings around the globe. But, as we flip the channels we are bombarded with the personal life of celebrities being discussed on these channels. As we proceed towards end of

the new decade of the twenty first century, the entire world might be immersed in the web of new media technologies yet television has its own significance. Analysing the various aspects of television, we can see a tremendous change in the content. Yet, the yellow journalism which is changing its facet in the current scenario can't be overlooked. Furthermore, to manifest it theoretically, the book by Lev Manovich on the '*language of new media*' would be quite handy. With the majority of young population investing maximum time on their modern gadgets gives the required impetus to the thought of propagating this on new media, but if we keep neglecting electronic media, it might be the end of electronic media. Therefore, the paper will try to encapsulate the use of these tools in reinvigorating the strategies of the state in near future.

Keywords: **Celebrities, New Media, News, Television, Technology.**

0508082 RAJI, HARSHINI AND VELAYUTHAM, C (Department of Media Sciences, Anna University, Chennai – 600025). 'SHAKTHI': AN EXPERIMENTAL STUDY ON DEVELOPING AND TESTING A MOBILE PHONE APPLICATION TO BRING LEGAL REDRESSAL AWARENESS TO YOUNG WOMEN OF INDIA

'Shakthi' was a mobile phone application launched in Chennai, India, as part of an experimental study by the authors with the goal of spreading awareness of legal redressal procedures available for women in the Indian legal system. The app was tested real time on a focus group of 50 young women participants in the age group of 18-25 for a period of 30 days to study the amount of awareness the application was able to spread to its users. The prototype addressed topics like- What is a First Information Report (FIR) and How to file one?, what are the basic rights of a complainant, etc. The participants were asked to fill a pre- test questionnaire followed by the installation of the application on their respective smart phones. They were encouraged to use the app throughout the study period and they then answered a post- test questionnaire to learn how women subscribers use the service, what they learnt from it, what they like and dislike about it and whether the service influences their awareness. Before using the app, 100% of the participants knew what an FIR was, but 60% of them did not know how to file an FIR. On using the app, 100% of the participants now evidently know how to file an FIR in the time of need. Participants were keen on learning more information under more title. Shakthi, was designed within the limits to understand the demands and gauge the need for awareness and how a digital platform can engage them. Future projects or continuation of this study should add meaning to the technology enhanced lives of women in developing countries.

0508083 RAMESH, ASHWINI (Department of Journalism and Mass Communication, University of Mysore, Mysuru 570006). FRAMING KASHMIR: ARTICLE 35A REPRESENTATION BY THE INDIAN PRINT

Stating that abrogation of Article 35A is like playing with the fire, or is the last act of betrayal; the Indian print has indulged in an incredible sequence of frames in reporting the issue of Article 35 A. The carte blanche that provides Jammu & Kashmir a special status to decide the 'permanent resident', is under testing times today. Though, Supreme Court adjourned the hearing, and later claimed it to have implications on gender discrimination, the issue had set its agenda invariably in the front and national pages of popular dailies.

Every news story pertaining to Article 35A from August 1, 2018 to August 30, 2018 were qualitatively content analysed, followed by quantitative findings. The four popular English dailies - The Times of India, The Hindu, The Indian Express and The Hindustan Times were chosen based on the Indian Readership Survey (IRS). The study involved four frames, namely, Journalistic objectivity, law and order, political and remedial frames. The predominant appearance of law and order, and political frames showcased the momentum of the situation in which the residents were fighting for their rights, and the resultant effect on state's political ramifications.

The study significantly focused on the role of media in representing Article 35A with a broader objective to understand framing of political catastrophes in the Indian print.

Keywords – **Framing, Article 35 A, Jammu & Kashmir, Political, Newspapers**

0508084 SHARMA, HARSHWARDHANI AND PEGU, UTTAM KUMAR (Department of Mass Communication and Journalism, Tezpur University, Assam). POLITICAL RHETORICS DEPICTED IN CARTOONS: AN ICONOGRAPHIC STUDY OF "SO SORRY POLITOONS"

The focus of the study is to understand the usage of cartoons in political communication. Political cartoons as a genre constitutes a form of media text whose verbal and visual elements have made them an interesting research field across academic disciplines. This has made political cartoons a potent interdisciplinary research field crossing different research boundaries such as education, sociology, psychology, health research, pragmatics, and communication. This growing research interest demonstrates that political cartoons have become a distinct and established genre within media discourse. Political cartoons generally are thought-provoking and strive to educate the viewer about a current issue. They have grown extremely popular due to the straightforward way they address an issue. "Cartoons are now one of the most important weapons in a newspaper's armory of political analysis…Unlike a news article or column, the cartoon has the capacity to almost instantaneously dissect a political issue. A cartoon can often have more veracity and insight than hundreds of words of text-based analysis.

This paper aims at illustrating how political cartoons are used as a vehicle for setting political agenda in Indian TV news Channels to reorient and shape public opinion through recurrent depictions mirroring current socio-political issues at a given period. The cartoons texts were excerpted from one of India's' most preferred TV News Channel 'India Today', episodes released from 15th Sept. 2018 to 15th Oct. 2018 have been selected using purposive sampling technique.The theoretical framework used for the study has been based on De-Sousa and Medhurst model of the political cartoon. This paper presents a formal analysis of political cartoons using Iconography method posited by Erwin Panofsky. In this study, we analyze the events which are depicted in "So Sorry Politoons" with history so that we can understand the cartoonists' armoury and the importance of history in the meaning-making process. The results indicates that majority of the themes focused on substantive issues through which political and social agenda is set to reflect social practices in the socio-political contexts. Finally, the results showed that political cartoons set social agenda by encapsulating current issues that people are much concerned about.

Keywords: **So Sorry Politoons, Political Cartoons, Semiotics, Iconography.**

0508085 SHARMA, ARPITA AND KANDPAL, NARESH KUMAR (Dept. of Agricultural Communication, College of Agriculture, GBPUA&T, Pantnagar). USE OF INFORMATION COMMUNICATION TECHNOLOGIES BY VEGETABLE GROWERS OF UTTARAKHAND

Uttarakhand is primarily an agricultural state although its share in the country's total area and production is very small. The contribution of agriculture to the state's domestic product is about 22.4 per cent and 75-85 per cent of the population dependent on agriculture for their livelihood. This highlights the need for separate approaches for agricultural development in the hilly region of the state. Majority of hill women are engaged in vegetable cultivation. Hill women were suffering from various problems due to lack of knowledge, information and education on various aspects. Thus, dissemination of information and education on various new aspects is necessary to empower the hill women. Present investigation was conducted in four villages viz; *Koan, Baldiyakhan, Devidhura and Aadukhan* of Nainital District of Uttarakhand. Result revealed that majority of respondents fall in middle age and belonged to General caste and can read and write. All the respondents have Mobile phone and television. Majority of respondents take the farming related information from neighbour followed by Input Dealer.

Key words: ICTs, Vegetable Grower, Hill women

0508086 SHRIRAM, M AND ARULCHELVAN, S (Department of Media Sciences, Anna University, Chennai-600025, Tamil Nadu) HOW MEDIA REPRESENTS MIGRATION? AN ANALYSIS ON INTERSTATE MIGRANTS IN INDIA

Migration has become a contentious issue in different parts of the world. With greater access to job markets and the enhanced transport system, mobility of people has grown to unprecedented levels. Migration has always been

a significant component and factor in population and economic change in both migrant receiving and sending states or nations.

Despite these considerable influences on the structure of society, media has made limited attempts in covering of news and events related to migrants. Even in the limited reporting undertaken by journalists, majority of stories covered have limited or no discussion on issues that deals with migration linked to human interest stories. Many experts have raised apprehension over the lack of representation of particular views and ideas, could lead to abuse of power by one dominant section of society.

However, in addition to the lack of coverage of migrants and their issues; the perception towards migration has also not been widely studied in a deep systematic manner in the Indian context. Many people heavily rely on Mass media as principal source of information with near zero scepticism, particularly in areas that deal with external events or when they don't possess enough understanding or experience about the specific subject. In this way media has the ability to act a powerful influencer not just in shaping people's views and attitudes but also perceptions towards the community as a whole.

This research analyises the construction of a newspaper's coverage of migrants and migration and takes a closer look at how the media ability in shaping public's perception and attitude towards migrants.

This research is further explores as to how migrants and the migratory process have been covered by national newspaper. The article aims to provide different aspects of which journalists and news article focuses on covering the related events. This study furthers intends provide analysis of the media general discourse related to migrants. In this study, newspaper articles and news stories related to migrants and migration published in a leading national Indian English newspaper were analysed using content analysis. This research analysed and classified news articles that were published during the period of July to September 2018.

The results revealed that, migrants and migration related issues are under reported in the newspapers. Even when reporting about those issues it usually deals sensational news related to migrants.

0508087 SINGH, BEENA, PANDEY, NIPUN KUMAR AND MORYA, RADHA (Mahatma Gandhi Chitrakoot Gramoday Visvavidyalaya, Chitrakoot,Satna (M.P.) **THE ROLE OF COMMUNICATION MEDIA IN WOMEN EMPOWERMENT**

Communication media mainly focuses on the injustice and evil practices faced by the women in rural and urban areas. Communication media help in women empowerment by letting them, know about their educational, social or socio-economical and constitutional rights, so that they can raise voice against them. The present study was carried out in Rewa District, Madhya Pradesh. Hanumana and Huzur block was selected randomly and in Each block two villages were selected. In total 80 respondents, 20 respondents are randomly selected for the study from each village. The data was collected through interview schedule and analyzed with appropriate statistical tools like Percentage and Chi-square (X^2) test. Independent variables like Age ,education , caste , occupation , types of family , marital status , spend leisure time , sources of Income , sources of energy , membership of organisation , religion , agriculture assets , sources of information , sofisticated items and dependent variables are considered in women empowerment . Most of the respondents under the category are of middle Age Group , General Caste, up to primary , Agriculture **,** mixed house , joint family , married life , spent time our TV **,** source of income in agriculture , using firewood as a source of energy , having no membership of any organization , Hindu , using tractor as a source of agriculture sources of information from TV . Highest majority were from people who never read newspapers , read newspaper for knowledge , always listen radio , listened radio for entertainment , never read magazines, read magazines for entertainment , sometimes watching TV, watching TV for knowledge, never use internet , No Decision making power, never faced the problem at the work , busy in household works , always freedom for the like work, sometimes participation in family decision, sometimes pressure for the unlike work, , sometimes problem at the work place, no permission of work, out of the home.

Key Words: Women empowerment, Communication media

0508088 SINGH, AMRITA (Malaviya Center for Peace Research, BHU, Varanasi). DIGITAL TECHNOLOGY OF CINEMA AND GENDER PERSPECTIVE

Riccioto Canudo addressed Cinema making as seventh art. According to Canudo cinema is the blend of the three spatial arts (Architecture, Sculpture and Painting) and three temporal arts (poetry, Music and Dance). Now-a-days through digital technology the art of cinema is enriching its impact. Digital technology does not only give prosperity to Cinema art but also serves impact to that massages what cinema wants to convey to its audiences. While Marshall McLuhan has said medium is message itself, he argued "medium is message" because it is the medium that shapes and controls the scale and form of human association and action.

Johan Galtung in his book *Peace by Peaceful means: Peace and conflict, Development and Civilization* (1996) established the link among social and cultural norms, violence and peace. Johan Galtung argued, in cultural believes men are chosen and women are unchosen. He introduced the concept of 'cultural violence'. Galtung defines cultural violence as any aspect of culture that can be used to legitimize direct violence and structural violence. Examples of cultural violence are indicated, by using the division of culture into-

- Religion and Ideology
- Art and Language
- Empirical and Formal Science

As empirical science cinema not only explores religion, ideology, art and language but also conveys massages related to these. Digital technology is the form of formal science through the using of this digital technology Cinema also a part of formal science. Gradually Indian cinema becoming more techno-friendly by using digital sound, digital pictures, BFX, 3D effects and etc. the purpose to be more techno-friendly is to convey the massages effectively. Now this is important to scrutinize what kind of massages is given through the use of this digital technology. This paper will analyses, is cinema only an art? Or cinema is also a tool for hegemony. By the content analysis of three Indian films Bahubali (2015), Bahubali The Conclusion (2017) and Padmaavat (2018) this paper will also explore, how the formal science of digital technology is being used as the tool to shape and control human action and deploying this digital medium to propagate cultural violence in gender perspective as well.

0508089 TRIPATHI, NITESH (Department of Journalism and Mass Communication, Faculty of Arts, Banaras Hindu University, Varanasi 221005). FUTURE OF INTERNET AND ITS ANTICIPATED IMPACT ON HUMAN BEINGS

Christian Lous Lange, a famous historian once said "Technology is a useful servant but a dangerous master" which is a very relevant quote in today's digital era. In a rapidly changing world aided by proliferation of technology, there are speculations that in future, technology would create dystopian world as depicted in Brave New World by Aldous Huxley. Some even imagine worst case scenarios like all out cyber war between nations or creation of Skynet (Fictional character of Terminator movie). Not just this, present issues like- cultural homogenization; the use of media for polarization, cyber crime, propaganda and terrorism; WhatsApp videos causing mob lynching and riots; concerns of black out due to cyber attack further compounds our fear and aversion to embrace technology whole heartedly. Against this backdrop of negativity, a great deal of thinking is required to anticipate what our future mass media especially internet would look like and how is it going to affect our culture, society and human beings in particular. Also thought needs to be put on what internet as a technology would do to human beings and how human beings would cope and communicate with it. According to Deloitte report (2018) by 2030, two billion youth are at risk of being left behind due to emerging technology. While the statement is true but the other side of the story needs to be told to allay fear, instill confidence and sense of security in people's mind. The whole picture of this statement is that even though jobs would be lost due to automation, the technology will never take human jobs as machines can't think. They can only do menial and rudimentary tasks like calculations and daily chores. The power to think critically and control these machines still rests with human beings and it would always remain so. Humanity today has fears, inhibitions and doubts as to how future in digital era would turn out. Whether technology would remain our companion and lead to better and brighter future? Or will it become our

nemesis and bring Doomsday? In this regard, the report of Ernst & Young titled 'The future of digital is human' definitely puts rumors to rest and instills confidence in people which elaborates that technology will only remain a subordinate to humankind. The apprehensions regarding the future of internet are due to wrong depiction of future in entertainment media, less knowledge and pervasive rumors. And thus it becomes evident that there is dire need to study and understand what the future internet would look like. This study focuses on studying the negative and positive future trends that may either work in favour or against mankind. To do this study, secondary data analysis of research report of Ernst and Young, website articles and research papers on New Media was performed. Also In-depth study of existing literature on Future of Internet such as- The future of the Past in the Digital Age (Clio Wired), Future Minds (Richard Watson), The Future of the Internet and How to Stop It (Jonathan Zittrain), How to Fix the Future (Andrew Keen) and The New Digital Age (Eric Schmidt and Jared Cohen) was carried out to gain knowledge and insights regarding the topic.

0508090 VERMA, ANURAG (Gyanarthi Media College, Kashipur), THE EFFECTS OF NEW MEDIA TECHNOLOGIES ON HUMAN COMMUNICATION AND RELATIONSHIPS

The world has become a digital platform today and so many communication technologies are available for the humans to make their life easier. The new media technologies have impacted various facets of modern life and it has a profound influence on the various phases of human communication and social relationships. Time has become the most precious resource, and people are finding means of saving time because of their fast paced life style. People need interaction for fulfilling their social needs and social media has become a preferred medium for communication with the proliferation of digital and mobile technologies. Digitalization has reduced the face to face interaction of human beings whether it is for marketing or promoting a product or a personal communication. The mobile phone has created a social situation whereby people are getting used to avoidance of person to person communication by switching over to mobile. The present day life styles and lack of time have made the usage of mobiles and other communication aids more useful for social contact. Three key issues are surfacing regarding the role new media now plays in people's communication styles. First, when we communicate through new media, i.e. Facebook, chat messengers, what's app, we tend to trust the people on the other end of the communication, so our messages tend to be more open. Second, our social connections are not strengthened as much through social media as they are face-to-face, so we don't tend to deepen our relationships—they tend to exist in the status quo. Last, we tend to follow and interact with people who agree with our points of view, so we aren't getting the same diversity of viewpoints as we've gotten in the past. Experts agree that those who have a keen sense of observation must be aware that people are changing the way they communicate.

The proposed research study would analyze the impact of new media and in the way people communicate with each other or lack of it! To analyze the growing influence of the digital devices and the social media on the interpersonal relationship, more specifically the following Objectives:

- A review of the progress of social media in communication
- A critical analysis of growth of new media in interpersonal communication
- The proliferation, impact and influence of mobile devices in communication
- The rise of artificial emotions in relationships because of social media
- The impact, pros and cons of such developments

The proposed study will be done by using survey methods i.e. ;-

- **Survey using questionnaire**

Keywords: Digital media, human behavior, invasion, interpersonal communication, generation gap. Relationship

09. COMPUTER SCIENCE

10. EARTH SCIENCE

11. ECOLOGICAL AND ENVIRONMENTAL SCIENCE

0511091 DOLMA, KONCHOK AND RISHI, MADHURI S (Department of Environment Science, EJM College, Leh Ladakh (J&K), 194101) **THE LOST WORLD OF SPRINGS: PAST AND PRESENT SCENARIO IN THE 21ST CENTURY DIGITAL ERA IN THE TRANS HIMALAYAN TOWN OF LEH**

Springs were revered during times of ancient Ladakh before the advent of tourism, especially in town of Leh. They were the sources of pure potable water during winters and summers in earlier times. These potable resources of water in Leh town are undergoing a massive change due to over exploitation of groundwater mainly propelled by urbanization. The boom of this trend majorly lies on the growing tourism sector which is hugely water intensive in nature. This paper describes the traditional folkways and mores related with springs in Leh town and how these water spots were an integral and indispensable part of the daily lives of the residents of this region. It is further elaborated in this paper how the status of these springs went drastic changes in due course of four decades after the advent of tourism in Ladakh. These changes are more or less located in Leh town as this part is the centre of Leh district which boasts a fully functional defence airport and simultaneously used by the civilians. As, tourism is majorly clustered in Leh town and the tourism industry becoming an agent of change is most conspicuously relevant in this part. Therefore, the springs, undergoing a massive chain of events, particularly for the worse can be directly or indirectly put on the mass tourism trends in this part of Ladakh. The detailed reconnaissance survey of existing springs in the town is further elaborated along with locations on the map and also the dried springs which were earlier flowing freely are located on a scaled map of Leh town. Further the state of existing springs and their water discharges per minute is further enlisted in a table and possibilities of further drying and contamination is elaborated keeping in view of the construction and urbanization boom in surrounding areas of such springs. Overall state of springs is thus inferred in the town of Leh and effective conservation methods are described henceforth in an elaborate manner in this research paper.

Keywords: Springs, Leh town, urabanization, tourism, groundwater

12. ECONOMICS

0512092 BARMAN, BEDADYUTI AND DEY, ASHAMUKUL (Department of Economics, Abhedananda Mahavidyalaya P.O. Sainthia, Dist. Birbhum, PIN 731234, W.B.), RABINDRATHA TAGORE'S THOUGHT ON DEVELOPMENT AND ENVIRONMENT

Environmental consideration of economic development has been attracting attention of the western intellectuals for more than half a century. From1970 onwards we find a large number of writings that pointed out the danger of self destructing nature of growth of the modern society. The study published in 1972 under the title 'Limits to Growth' or its updated version 'Beyond the Limit' as published in 1992 portrayed an extremely pessimistic vision of the future of this world and predicted the cessation of growth process after a certain period of time. Thus the environmental repercussions of economic activities led the people to think about the kind of growth process that can be continued over time. The study published under the title 'The Ultimate Resource' envisaged an unending process of growth but this seems to an extremely optimistic vision of the real world situation. The concept of sustainable development, as it appeared in the Brunt land's report (1987) and got widely accepted in agenda 21 of the Rio conference in 1992 seems reconcile the concept of environment and development in a meaningful way. Sustainable development seeks to provide the most obvious solution of the issue of continuing developmental activities paying adequate consideration to this planet earth. But long before these western efforts Rabindranath Tagore, one of the greatest poets, writers, thinkers, social reformers and environmentalists of the 19th century talked much about environmental repercussions of economic development and provided solutions to embark on the path of development suited to Indian soil and situations. A visit to the world of Tagore presents ample evidences of his deep concern about nature and the self defeating activities of the human race that have enormous bearing on environmental health. This paper attempts to focus on Tagore's thought on environment and the lessons as is found in his writings for mutual co- existence of progress and preservation.

0512093 CHARY, YELSOJU SOMA (Department of Economics, Kakatiya University, Warangal, Telangana), DIGITAL TRANSFORMATION IN INDIAN BANKING SECTOR: A STUDY

Indian banking sector is moving a wide range transformation in offering better and enhanced services to the customers through digital technology. Indian banking industry has been developing an outstanding advancement in using digital technology. Its mainly focused on new banking technological day to day Innovations , by creating to use of new technology to provide effective quality and services to the customers. The development of banking sector depends upon the services provided to the customers in various aspects such as, ATM-cum debit service, internet banking, mobile banking, SMS banking, RTGS, NEFT, IMPS, UPI, etc. Indian banking system facing many challenges towards innovations policies and strategies. Which leads ultimately by creating a new competitive economic environment throughout the country.

Key words: Banking sector, innovations, challenges, technology, advancement.

0512094 KAVLEKAR, PRATHIKSHA K AND MHALSEKAR, REVATI S (H.No.: 125/1,Khalwado, Corlim-Tiswadi, Goa), IMPACT OF DIGITISATION ON EMPLOYMENT IN GOA

Digital technologies are used in manufacturing as well as in service sectors. A large proportion of present workforce use ICT in their daily work. Services sector uses ICT extensively due to the increasing digitalisation of many services – such as e-Banking, e-Commerce, and online media. The digitalisation challenges the traditional concept of employment, working time and place. The Information Technology landscape has been significantly changing, and this change has altered the way IT companies can remain relevant in the future. Automation and robotics are exerting huge pressure on the work force to stay relevant. Fear has been expressed regarding the possibilities of labour being replaced by digital technology. This is advantageous to the economies having shortage of workforce. As new technologies require explicit type of skills, it would lead to policy challenges requiring to adaptability to vocationalisation of education and skill development through training, including lifelong learning. The immediate policy challenge would be to support workers in adapting to digital nature of tasks. The developments in digital technology are bound to affect employment opportunities not only of unskilled and

semiskilled workers but also professionals and highly skilled personals. The overall impact of digitalisation on employment could be positive as well as negative.

Goa, being a tiny state, has an advantage to adopt to digitisation. The Government of Goa is also taking various steps in this direction. The present paper attempts to analyse the extent of digitalisation taking place in Goa, the effect of digitisation on employment structure and employment rate in Goa, the opportunities and threats of digitisation in Goa. The required information for the study would be collected from secondary sources of data. It would also make use of information collected directly from the selected employers and would utilise simple statistical tools to analyse the data.

Key words: Digitalisation; Employment; Impact; Goa

0512095 KUMAR, RANJEET (A. N. Sinha Institute of Social Studies, Patna 800001) DOES PUBLIC EXPENDITURE ON EDUCATION CAUSE ECONOMIC GROWTH IN INDIA?

Education expenditure and economic growth is one of the debatable topics since the days of Adam Smith. Many scholars have acknowledged the importance of their relationship. Education is one of the effective determinants of multidimensional social development. It fullfills the supply of skilled labour and promotes the incorporation of modern technology to accelerate production process in an economy. A quality education is the essential requirement for every economy and so it needs a proper investment. This paper aims to measure the causal relationship between education expenditure and economic growth in India during the period of 1991 to 2012 applying Johansen co-integration and Granger causality test. Result based on Johansen co-integration and Granger causality advocates the unidirectional long run relationship between education expenditure and economic growth in India. In other words, the education expenditure causes the growth of GDP (Gross Domestic Product) in India while the growth of GDP has insignificant statistical impact on education expenditure in India.

Key Words: Education Expenditure, Economic Growth, Unit root, Co-integration and Granger Causality.

0512096 KUMAR, SANJAY (.....), खेती किसानी का संकट

पिछड़े देशों में हाल के दिनों में खेती के संकट नें एक व्यापक जनांदोलन का रूप ले लिया है। खासकर द्वितीय विश्वयुद्ध के बाद आजाद हुए देशों में विकास का एजेंडा काफी चुनौतिपूर्ण था। इसका कारण यह था कि औपनिवेशिक दौर में शोषण की वजह से इन देशों की हालत काफी खास्ताहाल थी। पॉल बारन ने इसे उत्पादक शक्तियों का साम्राज्यवाद और सामंतवाद दोनों के बीच उलझा हुआ माना। इसलिए इन अर्थव्यवस्थाओं में विकास के लिए सबसे जरूरी इस दुष्चक्र को तोड़ना था। इनके पास पूंजी की भी काफी कमी थी और व्यापक आबादी खेती पर निर्भर थी। खेती में शोषणमुलक संबंधों की वजह से खेती भी काफी पिछड़ी हुई थी। ऐसे में खेती में शोषणमुलक व्यवस्था के खात्मे से ही इन देशों के विकास का रास्ता खुल सकता था। भारत में इसी को ध्यान में रखते हुए आजादी के बाद खेती में संरचनात्मक बदलाव को केन्द्रित किया गया। पहली योजना में खेती के विकास पर जोर दिया गया। इसके परिणामस्वरूप 1960 के दशक तक खेती में उल्लेखनीय सुधार हुआ। लेकिन दुसरी योजना के बाद से ही सरकारों की प्राथमिकताओं में बदलाव होने लगे और खेती के विकास को आगे बढ़ाने वाली योजनाओं को छोड़ दिया गया। इसकी एक बड़ी वजह सत्ता संरचना भी थी जिसने ग्रामीण उत्पादन संरचना में बदलाव को बाधित किया। 1990 के दशक के बाद के नवउदारवादी नीतियों ने तो खेती को पूरी तरह हाशिये पर डाल दिया। आज इन समग्र नीतियों के परिणाम नें किसानों के जीवन को काफी बदहाल कर दिया है। घाटे और कर्जे में डुबते किसानी की वजह से किसानों की आत्महत्या बड़े पैमाने पर सामने आयी है। इन सबने किसानों का संगठित प्रतिरोध का स्वरूप लेना भी शुरू किया है। ऐसे में खेती के संकट को उसके ऐतिहासिक परिप्रेक्ष्य के लिहाज से देखना जरूरी है ताकि हम खेती के वर्तमान संकट को समझ सकें। इस संकट को राज्य और निगमों की भूमिका से इतर नहीं समझा जा सकता है। यह अध्ययन विकासशील देशों में उसके ऐतिहासिक परिप्रेक्ष्य में देखते हुए वर्तमान संकट को समझने की कोशिश करता है।

0512097 KUMARI, VANDANA (A. N. Sinha Institute of Social Studies, Patna 800001) WAGE AND PAYMENT DYNAMIC OF CONSTRUCTION SECTOR A STUDY OF BIHAR

After the bifurcation of Bihar and Jharkhand most of the mines and power plants are shifted in Jharkhand, most of the manufacturing units which was in the southern Bihar were naturally shifted to Jharkhand and distribution of physical assets on the basis of **'on is, where is'**, and also Bihar received three-fourth of liabilities and just one-fourth of assets. Therefore, a major workforce dependent on agriculture activities, but Bihar also suffers the

natural calamities like drought and flood with no any land reforms. Beside this poverty and unemployment has always been issues for the Bihar, literacy rate is extremely poor one of the reason of poverty and unemployment. Due to this gradually Bihar's workforce shifted from agriculture activities to non-agriculture activities. In this situation informal sector has boon for Bihar and construction sector become an alternative choice or option to get employment for unemployed uneducated workforce. In the last few decades Bihar is a centre point for investors, for this so many commercial and residential projects are run. It is seen the boom in the secondary sector is entirely on account of construction work, whose value added shot up to two and half times in three years from Rs. 3100 crore to Rs. 7400 crores in 2006-07, an annual growth 46 per cent. Construction sector is second larger employer and faster growing sector in India. Therefore, construction sector has an important component for the informal workers. Besides this, wage payment are always serious concern for the construction labour, where no any rules and regulations are worked properly. In this sector labourers are getting employment as an intermixing of formal and informal relation in the economy, therefore it is said that the construction sector is a **Peculiar Sector** also said construction employment is **Smokescreens** of formality at the same time prolong informality.

The study is based on primary data. This research adopts focus group discussion as well as structured and unstructured individual interviews for data collection. 100 construction workers and in 25 construction contractors were interviewed.

Key Words: Wage, Informal- segment, formal-segment, construction sector.

0512098 MAJUMDAR, SAIKAT (Department of Health & FW, Government of West Bengal (Public Health Research). THE ROLE OF DIGITAL INDIA IN GOVERNMENT SECTORS OF THE ECONOMY

The basic objective is to find out practical solutions and innovative ideas to accomplish the vision of a digital India-a reality.

The paper is based on the secondary data and the information is retrieved from the internet via journals, research papers and expert opinions on the same subject matter.

As per the World Bank report, a 10% increase in mobile and broadband penetration increases the per capita GDP by 0.81% and 1.38% respectively in the developing countries. India is the 2nd largest telecom market in the world with 1.16 billion wireless subscribers and world's 3rd largest Internet market with almost 259 million broadband users. There is still a huge economic opportunity in India as the tele-density in rural India is only 45% where more than 65% of the population lives. Future growth of telecommunication industry in terms of number of subscribers is expected to come from rural areas as urban areas are saturated with a tele-density of more than 160%.

Key Words: Digital India, tele-density, government service

0512099 MOG, USA JEN AND DEBBARMA, JAHAR (Department of Economics, Tripura University, Agartala). CHANGING PATTERNS OF TRIBAL LIVELIHOODS IN TRIPURA - A CASE STUDY

Agriculture and allied activities that support above ninety percent livelihoods of rural tribal population, has lost its importance nowadays. There are 19 tribes having 31.75 percent of total population in the state and 96 percent of tribe lives in rural areas and their livelihood depends upon agriculture and jhum or shifting cultivation. It has been observed that land based livelihoods of small and marginal farmers are increasingly becoming unsustainable. As their land has failed to support their family's food requirements they are forced to look at alternative means for supplementing their livelihoods. The rapid changes at the macro level that India witnessed since the early nineties has contributed to the instability of the livelihood systems of the tribal households. The emergence of so-called development process and market economy has disturbed the age old tribal and nature relation. The present study tries to explore the traditional pattern of livelihoods and their changing scenario in tribal communities in Tripura. In earlier days the tribes were mostly depending on forest resources for their livelihoods. They used to collect various forest based products and fuel woods from nearby forest. The villagers were managing the forest. Apart from forest resources they used to do some cultivation in forest land known as jhum cultivation. In course of time slowly this

forest got degraded because of various reasons. Due to development process, influx of outsiders and rise of population became major threat for tribal communities. The tribal population which was 50.26 percent in 1950 census was reduced to 31.75 percent in 2011 census due to influx of refugee from erstwhile East Pakistan in Tripura. The degraded resources failed to suffice the needs of the villagers. It compelled the tribal inhabitants to look for other alternatives. The average size of land holding of tribals is declining and agriculture labourers are increasing. In the initial days it was only agriculture, which gave them an alternative source of livelihoods. But fragmentation of land holding size, depletion of forest land and traditional technology failed to meet the rising needs of rural tribal. Due to increase in the population and requirement of development needs the forest depletion rate is faster in the State. People are now travelling long distance to collect the firewood. They engaged themselves in various non-traditional activities for livelihood. Most of the younger generation are engaged themselves in non-agriculture sector. It is, therefore, felt necessary to study this aspect to take stock of things so that the reason of changing in livelihood of tribal population can be identified and revision of policy can be suggested for facilitating effective planning, suitable policy formulation and efficient implementation of tribal development programmes in the state to cope up with the present changing scenario.

Keyword: **Livelihood; forest; tribal; development; policy.**

0512100 MORAJKAR, ARJUN ANANT AND GAUDE, KISHAN N (Department of Economics, Government College, Sanquelim-Goa). DIGITALISATION AND TRIBAL DEVELOPMENT IN GOA

The inclusive growth of any economy would be possible only when the fruits of growth reach out to the weaker sections of the society. Hence, bringing the tribal communities to the main stream of the society is essential. The Central and the respective State Governments in India have been formulating and implementing various programmes to uplift the standard of living of tribal population for which Goa is not an exception. Goa, a tiny state of India having a great historical background was ruled by many dynasties. The tribal people from different states have settled in Goa. As per the Census of 2011, the Schedule Tribes formed over 10 percent of the total population of Goa. Gowdas, Kunbis, Velips and Dhangars are the four major tribal communities mostly settled in the Eastern part of Goa. It is pertinent to examine effectiveness of the various schemes introduced in increasing income, literacy and education, health status, infrastructure facilities in tribal areas. In the digital world it is essential to focus on digital skills and literacy of tribes and developing digital means to reach out to the communities with connectivity and access. These might facilitate effective marketing of tribal products and services and availing of various schemes. In this background, the present study attempts to study the effectiveness of digital inclusion in bridging the gap between the tribes and the mainstream population, utility of the Internet-connected public facilitation centres (PFC) and common services centres (CSCs) in the tribal dominated villages, and to examine how digital means and medium can be used to mitigate exclusion within communities in Goa. The study will make use of secondary and primary sources of information and simple statistical tools for analysing data.

Key words: Digitalisation; Tribal; Development; Goa

0512101 REETI (A. N. Sinha Institute of Social Studies, Patna-800001). DIGITISATION DRIVE TO ENSURE TRANSPARENCY IN PDS: WHETHER INCLUSION OR DIGITAL DIVIDE

The Constitution of India guarantees fundamental right to life, and food is one of the most essential elements for life. The Public Distribution system (PDS) plays an important role in the fragile and uncertain lives of the poor people, as it provides a modicum of food and economic security. The National Food Security Act (NFSA), 2013, was introduced with a series of reforms, which put the PDS on a better footing. The Government of India has been deploying technology for enhancing the transparency, efficiency and accountability of the PDS. To achieve the objective many technological applications and improvements have been introduced such as; ration card, coupon system, aadhaar identification, biometric authentication, point of sale machine, sms based monitoring, GPS system, etc., from time to time. PDS in Bihar used to be one of the worst in India, but it is claimed that the system has improved significantly from 2011 onwards. The paper aims to analyse the targets of transparency and inclusion in PDS in Bihar, through digitisation. To what extent, technology can facilitate towards ensuring transparency and inclusion in the delivery mechanism of PDS to achieve food security, remains a central question, particularly in a

country like India, where illiteracy still remains a major challenge to bring the weaker section in the mainstream of development. The paper is based on the analysis of the primary data, collected from the pilot survey in Bihar. The survey was conducted at two types of PDS outlets- one where the conventional technology or the old 'register-system' is still in function, and second, where the new technology (ABBA, POS, etc.) has been implemented. The respondents were 30 households from each outlet, i.e. the sample size was 60. The challenges and drive to impose these technologies on PDS to ensure transparency, need to be critically examined. Imposing a technology that does not work on people, who depend on it, for their survival, is a grave injustice. The digitisation of PDS may be done through simpler technologies which may be accessed by the illiterate, and which are generally not dependent on the internet system. It is the central point of investigation as to whether digitisation facilitates transparent delivery system or, there is still a long way to go in ensuring that the system is reliable, transparent and corruption-free.

Keywords: Food Security, PDS, NFSA, Technology (ABBA), Transparency, Inclusion.

0512102 SHADAB, NAGMA (Department of Economics, GBM College Gaya, A constituent unit of Magadh University, Bodh Gaya). GOODS AND SERVICES TAX (GST) IN INDIA: PROSPECT FOR STATE

Goods and Services tax (GST) is a broad based and a single comprehensive tax levied at entry stage of the production and distribution chain with applicable set-off in respect of the tax remitted at previous stages. It is basically a tax on final consumption, integrates the union excise duties, custom duties, service tax and state VAT. Presently around 140 countries have adopted the GST pattern, including India. The GST would be beneficial for the consumers as it reduces the final burden of taxation. For government it leads the reduction of tax, compliance efforts and administrative costs and for business units, it leads transparency, complete set off and removal of cascading effect of taxation.

It is in this background that the present paper tries to explain the significance of GST in India and its prospects for state to generate revenue and ensure transparency in tax structure. This paper is organized into five sections. Section two presents justification for dual structure of GST in India. The third part presents the rate structure under GST in India. The fourth segment is concerned with the working of GST in India. The fifth and final part is related to conclusion and policy recommendation.

0512103 SINGH, AKHILESH AND PANDEY, ADYA PRASAD (Department of Economics, Banaras Hindu University, Varanasi). FOURTH INDUSTRIAL REVOLUTION AND DIGITAL DICTATORSHIP

In past human dealt with the problem of survival by organizing themselves around some natural, social or state order. And as long as problem is handled by tradition or command it never gave rise to that special field of study called Economics. The economist gave a new and imagined arrangement for world order called market system and rule was each should do what was to his best monetary advantage. Therefore, in quest of more and more surpluses we kept on substituting human labour with machines because machines don't demand share in production. Modern day machines equipped with the artificial intelligence are capable to do many tasks more efficiently, precisely and rationally than human being himself. These artificial intelligence are programmed on behalf of the set of algorithms i.e. data. Therefore, the World Economic Forum 2018 calls the fourth industrial revolution, "The Digital Data Age". Noah Harari in his speech at Davos said that- "If too much of the data becomes concentrated into few hands, humanity will not split into classes; it will split into different species".

Section 1, of this paper will discuss about role of digitisation on economy and economic activities. In Section 2 we will identify change in efficiency of few variables such as Time taken, money spent, with and without digital technology, in providing social good by state and private good by market regarding distribution of goods and services to the Public. Section 3 of this paper will discuss about effect of digitisation on economic behaviour and bounding rationality. And finally, section 4 of this paper will discuss that why overusing of technology may give rise to the situation of Digital Dictatorship in coming future.

Key Words: survival, command, market system, economist, artificial intelligence, algorithms, World Economic Forum, classes, digitalization, digital technology, economic behavior, bounded rationality, digital dictatorship.

0512104 SINGH, SMRITI SAURABH (Division of Economics and Agricultural Economics, A. N. Sinha Institute of Social Studies, Patna 800001). **RIGHTS BASED APPROACH TO DEVELOPMENT IN DIGITAL AGE: WHETHER INNOCUOUS?**

Development is an intrinsic part of Humans life, but with variation in spatio-temporal conditions. Apart from political sphere the 'notions of development' has been shaped by cultural, intellectual, philosophical and technological evolutions. Technological transformation was most dynamic factor in the changing idea of development in world as well in different economies simultaneously. The perspective of development coincided with its teleological visions; continuous interaction of development policies and periodic waves of technological transformations; their outcomes; throes and gains; have always been subjected to debate and analysis. In the era of Neoliberal regime, 'Right to Development' and 'Rights based approach to Development' are addition to development lexicon. Humans have travelled from Paleolithic age to digital age with widening horizontal and vertical technological gaps because of the prominent character of technology: firstly, being 'double edged' and secondly; not being 'class neutral'.

With the help of political economy method of analysis, the three conflicting zones that is: Rights based approach to development, Digital age and Technological gap has been studied in this paper to draw the vistas of this current wave of development in India. This analysis explores the role of digitization in the 'Rights based approach of Development' and also critically analyse whether incorporation of digitization is facilitating or impeding this approach in its spirit, that is, Equity, Non -Discrimination, Transparency, Accountability and Participation (ENTAP). In this deliberation firstly; analysis of historical and theoretical embedding of 'Right to Development' and 'Rights based approach to development' has been presented. In continuation to this, second section is studying the equation of Neoliberalism; Rights based approach to development and digital rule over the development policies. A brief account of byproduct and residual from this equation is depicted. To substantiate the debates and arguments third section is critically examining the case of "Right to Food" in India. This paper raises the question whether digital rule and technological gap is endangering the past, present and future of subject or object of development? The highlights from the analysis is that Aadhar based PDS has created new barriers, causing serious damage and ENTAP has been violated under the effect of new technologies incorporated in PDS system. In a nutshell, the gains are limited and tentative, whereas the damage is certain and possibly substantial likewise new form of power differentials.

Keywords: Development, Technology Gap, Neoliberalism, Digital Age

0512105 TRIPATHI, NITU AND GHOSAL, MAHUA (IIT Kharagpur). **WHAT AILS MGNREGA?**

Tantrik's approach to development with belief in the power of invisible to save the lives of the affected people from the clutches of the evil spirits of development agencies is the primary reason working at the root of the perpetual failures of the government initiatives not reaching the targeted vulnerable groups without learning any lesson from the preceding experiences. The government has initiated a variety of programmes one after another with over emphasis on its 'politico – administrative' approach without institutionalizing an effective delivery system primarily responsible for their failures. Mahatma Gandhi National Rural Employment Guarantee Act is no exception though there is a departure, for it being demand-based in place of supply-based programmes of the past. The act guarantees 100 day of wage employment to rural unemployed adults who volunteer to do manual work. The present paper is based on the primary data collected from 300 randomly selected respondents from three villages where this programme has been in operation since the last 5 years. The study has twin objectives of studying operational details, on the one hand, and how far this programme has been effective in achieving its objectives, on the other. The results of the study have mixed outcomes, while employment of rural adults has certainly improved, and assets creation of the rural economy has certainly taken place, a nexus between government officials and panchayat

functionaries in connivance with each other has also emerged misappropriating the project money for their own interest resulting in doubtful success of the programme. The study also makes some policy suggestions in order to make the programme further effective.

Keywords: Development, Mahatma Gandhi National Rural Employment Guarantee Act, demand-based, wage employment, employment

0512106 TUNGSHANGNAO, THOTREINGAM (……..). ENHANCEMENT OF ROAD CONNECTIVITY LINKING NORTH-EAST INDIA AND MYANMAR: IMPERATIVES FOR INDIA-MYANMAR AND INDIA-ASEAN ECONOMIC RELATIONS

The objective of this study is to critically examine the status of road connectivity linking North-East India and Myanmar through which international trade and economic exchanges between North-East India and Myanmar, and India and ASEAN can be promoted. Though North-East India is endowed with rich natural resources, inter alia, due to geographical isolation from the rest of India and poor conditions of road connectivity, its economy remains largely underdeveloped. The situation is even worse in areas of Myanmar bordering North-East India. India's strategic interest vis-à-vis Myanmar lies mainly in domains of economic growth and energy security. However, owing to poor road connectivity, border trade and other economic activities between North-East and Myanmar are lacking despite sharing about 1600 km long international border. Besides, from India's perspectives, it is pointed out that, in order to re-establish the old trading networks between India and ASEAN, the most important strategic requirement is to improve the conditions of transport infrastructure between North East India and Myanmar, particularly the road connectivity. In this effort, India and Myanmar have been undertaking various transport development projects through bilateral engagements. An attempt has been made as well to analyze the prospects of India's and Myanmar's participation in other transport development projects to expedite Asian Highway Network. The study concludes that improved road connectivity between North-East India and Myanmar will ensure rapid economic growth for North-East India and Myanmar. It will further boost trade potential and economic relations between India and ASEAN.

Key Words: Road Connectivity, India, North-East India, Myanmar, Economic Growth, ASEAN

0512107 ASWINI, VARNA V (Department of Politics and International Studies Pondicherry University, Puducherry 605014). IRREFUTABLE ROLE OF ENVIRONMENT DEGRADATION IN THE SUSTAINABLE ECONOMIC GROWTH IN INDIA

Sustainable development is a common agenda for global concern, which everybody agrees upon, but bringing this global concern into public policies is a difficult task. The most accepted definition of sustainable development according to the Brundtland's report is, "To meet the needs of present without compromising the ability of future generations to meet their own needs". The idea of "sustainable growth", according to The World Conservation Strategy report (1980), by the International Union for the Conservation of Nature and Natural Resources (IUCN), for development to be sustainable it must take into account the social and economic factors as well as the ecological ones.

India is presently emerging as an economic superpower, but in contrast, there is another profile of India where it constitute around 17% of the world's population, but account for about 35% of the poor and 40% of the illiterates in the world. Here lies the contrast where India craves for development and at the same time upholds the responsibility of environmental protection. The past decade of rapid economic growth has brought many benefits to India, but on the flip side the environment has suffered the most, exposing the population to serious air and water pollution. India's remarkable growth record, however, has been clouded by a degrading environment and growing scarcity of natural resources. Mirroring the size and diversity of Indian economy, environmental risks are wide ranging and are driven by both prosperity and poverty. In this background this article attempts to analyze the environmental sustainability along with the rapid economic growth of our nation to find out how India can strikes a balance between development and environment protection.

Key Words: Environment pollution, Economic development, Environmental conservation

0512108 VIKAS, VIDYARTHI (Department of Economics, A. N. Sinha Institute of Social Studies, Patna 800001) **ANALYSIS OF AGRARIAN CRISES IN BIHAR**

Agriculture is still prime mover and driving force for economic development of the State. In recent years, Indian agriculture has been reeling under crises and one of the concomitant outcomes is poor returns of cultivation which has rendered farming as an unsustainable livelihood option, particularly for the minifundia . Beside the two successive Agricultural Road Maps including successive five year plans and even after large number of Land Reforms Act and Rules, marginalization of peasantry and unequal land holding pattern are general phenomena in the State. Much acclaimed double digit of GSDP growth of the State circumvents the agricultural growth in the state and deepening the agrarian crisis. Bihar is yet to be witnessed for Green Revolution. However, one must not reduce the debilitating effect of New Class Nexus4 and Semi-feudal characteristics of agriculture in deepening agrarian crisis in Bihar. This paper is an outcome of an ICSSR project carried out by the Author in nine districts of Bihar in 2015 and report has been submitted to ICSSR in 2017. It is argued that the cumulative effect of a number of factors is responsible for the present agrarian crisis. These factors categorised as technological, socio-cultural and policy related are discussed here.

13. EDUCATION

0513109 BISWAS, SUBHASH (Bamanpukur Humayun Kabir Mahavidyalaya, West Bengal 743425). DIGITAL TECHNOLOGY AND MASSIVE OPEN ONLINE COURSES

It is true that commoditization of higher education has gained acceptance in recent years following globalization. As usual, the dominance of private higher education along with stratification and differentiation is also looming large in almost all parts of the country. Still we are thinking that open access and equality will remain the basic pillar of our educational policies. Particularly, increasing use of networks and digitalization has lent scopes for students those who cannot usually join the higher educational programmes for several reasons. Massive Open Online Courses have been a new scope for those students. It has made the higher education possible without physical proximity between the students and the teachers. But the question still lies how the new system will come up with the inherent power inequalities and market-driven inequalities. This has been the challenge before all the policy planners, administrators as well as the beneficiaries. The making of India will not come up so long as the markets shape and govern our education and research agenda.

0513110 CHATTERJEE, SUMITA (Department of Education, BHK Mahavidyalaya, West Bengal). DIGITAL TECHNOLOGY AND NEW ASSESSMENT SYSTEM IN HIGHER EDUCATION

Evaluation has always been an indispensable part of the educational process. Like other areas, ICT has also made an important inroad into this field. Of course, ICT usage has become very common but its full potential is yet to be discovered. It is a helpful tool for creating good governance in the working of examination related administration too. Developing countries have now understood the importance of ICT and have started adapting to it as a basic tool for good governance including evaluation. In India, there is a need to automate the existing examination system, because the manual examination system had been useful when the numbers of students registered were less and the numbers of courses taught were less. In present scenario the increasing burden of examination due to increase in GER is leading to inefficiencies of manual evaluation system. We can minimize human intervention by adopting ICT since the technology leads to compact storage, speedy retrieval of data. Introduction to Continuous and comprehensive Evaluation (CCE) in the Indian Education System aims to reform in every way, now the evaluation system tends to be student centric rather than teacher centric. High teacher pupil ratio, pressure of administrative tasks, lack of proper competent teachers has played a very important role in failure of existing system .This paper focuses the need for having a self-process of assessment that is value neutral ,and should meet the individuals standards according to their own developmental place. It also explores the nature and status of implementation of CCE and finally determines the possibility of transforming CCE into an automated evaluation process using web 2.0 technologies. Web 2.0 is a useful tool to have transparency, reliability and efficiency in university examination system. There are tremendous facilitations integrating ICT with examination system. CCE will have the scope to ensure efficiency and effectiveness in the examination system and thus bringing changes in the existing manual evaluation system.

Keywords: WEB .2.0, self- assessment, Gross enrolment ratio, continuous evaluation.

0513111 CHOUDHARY, HARI RAM (Department of Biostatistics, ICMR – NIRRH Mumbai – 400 012) GIRL CHILD EDUCATION AMONG BHIL TRIBE OF RAJASTHAN: AN ETHNOGRAPHIC STUDY

Education is the best investment for children's future. It has been well documented that when girls are educated, their self-esteem, self-confidence, and earning capacity improves and the marriage does not happen in early age. Good education also declines the infant mortality rate, malnutrition, and family size. Lack of education is the main reason for female enslavement and subordination. It hinders that the ability of a girl child to socialize, have intellectual stimulation and have their own identity. The Constitution of India providing compulsory education for all children until they complete the age of 14 years, it is applicable for both boys and girls. Education plays very important role in development of human being, because it increases the knowledge of person, help them to know about their fundamental rights and duties, encourage them to fight for these rights, help to deal with the traditional

barriers and it is also powerful tool for overall development of any country. Girl child faced discrimination in society before and after the birth. Education is one of the important factors where girl child is biased by the parents, community and society.

Keeping the above context in perspective, the present study tries to identify the available institutional mechanism for promoting girl child education in rural Rajasthan, factors that contribute to dropping out of a girl child at the secondary or higher secondary level, issues are being faced by the tribal girl children and its impact on their lives. The study was qualitative in nature focusing on tribal girls who are going school, dropped out from school and never been to school. This study was conducted in hamlets of Udaipur district of Rajasthan. The Findings clearly indicates discrimination faced by girls in getting quality education at all levels. Besides, the conditions are also non-favourable for girls to continue their studies.

Keywords: Bhil Tribe, Girl Child Education & Discrimination

0513112 CHUNI, SARIKA (.....Lucknow). COMPARATIVE ANALYSIS OF DIFFERENTIATED TEXTBOOKS IN FINNISH SCHOOLS AND ITS IMPLICATION FOR INCLUSIVE EDUCATION IN INDIA

According to the 2011 Census, India had a population of 2.68 Cr. persons with disabilities. Over the past 7 years, the population has only increased. Based on the 2011 Census, nearly 45% of this disabled population is illiterate. The Right to Education Act in 2009, through its provisions for persons with disabilities, as defined in the Persons with Disabilities Act (1996), provides a right to an inclusive and barrier-free education to all people with disabilities regardless of the socio-economic background. From a fundamental rights perspective, it is the duty of the state to provide all the necessary tools and policies to ensure that people with disabilities study in mainstream schools alongside the non-disabled population in a manner that enables them to achieve an equitable education. A large percentage of the population among the disabled students are unable to effectively read print because of visual, physical, perceptual, developmental, cognitive or learning disability. Children with visual or physical challenges can get aid through Braille or Audiobooks. However, children with a perceptual, developmental, cognitive or learning disability, who are not audiological learners, are left with no other option but to read the regular barrier-ridden textbooks, leading to a significant lag in conceptual understanding and a consequent academic backwardness. As a result, a large number of print-disabled students face an immense handicap in understanding a concept due to their inability to access the printed content in the textbooks, which is designed for an efficient reader. The barrier of printed content, in this case, is a significant impediment to their learning. In spite of the recent modifications and provisions in the examination system for children with special needs, by the Central Board of Secondary Education (CBSE), provision of appropriate and disability-friendly textbooks to children with print disabilities in mainstream schools is an area that still faces a lacuna. Finland has emerged as one of the world leaders in equitable and high-quality education in the world. The Finnish education system is inclusive and provides pedagogical methods and tools that promote the success of all pupils in their studies. It caters to the needs of children with print disabilities by providing them differentiated textbooks, called E Books or Easy Books that aid their understanding of the concept. These differentiated textbooks are based on the Universal Design for Learning framework of education that provides the learners multiple means of engagement with the content. This paper critically analyses the difference in the content presentation for children with print disabilities in the Easy books vis-à-vis the content presentation for children in the regular textbooks. It draws parallel to the inclusive education system, as set up in India, and provides suggestions on how such textbooks can be created to help the vast numbers of children with special needs in the country study alongside their nondisabled peers in an inclusive environment giving them the best opportunities for academic success.

Keywords: Inclusive Education, Right to Education, Persons with Disabilities, Universal Design for Learning, Differentiation, Barrier-free access, Simplified Textbooks, Finland Easy Books 4

0513113 DAS, ANUPAMA (.....). GENDER, EDUCATION AND CONSTRUCTION OF KNOWLEDGE IN SCHOOLS

This paper is an attempt to understand a general overview of gender, education, and construction of knowledge in schools. The paper is mainly divided into five sections. In the first section, the paper discusses the traditional approach of understanding the idea of "gender", "equality" and "empowerment". It tries to understand why the traditional approach required to be questioned and how one could understand the idea of "gender", "equality" and "empowerment" in a more gender-inclusive and gender-sensitive manner. The second section is a review of education policies and how the vision of polices with regard to girl's education evolved over the period of time. The third section discusses how formal schooling is an active apparatus of cultural reproduction and social control, which does not endeavor to change the formal and informal processes of socialization. It also discusses some of the challenges of girl's education in term of their retention and unequal resources. The fourth section talks about how schools through its formal and hidden curriculum overtly and covertly sustain gender biases and control the construction of knowledge in school textbooks and practices. The fifth section is about the feminist critique of disciplinary knowledge which discusses how historically the gender division of labour, division between public and private domain and devaluing of women's experiences led to the initial "invisibility" and "under-representation" of women across all disciplines. It also points at the need of being progressively informed, transformed and map the gender contours of disciplinary knowledge to demarcate a more egalitarian and democratic curriculum framework. Women movement in the past was mostly situated in the areas of women's health, violence and livelihood, the paper argues that we need more women's and people's movements who will address systematically the educational needs of gender education at all level of schooling. This paper is essentially important in the light of Government's ambitious project "Beti Bachao, Beti Padhao" as the paper discusses some of the important challenges and educational needs of girl's education in India.

Key Words: Gender, Equality, Empowerment, School, curriculum

0513114 DEVNATH, PULAK CHANDRA (Department of Education, Government Kamalanagar College, Chawngte, Lawngtlai, Mizoram 796772). MODEL OF DIGITAL EDUCATION: A PROSPECT

Technology is leading to a revolution in the way we learn. Digital Technology includes all types of electronic equipment and applications that use information in the form of numeric code. Devices that process and use digital information include personal computers, calculators, automobiles, traffic light controllers, compact disc players, cellular telephones, communications satellites, and high-definition television sets. The impact of digital technology also influencing the system of education and importance of ICT is concerned. It is absolutely true that no technology can replace teachers. But it is possible to teach the students without the physical presence of teachers in full-fledged online formal education. Student will learn from home online, take admission online, learn lecture online, replay lecture when required, ask question online through video conference, appear examination online, obtain certificate online, teacher will join their service online by uploading their certificate and by the performance of their video lecture and salary of the teacher will be given on the basis of their lecture. There will be digital education centre with computer and video conference facilities, called formal Digital Institution for Education, in every blocks and will be extended in every villages where students from poor background will get chance for admission and rich people also can make digital room in their home, facilities will also be given to the private sectors to open digital institution by registering themselves. Attendance of both Students and teachers will be monitored through Bio-metrics. There will be only digital library. Through this process expenditures on education can be minimized and expected effective and active learning. So, the main concern of this paper is to develop a model of digital education through which continuous expenditure on education can be minimized. The administrative process of digital education and the advantaged of digital education will also be discussed.

0513115 DUBEY, SANDHYA (Department of Educational Finance, National Institute of Education Planning and Administration, 17-B Aurobindo Marg, New Delhi). DIGITAL REVOLUTION: EMERGING ADJUSTMENTS IN ACCESS, QUALITY AND FINANCING DYNAMICS OF INDIAN HIGHER EDUCATION

In this globally commercialized 21st century, countries across the world are strivings for global competitiveness by investing vividly in their higher education system. The goals of increasing access and quality in higher education have acquired decent attention of policy makers across the world. These goals are the backbone of

higher education system and play a significant role in linking it with the economy and society of the country. Along with the socio-political commitment, it is the finances, which are of extreme importance for the realization of these goals. To achieve the twin goals of increasing access and quality, the combinations of funding sources are used in higher education institutions globally. These include public education finance (which is gradually declining), parent's financial supports, student loans and funding from specialized institutions. Despite these diversified financial sources, the financial crunches do not allow higher education systems to achieve together the unimpeded mass access and their full potential quality. Consequently, simultaneous fulfilment of the goals of mass access to higher education and high and sustainable quality with the given budgets is a major challenge emerging globally, especially in the developing country. This challenge has led to the quantity-quality debate in the arena of higher education, which mainly highlights the concept of access-quality dichotomy. Now, on the other hand, with the advent of digital revolution, the context of education has become more dynamic, energetic, and economically driven than ever before. Recent unprecedented advances in digital technologies and their concomitant affordances in education seem to be a great opportunity to adequately address burgeoning demand for high quality higher education and the changing educational preferences. It is increasingly being recognised that using new technology effectively in higher education is essential to prepare students for its increasing demand.

The traditional methods of tertiary teaching are not encouraging new generation of technologically empowered students to wholly engage with the learning process. Internet-based online instructional delivery has significant quality inputs and is now the fastest growing type or sector of higher education in many countries.

Thus, it can be argued that digital revolution already has started influenceing the access-quality and the financing dynamics of higher education. It is also known as the zero-marginal cost revolution, which means that the cost of the enrolment of one more student can eventually become zero on the virtual platforms of higher education. However, one should always keep in mind that physical infrastructure and digital infrastructure have one-way complementarity i.e. certain amount of physical capital is indispensable to bring digital capital in action. Therefore, the tenets of traditional as well as digital economics are supposed to be working in tandem in the coming time. Nevertheless, there is enormous research gap in this arena of considering the impact of the digital revolution on the access-quality-financing dynamics of higher education. Hence, the question that arises is, does the digital revolution has potential to provide solutions to the problems of the access, quality and the financing in the higher education and to what extent? In addition, can there be a comprehensive theoretical model tracing the impact of digital revolution on access-quality-financing dynamics in the higher education. These are the two main question this study endeavours to answer.

Key Words: Access, Quality, Financing, Higher Education, Digital Revolution

0513116 DUTTA, BIDYARTHI (Dept. of Library & Information Science, Vidyasagar University, Midnapore 721102). **CHALLENGES AND OPPORTUNITIES IN TECHNOLOGY-ENABLED LEARNING (TEL): A CASE STUDY ON TERTIARY EDUCATION IN INDIA**

The process of learning about humanities conveys an understanding of what existed in past, and how it can be viewed or interpreted by others in the context of present age. Learning articulates a psychological process based on an internal change of human mind. The process of transformation is the heart and soul of learning. Mezirow, the leading scientist in the area of transformative learning theory, traced the origin of transformative learning theory to adults learning communities in US in the 1970s and found the theory on the work of Habermas as having 'a test of validity until new perspectives, evidence or arguments are encountered and validated through discourse as yielding a better judgement'. Transformation process in learning avows importance of cognitive, emotional and value-based frameworks for spontaneous perception and expression. Mezirow's theory described logically how learners construe, validate, and reformulate the meaning of their experience.

The principal endeavour behind the transformation in learning process today is the Information Technology (IT) applications that is growing and invaded almost every part of our life. Technological progress can be harnessed for augmenting both expansion as well as quality of education. The digital resource development and utilizing the digital resource into quality certified programmes and courses need to be fully exploited by the higher education

systems like universities, R & D institutions etc. The appropriate use of technological tools in learning process is known as educational technology. It consists of an array of tools, such as media, social networking, machines and networking hardware, etc. Educational technology is not restricted to high-level technology. Nonetheless, electronic educational technology, or e-learning, has become an important part of society today, comprising an extensive array of digitization approaches, components and delivery methods. For instance, mobile learning emphasizes mobility, but is otherwise indistinguishable in principle from educational technology. Mobile-learning emphasizes learning through smart phone, social networking, apps downloading etc. Educational technology includes numerous types of media that deliver text, graphics, image, audio, video, animation, movie clip and performances like lecture, program, experiment, seminar, conference, workshop, symposium etc. through streaming video. Learning through media includes technology applications such as audio or video tape, satellite TV, CD-ROM, computer-based learning, as well as local intranet/extranet and web-based learning. Information and communication technology, whether free-standing or based on either intranet or Internet underlie many e-learning processes to facilitate networked learning. The application of theories of human behavior to educational technology derives input from instructional theory, learning theory, educational psychology, media psychology and human performance technology. Educational technology and e-learning can occur everywhere in or out of the classroom. It can be self-paced, asynchronous learning or may be instructor-led, synchronous learning. It is suited to distance learning and in conjunction with face-to-face teaching, which is termed blended learning.

Today, India is one of the world's top destinations for education. With some of the best colleges and universities, it is renowned for its excellence and high standards and technology has advanced rapidly to transform the way students in India consume educational content. Additionally, the penetration of internet-based smartphones is taking quality learning to students across the nation. This paper carries out SWOT analysis of e-learning process in India at present. The factors enabling growth of digital education in India are analysed here, i.e. mobile learning, video learning, use of open-educational resources, use of virtual reality and augmented reality in learning etc. The introduction of MOOCs courses, free online courses on SWAYAM by university-level faculty and students etc. are new initiatives for technology-enabled tertiary education implemented by the Govt. of India. The feasibility studies of all these new initiatives are carried out here.

Keywords: Technology-enabled learning; Tertiary education in India; MOOCs; SWAYAM

0513117 KUMAR, AMIT (Zakir Husain Centre for Educational Studies, School of Social Sciences, Jawaharlal Nehru University, New Delhi 110067). TRENDS AND PATTERN OF HOUSEHOLD EXPENDITURE ON HIGHER EDUCATION IN INDIA: EVIDENCE FROM NSSO DATA

Using three round surveys of National Sample Survey Organisation (NSSO) namely 52nd round (1995-96), 64th round (2007-08), and 71st round (2014-15), the present paper attempts to examine the trends and pattern of household expenditure on higher education in India during 1995-96 to 2014-15. It explores the variations in expenditure by various socio-economic indicators such as gender, location – rural and urban, family income and also by major states, items of spending, and type of education. Further, the interrelationships between these indicators have also been examined.

The findings indicate that the annual per-student expenditure on general higher education increased from a meager ₹1,198 (1995-96) to ₹17,391 in 2014-15, registering an increase of 14 times during the period. Though the expenditure is observed to be increased, it varied significantly across states ranging from the highest increase of eight times (Chandigarh) to the lowest increase of three times (Goa) during the same period. With respect to the socio-economic indicators, the findings reveal a disparity in household expenditure on higher education. While the expenditure on male and female revealed not many variations, significant rural-urban differences in expenditure were observed during the period. The urban households were found to be spending considerably more on higher education as compared to rural households. As expected, average expenditure increases with the increase in the income level – holds true for gender and location. During 2007-08 to 2014-15, the average annual expenditure on higher education for the top income quintile was around twice and thrice the expenditure of the lowest income quintile in rural and urban areas respectively.

In general higher education, the share of total fees and other items of household expenditure was expressed to be in the proportion of 46:44 in 2014-15 and 52:48 in 2007-08, indicating an increase in the fees. Moreover, the average expenditure on technical/professional and vocational education was around nine times and four times the expenditure on general higher education respectively during 2014-15. Hence, with the increasing privatization of higher education it is quite important to examine the households' investment in it, and therefore the findings of this paper provide significant policy implications.

Keywords: Household Expenditure, Higher Education, Socioeconomic indicators, Institutional Factors

0513118 MAINI, MONIKA (National Institute of Educational Planning and Administration 17-B Aurobindo Marg, New Delhi-110016). **IDEA OF THE UNIVERSITY: RETHINKING THE UNITY BETWEEN TEACHERS AND STUDENTS IN DIGITAL ERA**

Digital space has played an integral role in massification of education. Though the digital resources have made significant contribution in making education available to masses, they have also reduced the human interactions between teachers and students in the digital Era. One of the most important concern of these reduced human interactions is the rising academic conflict that has become a dominant feature of Indian Public universities. With the help digital education resources higher education has expanded the information to the reach of masses, but with this information boom it has also brought us at the verge of what Kant described as 'Euthanasia of Reason'. Especially, for the students from marginalized sections of society, digital gap between have and have nots have resulted into a psychic struggle that teachers from privileged backgrounds sometimes fails to acknowledge. This failure has often resulted into incidences of suicide as observed in many education institutions in higher education. Hence, to survive in digital Era and to undertake the education for democracy universities need to find out unique ways to connect students and teachers from diverse backgrounds through dialogue, and discussions with in digital media.

Through this paper, it is intended to invoke the idea of university given by German and Indian philosophers to understand the idealistic view of the relationship between teachers and students and the nature and basis of this relationship in contemporary Public University in digital Era. The main objectives of this paper will be to understand the meaning of unity of students and teachers explicit in the idea of university given by German philosophers, to understand how the idea of unity of students and teachers was conceptualized in Indian context and to find out the kind relationship that exist between students and teachers in Indian public universities in digital Era and its implications for the foundation principles.

Following the interpretivist paradigm, the paper will critically look at the principle defining the unified relationship in Kant's transcendental postulates, and in the idea of eastern university framed by Rabindra Nath Tagore. The theoretical underpinning revealed that the classical idea of the unity between teachers and students was based upon several assumptions such as the Principle of Pursuit of knowledge for knowledge sake, Principle of reason, Principle of autonomy, Principle of unity of knowledge, Principle of commitment to objectivity, cultivation of mind, apolitical inquiry and so on. The changing academic scenario of the universities since the advent of digitalization of higher education calls for a re-examination of the ideals of the unity between teachers and students to develop a nuanced understanding of the relationship between teachers and students in the contemporary university. The main question under consideration is how to conceptualize university as community of scholars engaged in critical thinking when the teachers and students are not physically present in virtual classroom spaces?

Further, through the analysis of data collected from in-depth interviews of fifteen teachers and eighteen students from the faculty of Social Sciences, University of Delhi, the paper will reflect upon the how the relationship between teachers and students has taken a new shape with the integration of digital resources in teaching- learning process. The results reveal the existence of several classical principles that have continued among the changes brought by technology, along with the emergence of new areas where use of digital media resources creates conflict between students and teachers and affects their working as a community of scholars.

0513119 MERCHANT, HARSHA (Aishabai College of Education-Byculla, Mumbai). BALANCING TWO SIDES OF A COIN

Online technologies provide opportunities to learn anywhere, anytime and from anyone. Technology is driving major changes in people's professional and personal lives across the India and the world, impacting every facet of society, and is now an integral part of how most people interact, work, learn and access knowledge and information.

As we have entered in the digital era Revolution, it's clear that technology will play a central role in nearly all aspects of our lives. Research by the World Economic Forum estimates that 65% of children entering primary school will find themselves in occupations that today do not exist.

By 2020 it's estimated there will be 1.5 million new digitised jobs across the globe. At the same time, 90% of organisations currently have an IT skills shortage, while 75% of educators and students feel there is a gap in their ability to meet the skills needs of the IT workforce. To prepare the talent needed for the digital economy, education must adapt as fast as the demand for IT skills is growing and evolving.

Following is a new approach to understand education that in our complex and rapidly evolving world today, academic models based on interdisciplinary research are necessary to create effective teaching and learning environments. Insights into the influence of psychological, social, cultural and environmental factors on how we learn are emerging from "the new science of learning".

0513120 PAROI, SUMIT AND SHERPA, ALINA GOPERMA (Department of Education Kazi Nazrul University, Asansol). THE PROCESS OF TEACHING LEARNING IN SOCIAL SCIENCES AT HIGHER EDUCATION LEVEL IN DIGITAL ERA

The world is changing a rapidly. With the advancement of scientific and technological inventions, we are ushered into a new era characterised by extreme use of technological devices resulting into diverse issues impacting every aspect of our life. With the changes occurring in the society, the method of education also needs to be updated. The aim of education is necessarily to prepare the child adjust to the ever-changing society. This is not possible unless the teachers themselves are updated with the recent knowledge or innovations that happened in the field of education as a result of technological revolution. There has been a lot of change in teaching learning process in social science. The Government of India has been pushing its way to introduce the recent technological innovations into the field of education. Of late, the Ministry of Human Resource Development, Government of India has taken three significant initiatives towards digital India and they are SWAYAM (Study Webs for Young Aspiring Minds), SWAYAM PRABHA and NAD (National Academic Depository). Students can take a course online according to their area of interest and learn from anywhere with the help of SWAYAM, an Indian platform for MOOCs or Massive Online Open Courses. Swayam Prabha which is a group of 32 DTH Channels providing high quality educational audio-visual contents provided by NPTEL, IITs, UGC, CEC, IGNOU, NCERT and NIOS. There are thousands of video lectures, audio lectures and e-modules being prepared daily. There are other Learning Management Software such as Moodle which are useful in both online and blended learning. There are hundreds of e-modules available in the e-PG Pathshala from where learners can benefit. In a nutshell, the techniques used in education are becoming digital more and more. In this context, we need teachers who are well equipped with the knowledge and skills to know the recent trends of educational technology, to prepare digital resources and to make use of that for optimum development of the students.

0513121 KUMAR, RAI DEEPAK (Department of Psychology, S.S college sasaram, ara). बिहार में उच्च शिक्षा के गिरते स्तर और वर्चुअल क्लासरुम

अपने ज्ञान के स्वर्णिम इतिहास को दुनिया के सामने प्रस्तुत करने वाला, भारत को विश्व गुरू बनाने में अग्रणी भूमिका निभाने वाला नालंदा और विक्रमशिला कि भूमि, जहाँ गौतम बुद्ध और महाबीर को परम सत्य से साक्षात्कार कराने वाली प्राकृत अपने ज्ञान के उत्कृष्टता का प्रमाण प्रस्तुत करती हो, जहाँ विद्वता के उत्कृष्ट स्तर को स्थापित करने वाले आर्यभट्ट, चाणक्य जैसे विदूषक थे, वहीं विदुषी के रूप में शंकराचार्य से भी शास्त्रार्थ करने वाली मंडल मिश्र की पत्नी भारती। इतिहास के आइने में ऐसी ज्ञानोदीप कि भूमि बिहार थी। पर अफसोस अपने गौरवशाली अतीत पर इतराने वाला बिहार, आज अपने वर्तमान के दुर्दिन पर अनवरण करूण–क्रन्दन करने वाला बिहार के रूप में परिणित हो चुका है। यहाँ उच्च शिक्षा के महत्वपूर्ण चार स्तम्भ–शिक्षक, शिक्षण पद्धति, छात्र और विषयवस्तु

(पाठ्यक्रम) को बिहार के विश्वविद्यालयों और महाविद्यालयों संदर्भ में देखें तो हकीकत हमारे सवामने होगी। जहाँ प्रत्येक एक लाख योग्य जनसंख्या (Age 18-23) पर सम्पूर्ण भारत में 28 कॉलेज हैं वहीं बिहार में मात्र 7 कॉलेज हैं। उच्च शिक्षा में सकल नामांकन अनुपात (enrolment ratio) सम्पूर्ण भारत 24.5% है जबकि बिहार में 14.3% है। PTR (pupil teacher ratio) सम्पूर्ण भारत में 21 है जबकि बिहार में 50 से भी अधिक है। बिहार के लगभग 290 (दो सौ नब्बे) अंगीभूत महाविद्यालय में पढ़ने वाले विद्यार्थियों की संख्या प्रति महाविद्यालय 6000 (छः हजार) कि औसत से लगभग 1700000 (सत्रह लाख) है। जिनको पढ़ाने के लिए सरकार द्वारा स्वीकृत शिक्षकों की पद संख्या (sanctioned) लगभग 12000 (बारह हजार) है वहीं कार्यरत (working) शिक्षकों की संख्या मात्र 5000 (पांच हजार) है। जबकि UGC के मानक (1:30) के हिसाब से शिक्षकों की पद संख्या लगभग 55000 (पचपन हजार) होनी चाहिए। अर्थात् जहाँ शिक्षक 55000 होने चाहिए वहाँ मात्र 5000 (पांच हजार) हैं, यदि इसमें intermediate में पढ़ने वाले छात्रों को जोड़ दें तो (बिहार के डिग्री कॉलेजों में intermediate कि भी पढ़ाई होती है) यह संख्या 25 लाख के लगभग हो जायेगी जिन्हें पढ़ाने के लिए मात्र 5000 शिक्षक हैं। वहीं बदतर पुस्तकालय एवं प्रयोगशाला तथा स्नातक स्तर पर बीस वर्ष पुराने सिलेबस, छात्रों (student) को नए–नए शोध ज्ञान और विषय के अद्यतन जानकारी से वंचित कर, उनके विषय ज्ञान को बहुत ही सीमित और सतही कर रही है। ऐसी स्थिति में वर्चुअल क्लासरूम अपने सहज सरल, लचीली और मितव्ययी विशेषता के चलते आधुनिक युग में अधिक प्रभावी हो सकता है क्योंकि संचार क्रान्ति के इस युग में स्मार्टफोन और इन्टरनेट तक सबकी पहुँच सुनिश्चित होने लगी है। इसके लिए बिहार के 10–12 कॉलेजों को स्मार्ट कॉलेज के रूप में विकसित किया जाय जहाँ PPT प्रेजेंटेशन, प्रोजेक्टर, audio/video से संबंधित उपकरण, e-library, other work automation कि सुविधा उपलब्ध कराई जाय और एक बेबसाइट विकसित किया जाय जिस पर उपरोक्त कॉलेजों के क्लास टीचिंग का अपलोड किया जा सके। जिसका इस्तेमाल अन्य छात्र, शिक्षक और बौद्धिकजन क्लास टीचिंग के बाद भी कर सकें।

0513122 SAMARASINGHE (Information Technology Unit, University of the Visual & Performing Arts, Sri Lanka). TACIT KNOWLEDGE: A LITERATURE REVIEW`

Knowledge was considered a valuable asset to individual, group, organizations. There was no knowledge without information. Information was unprocessed data whereas knowledge was concise and suitable interpretation of information in a way that makes it useful.

Michael Polanyi, in his book Personal Knowledge defined that tacit knowledge was information but that's difficult to transfer to others. Tacit knowledge include things like experience, perspective, and intuition. Ivan 2015 on his article stated that Tacit Knowledge is personal, known by an individual and is context specific, highly experiential and difficult to document and communicate, sharing involves learning, cannot easily be codified but can only be transmitted via training & experiences. The global growth demand for knowledge enhancement is considerably high since knowledge translates into creating values through the industries. With the development of Information technology, learning styles and methods of knowledge acquisition changed vastly. Moreover, it motivates and aids to retain the acquired knowledge. Therefore, it is highlighted that with the help of the current technological advancements sharing tacit knowledge will be easier and effective. It is important to investigate methodologies used in past studies of the tacit knowledge in education discipline. The purpose of the study was to study the past research methodologies and methods of 18 empirical studies on tacit knowledge in Education. Major findings included that as tacit knowledge is more subjective and to understand it qualitative methods should be used such as personal interviews, scenario methods. There is vast opportunity for future research on understanding the role of tacit knowledge focusing on specific educational fields mainly practical based educations such as performing and visual arts.

Keywords: education, information, knowledge management, tacit knowledge.

0513123 SHANKAR, G (District Institute of Educational Training, Sitamarhi-843301). DIGITAL DIVIDE IN THE INDIAN CLASSROOMS: AN ANALYSIS

Digital divide refers to a substantial symmetry between two or more sets of population in the distribution of effective use of information and communication resources. This can be defined as the gap between individuals, households, business and geographical areas at different socio-economic levels with regard both to their opportunities to access ICTs and to their use of the internet for a wide variety of activities. This refers to the unique and disproportionate pace of development in societies in having access to digital infrastructure and services.

Here, the digital divide between Information and Communication Technology (ICT) 'haves' and 'have-nots' is directly related to the multi-layered Indian education system where different types of both government and private educational institutions exist. Marketization and commoditization of education have made it beyond the reach of the common people. There has been a distinct gap in the education landscape. In the Indian education system technology is being introduced, but slowly and only in certain places. The grass root level infusion of technology is missing. There are hundreds and thousands of schools and colleges that are yet to see what a projector looks like. Such a situation in the majority of educational institutions creates a clear-cut digital divide in the Indian classrooms.

The objectives of this paper are to investigate the reasons behind the digital divide in the Indian classrooms; to examine the realities of the digital/virtual classrooms and the ability of the technology to transform the learning landscape of our country.

Results of the study indicate that infrastructural facilities with digital divide varied among rural and urban educational institutions. Critical thinking and reflective approach along with the rationalization of the technology cannot take place without digital equality.

Key words: ICT, Digital divide, Infusion of technology, Indian classrooms, Virtual classroom

0513124 SHARMA, ANKITA (Zakir Husain Centre for Educational Studies, School of Social Sciences, Jawaharlal Nehru University, New Delhi 110067). GETTING ONLINE ADMISSIONS IN A PRIVATE SCHOOL: PRIVATE SCHOOL ASPIRATIONS AND EXPERIENCES OF EWS PARENTS IN DELHI

The present paper attempts to explore the experiences of parents belonging to EWS (Economically Weaker Sections) category while securing admissions of their children in a private school in Delhi under the Section 12 (1)(c) of the RTE Act 2009. The paper uses in-depth semi-structured interviews of six set of parents whose children were enrolled in a recognized unaided private school in Delhi under the Act. Particularly, the paper dwells into the challenges and problems faced by EWS parents in securing admissions and selecting schools. Further, it looks into the strategies that the parents had devised to get their children admissions in the private schools.

The research was conducted in the year 2015-16 when the Delhi government changed the admission procedure from offline to online mode. The anxieties of securing a seat in the private schools and the lack of know-how of internet among the parents had given way to a new form of market where cyber café had arrived as a helping hand. The cyber café helps the parents in choosing schools, filling up form and even after admissions as homework assistance. However, all this came at a high economic cost.

The findings indicate that the parents lack know-how of the admission process and thus face difficulties in accessing schools; parents who are in contact with any school or already have a child enrolled under the provision are in a better position than other parents; their strategies in choosing schools is based on hear-say among the kin, neighbours and middle-class families that they know of; and the schools provide limited information to the parents which they find difficult to decode. Thus, the present paper contributes in understanding the gaps between the intent of the state policy and its implication by looking at how parents of "EWS" children who are aspiring to enter elite private schools, engage with an unfamiliar institution and new forms of communication, i.e., internet, its practices, and expectations from them.

Key Words: Economically Weaker Sections, Private Schools, Right To Education Act 2009, Cyber Café, Online Admissions

0513125 TIWARI, SHASHI PRABHA (.....). सीखने और सृजनात्मकता पर डिजिटल टेक्नोलॉजी के प्रभाव

भारतीय शास्त्रीय नृत्य अमूर्त सांस्कृतिक विरासत है। विशुद्ध शास्त्रीय नृत्यों का उद्‌भव और विकास के केंद्र मंदिर रहे हैं। भरतनाट्यम नृत्य, कथक नृत्य, ओडिशी नृत्य, कुचिपुडी नृत्य, कथकलि नृत्य, मणिपुरी नृत्य, सत्रिय नृत्य सभी के सूत्र देवालयों से जुड़े रहे हैं। तंजौर, वृहदेश्वर, लखनऊ, बनारस, भुवनेश्वर, जगन्नाथ पुरी, कुचिपुडी गांव, केरल के मंदिर, मणिपुर व असम के सत्र और मंदिरों के आस–पास ये नृत्य शैलियां फली–फूलीं और संरक्षित हुईं। अल्मोड़ा के जागेश्वर मंदिर, प्रभास का सूर्य मंदिर, भुवनेश्वर का मुक्तेश्वर मंदिर, पुरी का जगन्नाथ मंदिर, कोणार्क का सूर्यमंदिर, चिदंबरम का नटराज मंदिर, खजुराहो के मंदिरों के स्थापत्य कला और उनकी दीवारों पर उत्कीर्ण मूर्तियों की भंगिमाएं भरत मुनि के नाट्य शास्त्र में वर्णित मुद्राओं और करणों का प्रयोग साफ नजर आता है। पुरातात्त्विक सामग्रियों और देवी–देवताओं की मूर्तियों से भी यह स्पष्ट होता है। ईसा पूर्व में मोहन–जो–दड़ो की खुदाई से निकली प्रसिद्ध नर्त्तकी की मुद्रा भी इसे प्रमाणित करती है।

आज के बदलते परिवेश में ज्यादातर बच्चे कॉन्वेंट या पब्लिक स्कूल या बिजनेस व प्रोफेशनल स्टडीज में पढ़ते हैं। इन स्कूल–कॉलेजों में अंग्रेजी माध्यम में पढ़ाई होती है। पढ़ाई और अन्य गतिविधियों की व्यस्तताओं के कारण ये बच्चे अपनी मातृभाषा या अन्य साहित्य को कम पढ़ या समझ पाते हैं। बहुत बार यह देखा जाता है कि बच्चों को अपने देश के साहित्यकार, कवि या कथाकार, पौराणिक आख्यान, परंपरा या रीति–रिवाजों का पता ही नहीं होता या कमोबेश वो भूलते जा रहे हैं। ऐसे में नृत्य चुंकि दृश्य–श्रव्य माध्यम है, इससे हमारी युवा पीढ़ी आसानी से नृत्य के जरिए संस्कार व साहित्य से आसानी से रूबरू हो सकती है। साहित्य और कला के रसास्वदन से उनके मानस पटल पर सकारात्मक प्रभाव पड़ता है, वहीं दूसरी ओर वह अपने सांस्कृतिक विरासत से सहज और सरल ही अवगत हो जाते हैं।

इस संदर्भ में यह महत्वपूर्ण पक्ष है कि नृत्य में कहीं–न–कहीं साहिंत्य और संगीत का सामाजिक सरोकार जुड़ा होता है। कलाकार अपनी कला में मानवीय संबंधों, प्रकृति–मानव, पशु–पक्षी, सजीव–र्निजीव हर पक्ष को व्याख्यायित करता है। इससे कलाकार और दर्शक एक–दूसरे से भावनात्मक स्तर पर जुड़ते हैं। और जहां दो मानवीय मन भावनात्मक स्तर पर जुड़ते हैं, वहां परस्पर कल्याण की भावना जागृत होती है। यह कल्याण की भावना व्यक्ति से समष्टि और समष्टि से राष्ट्र कल्याण की भावना से ओत–प्रोत होती है।

हमारे शास्त्रीय नृत्य और संगीत मौखिक परंपरा के 'वाहक' हैं। यह 'करने' की विद्या है। गुरू–शिष्य परंपरा और परिवार परंपरा में जो व्यवहारिक तौर पर गाना–बजाना करते हैं, वही *सफल कलाकार बनते हैं। महान कलाकारों ने नृत्य का रियाज, समर्पण और साधना से इस* सांस्कृतिक परंपरा का संरक्षण और संवर्धन किया है। कला मर्मज्ञ कपिला वात्स्यायनजी कहती हैं कि भारतीय संगीत, नृत्य व अन्य कलाओं से उसके लंबे और गहरे अंतर–संबंध को विचार में लिए बिना न इतिहास में और न वर्त्तमान में और न ही सिद्धांत को व्यवहार के स्तर पर ठीक से समझा जा सकता है। संगीत व नृत्य भारतीय कला–वृक्ष की एक शाखा है और उसके विकास का दूसरी शाखाओं और सारे वृक्ष की बढ़त से गहरा नाता है।

दरअसल, हमारे शास्त्रीय नृत्य में व्यक्ति की भावनाओं के साथ उसकी राष्ट्रीयता व सामाजिकता भी प्रतिबिंबित होती है। उससे देश के रीति–रिवाज, रहन–सहन और सामाजिक–सांस्कृतिक विरासत का भी ज्ञान मिलता है। शास्त्रीय नृत्य भारतीय संस्कृति की आत्मा हैं। इसका गौरवशाली इतिहास रहा है। क्योंकि भारतीय शास्त्रीय नृत्य में भारतीय संस्कृति की पूरी झलक मिलती है। प्राचीन और आधुनिक सांस्कृतिक काव्यों, राष्ट्रीय भावनाओं, उपदेशात्मक कथाओं, धार्मिक आख्यानों और लोक परंपराओं का दिग्दर्शन करते हुए, जब कलाकार नृत्य प्रस्तुत करते हैं, तो उसमें संपूर्ण राष्ट्र की गरिमा और सौंदर्य के महिमा का गान दृष्टिगोचर होता है। इसलिए समाज और राष्ट्र के हित में नृत्य और उसके साहित्य का विशेष महत्व है। डिजिटल मीडिया ने साहित्य और कलाओं को जोड़ने और एक दूसरे से परिचित होने का एक असीम नया संभावना दिया। इसमें कोई शक नहीं कि आने वाले समय में डिजिटल माध्यम विश्व को जोड़ने में और महत्वपूर्ण हो जाएगा।

सार्वजनिक जीवन में प्रगति और मूल्यों की खोज में निरंतर रत भारत के करोड़ों छात्र और युवा समुदाय आज पश्चिमी संस्कृति की हवा के थपेड़ों में दिग्भ्रमित हैं। भूमंडलीकरण के रूप में आर्थिक विकास का लबादा ओढ़े आर्थिक साम्राज्यवाद हमारी संस्कृति, भाषा, सभ्यता और जीवन मूल्यों को निगल जाने को अग्रसर है। इक्कीसवीं सदी के इस विंदु पर हमारे मस्तिष्क में न जाने कितने संशय, कितने प्रश्न और कितने स्वप्न हैं। हम विस्मित और विचलित हैं। कभी–कभी किंकर्त्तव्यविमूढ़–सा लगता है कि हम किस रास्ते पर जाएं कि देश और समाज की सुरक्षा हो पाएगी।

0513126 TRIPATHI, SHWETA (Department of Education, University of Allahabad, Allahabad 211002). SCHOOLS TOMORROW

A school is a place of learning. Learning is gaining of new knowledge or bringing modification in previous knowledge, it occurs out of the interaction of an individual with his environment. In India, schools have been

considered as temple. With the change in environment, the shape, structure and working style of the schools are changing at a very fast rate. Most educators and observers agree that the future school will go digital with a capital D. Digital life is investigation and also the examination identified with re-evaluation of human-PC intuitive experience. Digital revolution known as Third Industrial revolution, is changing from mechanical and simple electronic innovation to computerized gadgets which stirred around the late 1950's to the late 1970's with the reception and acceleration of computerized PCs and computerized record holding that proceeds to the present day. There is no uncertainty that innovation based training can upgrade students' cognitive execution and accomplishment if legitimate instructive methodology is embraced. PC based training has an incredible potential in conveying showing learning material. In times to come, schools, as one probably is aware of, will never again exist. In their place will be network style, focused on working seven days and 24 hours per day. Technology will turn into a fundamental item for a school to come. Technology is the knowledge of techniques, processes, and the like, or it can be embedded in machines which can be operated without detailed knowledge of their workings. One will detect innovation, inventions and discoveries wherever in teaching: classroom, play area, library, research facility and so on; which means, everywhere throughout the school atmosphere. Teaching is a complex process and is the main part of any school activity. Teaching will no longer be restricted within the four walls of the classroom. Robot teachers have already appeared on the forefront. Personalised learning and haptic technology will be highly stressed. Schools will be a place of innovation and inventions. Schools will no longer remain the traditional building with students and teachers imprisoned within the classrooms. In future, the interaction between the teachers and students will break the bounds of the timing and place. Learning and teaching will be round the clock job. Blended learning may soon kick aside regular schooling Along this path, the total educational system with cross through various type of experiences, favourable and unfavourable, bringing advantages and challenges before it. Therefore, there will be different favourable circumstances and challenges of digitalised schools. This paper discusses about the schools of future, its shape and structure, advantages, scopes and the challenges.

Key Words- digital, school, future, teacher, student, teaching, learning etc.

0513127 WAJIHUDDIN (PublicAdministration, Aligarh Muslim University, Aligarh). MAULANA AZAD'S CONTRIBUTION TO NEW EDUCATION SYSTEM

Maulana Azad one of those leaders who stood for a society through liberal, modern and universal education combining the humanism of Indian arts and relationship with the others culture and ethics. In this paper we have discussed Maulana Azad's educational ideas, philosophy and educational planning and it's relevance to New Education System. This paper is based on critical examination of writings, speeches and notes of Maulana Azad who was the first Minister of Education of Democratic Republic of India. In another phase we have discussed Maulana Azad's three tier programme of education and policy of women education in India.In the last phase we have analysised the efforts of Maulana Azad in his ministership and its results which is relevant and helpful for present modern education system.

14. ENGINEERING SCIENCE

15. GEOGRAPHY

0515128 DEY, CHANCHAL KUMAR AND MISTRI, TAPAS (Department of Geography, University of Burdwan, Burdhman, West Bengal). CHANGING TRENDS OF AGRICULTURAL MARKETING SYSTEM OF PURBA BARDHAMAN DISTRICT, WEST BENGAL, INDIA

Agriculture remains as the most significant mode of production system that symbolizes the food and economic security as a whole for any nation, especially in India. Modern agricultural infrastructure and NAS (New Agricultural Systems) tries to move from production oriented agriculture towards market oriented sustainable agriculture. Actually, buying and selling of agricultural goods signifies as agricultural marketing that means exchange or transfer of agricultural produce and its related commodities. Agricultural marketing system is a link between farm and non-farm activities which is interconnected with several of activities such as production planning, growing & harvesting, grading, assembling, packaging, storage, transportation, processing, distribution, advertising and sales i.e; assemblages of complicated variety of manual and mechanical activities.

Undivided Bardhaman District was known as ***'Granary of Bengal'***, but now Purba Bardhaman District is in leading position among districts of West Bengal on the basis of paddy production i.e.,9.97 percentages of Bengal's production. The present study is analysis of agricultural marketing system and changing trends of wholesale price of agricultural commodity, mainly paddy, potato and pulses etc in Purba Bardhaman district, WB. The study is based mainly on secondary data and perception study of concerned farmers. Data have been collected from BAES and DDA (marketing) and relevant sources which have compiled and also supporting field visit have done. It reveals that after Green Revolution agricultural marketing system has gone a sea change and agricultural production and diversification is directly influenced and adjusted by marketing principles.

Key words: Production, Prices, Sustainability, Marketing principles.

0515129 JOSHI, YASHWI (P/13, New Medical Enclave, Banaras Hindu University, Varanasi-221005). DAILY MOBILITY: A GENDERED PERSPECTIVE

Gender as one of the significant socio-demographic factors affecting travel behaviour and daily mobility as an important measure of women empowerment, is usually little understood. Despite better mobility choices for educated and urban Indian women and hence relatively higher access to economic opportunities, health and education compared to the rural ones, both are disadvantaged compared to men. Perceptions of women's rights and prevalent levels of violence against women, both in the households and community, largely dictate women mobility. Age, level and quality of education, marital status, age at marriage, family type, place of residence and economic independence are some salient variables affecting daily mobility. That the religion also affects daily mobility in some parts of India has also been demonstrated by some studies. It may be interesting to note that not only the perspective of wife but also the perspective of husband has a bearing in shaping the norms that end up defining gender constraints, particularly in the village households.

Women needs are largely different in terms of requirement of routes, type of transport and transport schedules. Often, such requirements cannot be catered to ignoring accessibility, disadvantages that are gender related. Approaches to meet these challenges, particularly in the developing countries, are diverse for different populations. First steps to suggesting any possible mitigational measures involve understanding the gendered travel behaviour according to the specific accessibility needs of women. Although the advent of call centers in Indian Metros has led to an increasingly large number of women commuting at night, but the challenges to achieve safe women mobility still continue. It is apparent that this process of modernization has had little bearing on women travel behaviour. Admittedly, a prolonged history of exclusion of women from public realm has conditioned the present. Undeniably, exclusion of women in societies claiming to be modern democracies is a reality. Ironically, such exclusion manifests in women's exclusion from discussions in society that reprimands women for any violence faced by them in public spaces. Still worse, the stigma attached to even reporting of such occurrences compounds the problem.

Structured violence against women in society also manifests in considering women 'out of place' in 'public space'. 'Gendered spatialization of fear' has been central to geographical researches studying women mobility in public spaces. A major challenge for modern Indian women, forced to commute for their job requirements, is to carefully avoid the image of a liberated western woman while performing all neoliberal economic functions. Perceptions of social respectability for women broadly correspond to a middle class, upper caste woman in a patriarchal and patrilocal set up. It is argued that the design of safer transport policies for women would greatly benefit from studies of gendered travel behaviour.

0515130 KUMAR, PRAMOD (Department of Geograpgy, K. K. PG College, Etawah). **ओजोन क्षय : एक पर्यावरणीय समस्या एवं चिन्ता**

ओजोन परत का सर्वाधिक सान्द्रण समताप मण्डल में 12 से 35 किमी. की ऊँचाई (सागर तल से) के बीच पाया जाता है। इसे पृथ्वी का रक्षा कवच कहते हैं जो सूर्य से आने वाली पराबैंगनी विकिरण को सोखकर पृथ्वी को जीवनदायी बनाता है। ओजोन ऑक्सीजन के तीन परमाणु से बनी स्वयं में श्रंखला अभिक्रिया के द्वारा निर्मित और बिसरित होता है जो होमियोस्टेटिक (स्वस्थैतिक) क्रियाविधि द्वारा संचालित होता है एवं स्वयं में प्रकृति को संतुलित बनाता है।

आज बढ़ती औद्योगिकीकरण एवं मानवीय क्रियाविधि ने हैलोजनित गैस–क्लोरोफ्लूरो कार्बन, हैलन्स तथा नाइट्रोजन आक्साइड्स जैसे प्रमुख गैस तथा ज्वालामुखी से निस्सृत सल्फेट एयरोसोल ओजोन अल्पता को उत्पन्न किया है।

जिसका प्रभाव न केवल जलवायु तक सीमित बल्कि यह स्वयं मानव समुदाय, जैव समुदाय तथा पर्यावरण को प्रभावित किया है। इस ओजोन अल्पता के क्षतिपूर्ति के लिए वैश्विक प्रयास किया जा रहा है जिसके लिए कई प्रोटोकॉल तथा वैश्विक सम्मेलन द्वारा क्लोरोफ्लूरो कार्बन सहित कई हानिकारक कारकों के कटौती का प्रयास किया जा रहा है तथा वर्तमान स्थितियों के साथ वैश्विक मार्गदर्शन के लिए प्रभावी उपाय करने का प्रयास होना चाहिए।

कुंजी– ओजोन परत, ओजोन क्षय, प्रभाव, ओजोन रक्षा एवं अनुरक्षण

0515131 KUMAR, SHAILESH, SRIVASTAVA, G N AND MISHRA, ANAND PRASAD (Department of Geography, Banaras Hindu University, Varanasi-221005). **APPRAISAL OF TREATMENT OUTCOME OF TUBERCULOSIS CASES REGISTERED UNDER REVISED NATIONAL TUBERCULOSIS CONTROL PROGRAMME (RNTCP) IN THE EASTERN UTTAR PRADESH: A STUDY IN HEALTH GEOGRAPHY**

TB is an infectious disease caused by the bacillus Mycobacterium tuberculosis. It typically affects the lungs (pulmonary TB), but can also affect other sites (extra-pulmonary TB). The disease is spread when people who are sick with pulmonary TB expel bacteria into the air, for example by coughing. Tuberculosis, once known as the "*White Plague"*, and as *"the Captain of the death"*, is contagious and spreads through droplets in the air when an infected person coughs, talks or sneezes. A relatively small proportion (5–10%) of the estimated 1.7 billion people infected with M. tuberculosis will develop TB disease during their lifetime. However, the probability of developing TB disease is much higher among people infected with HIV; it is also higher among people affected by risk factors such as under nutrition, diabetes, smoking and alcohol consumption. Overall, about 90% of cases occur among adults, with more cases among men than women. The male: female ratio among adults is approximately 2:1. Worldwide, TB is one of the top 10 causes of death and the leading cause from a single infectious agent (above HIV/AIDS). Millions of people continue to fall sick with TB each year. The National TB Programme (NTP) in India was started in 1962, which could not achieve its desired targets, in terms of case findings and treatment success. In 1992, the Government of India, together with the World Health Organization (WHO) and Swedish International Development Agency (SIDA), reviewed the national tuberculosis programme and concluded that NTP suffered from numerous bottlenecks and as a result, a Revised National Tuberculosis Control Programme (RNTCP) was designed to adopt Directly Observed Treatment-Short Course (DOTS), as a comprehensive and effective strategy for TB control, canvassing all the states and districts of India. In the recent years, TB as a disease has raised its head not only as a health concern but also as a social menace. This study is an attempt to reflect the status of Tuberculosis disease in Eastern Uttar Pradesh with respect to Spatio-temporal dimensions and evaluate the characteristics of tuberculosis patients under Revised National Tuberculosis Control Programmes (RNTCP) and Directly Observed Treatment-Short Course (DOTS).This paper studies and analyses the performance of RNTCP on the basis of ten

indicators i.e., Sputum examination, Smear +ve diagnosed, patients registration on treatment, positive patients registration on treatment, Cured, Treatment completed, Died, Failure, Defaulted and Transferred to another district. This study is based on retrospective record which are collected from District Tuberculosis Centre (DTC) of Eastern Uttar Pradesh .Maps are prepared in ArcGIS 10 software and data are computed in Statistical Package for the Social Sciences (SPSS) and Excel.

Key Words: Pulmonary Tb, *Mycobacterium*, TB, RNTCP, DOTS and GIS

0515132 MRIDUL, AJAY RAJ AND MISHRA, ANAND PRASAD (Department of Geography, Banaras Hindu University- Varanasi 221005). A STUDY OF HUMAN POVERTY AMONG SCHEDULED CASTES (SCS) IN DISTRICT GHAZIPUR, UP: A GEOGRAPHICAL PERSPECTIVE

Poverty is much complex and multi- dimensional social phenomenon. Poverty especially in caste basis historically segregated and traditional societies has many complexities. The uneven distribution and reach towards resources and unequal social rights creates inequality among social groups/ communities. In laddered society like India explanation of poverty reveals more dimensions and uniqueness which provides better insights toward fact finding and solution. Various approaches and concepts have been developed by the researchers for better understanding of poverty in this continuation human poverty reveals deep inquiry and scientific non- economic measurement and it capture multiple dimensions of poverty also. To study poverty beyond the money metric measurement has relevance to understand existence and mechanism of poverty and also helpful for required policy formation and eradication programmes and its implementation. Geographical dimension of poverty has more significance because it incorporates real cause of poverty in an area according to historical, political, socio-economic and environmental background. In present paper researchers have tried to measure human poverty in study area and also try to make debate based on ground realities.

0515133 MONDAL, SOUMYABRATA AND MISHRA, ANAND PRASAD (Department Of Geography, Institute Of Science, Banaras Hindu University, Varanasi, 221005). APPRAISAL OF PRESENT STATUS AND PERFORMANCE OF MGNREGA: A CASE STUDY OF HOOGHLY DISTRICT OF WEST BENGAL

Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) is one of the major revolutionary steps in alleviating poverty in India. The act enhances the livelihood security of the rural poor and marginalized people by providing at least one hundred days of guaranteed wage employment in every financial year. Though its scope is national, there have been wide interstate as well as inter district variation in the achievement of the objectives of the act. National Rural Employment Guarantee Act (NREGA) enacted by legislation on August 25, 2005 and it was renamed as the Mahatma Gandhi National Rural Employment Guarantee Act (MGNREGA) on 2nd October 2009. The act aims eradication of extreme poverty and at making villages self-sustaining through productive assets creation. Over the last 10 years MGNREGA plays a significant role in alleviating poverty and vulnerability in different parts of our country. Hooghly is one of the most important agricultural based industrial district of West Bengal. Still in various rural parts of Hooghly the prelevance of poverty is found. Many rural people of this district have been suffering from sustaining their livelihood. According to the District Human Development Report of Hooghly, (2011), it is observed that the percentage of rural households living below the poverty line in the district is 33.49%.From various reports and literatures it is found that MGNREGA played a significant role for sustaining rural livelihoods in Hooghly district of West Bengal. The present paper analyses the performance and present status of MGNREGA during financial year 2017-18 in different blocks of Hooghly district of west Bengal. The study is mainly based on the secondary sources of data. For analysis and interpretation various qualitative and quantitative techniques have been used.

Keywords: MGNREGA, Livelihood security, Rural poverty, Job Cards.

0515134 PRAKASH, SATYA AND KUMAR, ANAND (Bhojpuri Adhyayan Kendra, Faculty of Arts, Banaras Hindu University, Varanasi 221005). A CRITICAL STUDY OF SMART CITY DEVELOPMENT MISSION IN VARANASI CITY

A city is constituted by a plurality of spaces - spatial, ecological and socio-economic. Despite many similarities, each and every city evolves over a period of time as a unique place. Therefore, many scholars tend to romanticize the geographic-historic-socio-cultural specificity of a city and in the process a critical study of the city is often denied. In this paper we evaluate the impact of Smart City Development Mission (SCDM) in Varanasi, the most ancient city of India. The paper is largely based on a critical study of documents, data and reports of government and autonomous agencies, newspaper clippings, and on Varanasi city. The results of the study indicate that Smart City Development Mission (SCDM) may not be able to address the basic issues and challenges of the city at grassroots levels. The mission clearly ignores the values of inclusivity of the marginal groups and spaces, urban social life and intimacy among the city dwellers. The study finds that most of the investment is planned for a very small geographical space of the city leaving large parts of the city and its rural hinterland dissatisfied. Therefore, if implemented in its current form, the SCDM may exacerbate existing socio-spatial disparities and may give rise to contestations and conflicts in the city.

Key words: conflict; development; socio-spatial disparity; inclusive city; city space; smart city

0515135 SAMSUNNEHAR AND SARKAR, SUMANA (Department of Geography, University of Burdwan, Purba Bardhaman, West Bengal) **DECISION MAKING POWER OF RURAL HOUSEWIVES IN MUSLIM COMMUNITY: AN EMPIRICAL STUDY OF SANTOSHPUR MOUZA IN SAGARDIGHI BLOCK OF MURSHIDABAD DISTRICT (WEST BENGAL)**

Decision making power is the key which definitely enhance the process of empowerment of someone specially women section of our society. Empowerment increases self-efficacy by which one can control one's way of life for survival. It is established fact that women are the disempowered section in our society. When women belong to a section that is underprivileged because of caste, poverty or other reason, they get doubly disempowered in relation to others. Hence, the rural Muslim women are the most backward than other as they have to face economic insecurity and also social inequality which day by day makes them vulnerable section in the country. They have limited opportunity to take decision in many dimension in family, society even something related to their self matter. Considering this scenario, this study is an attempt to explore and analyse the decision making power of rural housewives in Muslim community of Santoshpur mouza in Sagardighi Block of Murshidabad District, West Bengal. The methodology adopted for the present study is the integration of both quantitative and qualitative data based on primary survey. Fifty respondents are selected for interview with the help of random sampling technique and a Cumulative Empowerment Index (CEI) is constructed based on some key indicators to measure their decision making ability and liberty. Some independent variables which directly or indirectly affect their empowerment process are estimated. Computer package like Microsoft Excel and statistical software SPSS v 20 are used for data analysis and maps along with charts are generated using geospatial tools of Arc GIS 10.2.1 software.

Keywords: Decision making power, Empowerment, Qualitative data, Random sampling technique, CEI

0515136 SARKAR, ARPITA AND MISTRI, TAPAS (University of Burdwan, East Bardhaman, West Bengal, India). **POSITION OF WOMEN IN THE RABHA TRIBAL SOCIETY OF WEST BENGAL: PAST AND PRESENT**

The position of women in a society is a significant reflection of the level of social justice in that society. Rabha is a scheduled tribe community of North-East India. According to Hodgson 'they belong to the great Bodo or *Mech* family'. In West Bengal the Rabhas are settled in Cooch Behar, Jalpaiguri and Alipurduar District. In Rabha community, the role of women is substantial and crucial. The position of Rabha women's is justified in their work participation rate, education, health, roles and decision making power within the family, community and the society. They have to perform most of the important works in and out -side the family. Feiend-pariera mentioned that this tribal group had once a full-fledged matrilineal base and now 'they are in a stage of transition from matriarchal to patriarchal form of life'. After independence in West Bengal, the Rabhas came in touch with a large number of immigrants like Hindu Bengalis and others local communities and gradually started imbibing patrilineal traits due to the influence of their neighbours. Under the strong patriarchal frame and at the same time influence of the

continuous women movements to protect their rights and dignity at different levels Rabha women's status began to change. This paper tries to examine the changing position of the Rabha women with time. It also tries to reflect the tenacity, fight and indomitable will power of the women of the small tribal group of West Bengal, at the same time their adaptations, permutation and combinations under the undesired patriarchal dominations to preserve their own dignity providing sustained, important and versatile contribution to their family and society as well.

Key Words: Matrilineal, Patrilineal, Adaptation, Fight, Dignity

16. HOME SCIENCE

0516137 AHMED, FARIDA (Department of Home Science, Faculty of Science, University of Allahabad, Allahabad) **COMMUNICATION IN RURAL INDIA: A POLICY PERSPECTIVE**

Health communication is the process by which health information is communicated from a sender, such as health service providers to a receiver, community or beneficiary with the idea of changing the community's health behaviour. This involves the formulation of policies or strategies for the implementation of health communication. Therefore, in this paper two different studies conducted on health communication in Bihar and Uttar Pradesh States is discussed in detail.

First study was carried out in Bihar State was aimed to assess the formation, function and effectiveness of VHSNC and VHSND in nine high priority districts of Bihar. Both qualitative and quantitative methods of data collection were adopted to gather relevant information. The study covered 174 Gram Panchayat spread across 101 development blocks of 9 high priority districts (declared by the Government of Bihar). Altogether, a total of 2958 respondents including recently delivered women (1914), currently pregnant women (696) and adolescent girls (348) were interviewed. In addition, 20 FGDs among stakeholders and 40 in-depth case study of VHSNC members, stakeholders, health and BTAST officials were also carried out.

Second study was conducted in Uttar Pradesh State. The aim of the study was to analyse the combination of communication approaches and strategies adopted by the Government of Uttar Pradesh State for the individual and community health behaviour change. For this purpose a qualitative cross-sectional study was conducted in Lucknow and Allahabad Districts of Uttar Pradesh State which includes stakeholders such as National Health Mission, TAP-UPHSSU, SIFPSA and Department of Health and Family Welfare Officials. A total of 11 stakeholders, medical officials and managers were interviewed for the purpose of data collection in Uttar Pradesh State. Therefore, this paper highlights the health communication system and provides practical suggestions for the current health policy in rural India and monitoring services.

In rural Bihar and Uttar Pradesh States of India, health services related to RMNCH+A (reproductive, maternal, newborn, child and adolescent health) were mainly provided by the VHSNC (Village Health Sanitation Nutrition Committee) members or Frontline Workers (ANM, ASHA and AWW) during Village Health Sanitation Nutrition Days (VHSNDs). VHSNC supports to VHSND for delivering ANC (Antenatal Care), PNC (Post-natal care), immunization and counseling services at the village level. FLWs through a combination of communication approaches and strategies like interpersonal communication, group meetings, digital media and using IEC (Information, Education and Communication) material communicating target messages to the women, men and girls that foster the change in community health seeking behavior. State governments also developed various IEC materials and BCC (Behaviour Change Communication) strategies to support health programmes. NHM (National Health Mission) had also introduced AFHS (Adolescent Friendly Health Services) programme to provide counseling service to the adolescent boys and girls. Under AFHS programme separate AFHC (Adolescent Friendly Health Clinics) for adolescent boys and girls were developed.

In Bihar, ANM (95.9 percent), AWW (95.2 percent), ASHA (92.2 percent) and Uddeepika (19.4 percent) were the most visited health service providers at AWC on VHSND. However, ASHA remains the most preferred healthcare service provider on VHSND over AWW and ANM for ANC services.

In UP, SIFPSA (State Innovation in Family Planning Services Project Agency, UP) implemented few digital media health services like radio drama series *Sunhare Sapne aur Sawarti Raahein*' programme, '*Sehat Sandeshwahini*' (Mobile Video Van), 'Mobile *Kunji*', '*Meri Sehat Mera Nirnay',* '*Aao Batein Karein*' to generate demand for reproductive health services. It had oriented various folk troops like puppetry, *Nautanki, Kawwali,* magic show, folk songs on family planning and health and sends them in villages. More than 3000 shows were implemented by NHM in 2017. HNBC (Home Based Newborn Care) a mobile based monitoring programme, showed positive results in health seeking behavior in Bihar and UP rural community and people took interest to avail RMNCH+A health services.

In UP, the IEC and BCC strategy covers only rural and urban and excluding large urban slum areas, which have different developmental issues and social dynamics from the rural and urban. Therefore, for decreasing the unhealthy slum condition 'urban slum-specific IEC materials and BCC plan' need to be developed. The major challenge for developing and implementing IEC materials and BCC strategy is the capability of the government health officials. The IEC materials and BCC strategy also seeks to address the following gaps- lack of coordination at various level, lack of focus strategic planning, lack of service provider orientation, lack of PRIs involvement, lack of counseling, lack of proper doctor-patient communication, lack of monitoring, lack of male involvement, lack of behavior centered strategy, religious and cultural norms, lack of VHSND infrastructure and resources, lack of IEC materials for urban slums, improper monitoring and evaluation activities etc.

Therefore, before the finalization of IEC materials and BCC strategies pre-testing exercise should be carried out. However, a detailed recommendation for operationalization of IEC materials and BCC strategies for interpersonal, group and mass communication or digital communication activities is provided in the paper. Priority was given to improve modernize the health communication system, recruitment of qualified and skilled human resource, recruitment of family counselors, appreciation and awards for ASHAs, address religious and cultural norms, faith-based health BCC strategy, NGOs involvement, urban slum-specific IEC and BCC plan etc. The convergence of line-department is also important to promote the involvement of wide range of health stakeholders. It was also found in the research study that the effectiveness of interpersonal communication in comparison to mass or digital media for availing health related information in rural India was very high. Therefore, research findings indicate that penetration of mobile phones, television, radio and other digital means is still very less in number in rural areas. Hence, more focus must be given to improvising the capacity of the local frontline workers for providing health information and improvising rural health status through the mix method of communication i.e. interpersonal and digital communication methods.

0516138 SATHYA, G AND SUGUMAR RAJI, V (Department of Home Science, Bharathidasan Govt. College for Women (Autonomous), Puducherry) **PREVALENCE OF OBESITY AMONG ADOLESCENTS IN PUDUCHERRY: CLAMOURING FOR LIFE STYLE SHIFTS**

A shift in the dietary and physical activity behaviour among adolescents in a globalized scenario foresee the soaring prevalence of Non-Communicable Diseases due to alarming changes in the life style. The culture towards the craze for zero slimming and the habit of over eating junk foods to fulfill the desire of the demanding taste buds leads to either sides of malnutrition namely Chronic Energy Deficiency (CED) or obesity

The present study proceeded with the above claims as a prelude. The primary objective of the study was to find out the prevalence of obesity among college going adolescents through basic anthropometric measurements and Body Composition Analyser (BCA).

A cross-sectional survey was conducted using a pre-tested questionnaire to find out the health profile, physical activity behaviour and anthropometric measurements among the college students, 17-19 years of age (N=1500) studying in Government Arts and Science Colleges of Puducherry, South India. Anthropometric indices and body composition parameters were collected using standard procedures.

About 45 % of the adolescents had normal Body Mass Index (BMI) whereas 41 % were categorized as underweight and 14% were obese. Abdominal obesity was observed in 21 % of girls and 7 % of boys. Binary logistic regression showed that the factors such as urban location and female gender were found to be significantly associated (<0.001) with obesity. About 53% of the respondents skipped their breakfast, out of which girls were higher (55%) when compared to boys (49%). About 12% of them avoided breakfast due to lack of hunger. Nearly 25% of the respondents had the habit of doing exercise regularly for at least 30 minutes per day. Boys were more (29%) than girls (22%) who practiced physical exercise regularly. Boys (13%) who went to gym were more than girls (5%). Rural boys (14%) showed more interest to go to gym than urban boys (12%).

Nearly half of the respondents were found to be undernourished. Among the overweight and obese respondents, girls were more than boys. Factors such as urban region and female gender were found to be

significantly associated with obesity. Nutritional status and dietary behaviour of girls was observed to be poorer than their male counterparts. Eradicating malnutrition and correcting unhealthy life style practices among adolescents are significant public health challenges in this digital era.

Key Words: Adolescents, Obesity, Overweight, Body Mass Index, Dietary behaviour

0516139 SINHA, ARPANA (Department of Home science, Patna University, Patna 800001). POVERTY AND MATERNAL HEALTH CARE UTILISATION IN PATNA: ASSOCIATED INFLUENCES ON INFANT MORTALITY AND MORBIDITY

The importance of maternal health services in reducing maternal and infant morbidity and mortality has received increasing recognition. The uptake of maternal health care (MHC) in developing countries has significant consequences for both the safe transition of the mother through pregnancy and child birth and the survival and health of the child during early infancy. India is one in developing nations with a high rate of maternal mortality. Government launched many maternal health care (MHC) programmes to reduce MMR and some other maternal and child health complication. But, it still lacks behind to fulfil Millennium Development Goal. Women of reproductive age group are the most vulnerable part of the population in case of health issues, especially when they are going to be a mother. The maternal health refers to the health of women during pregnancy, childbirth and postpartum period.

Keyeords :- Maternal health , child health , poverty, utilisation of services

17. INTERNATIONAL RELATIONS STUDIES & DEFENCE, STRATEGIC STUDIES

0517140 ADHIKARI, MANOJ AND BASHYAL, SAURAV (Department of International Relations, South Asian University, New Delhi 110021). TRANSFORMING CONTEXTS AND ALTERING WAYS: THE CHANGING NATURE OF INDIA'S AID TO NEPAL

India has played a paramount role in the political and economic development of Nepal, especially after the formal establishment of its bilateral relation with Nepal in 1950 and securing its political foothold in Nepal's political development. The democratization of Nepal in 1951 further provided India with ample space to institutionalize its various political and economic agendas through formal and informal channels of foreign policy. It is an established practice for any state to pursue its foreign policy objectives via foreign aid. Hans Morgenthau classifies foreign aid into six different types, namely apolitical humanitarian aid, subsistence aid, military aid, bribery, prestige, and economic development aid In case of India and Nepal, India has prioritized the domain of economic diplomacy involving the deployment of aids, grants, loans and other financial assistance with consideration of its national interest. The promulgation of constitution of Nepal in 2015 as corollary of conclusion of 10 year long civil war marks the major shift of Nepal from a war-torn economy to developing economy. As one of the poorest nation in the world, foreign aid has been one of the driving forces bolstering the economic development of this aid-dependent nation. Even though international community has been extending their financial support to Nepal, Indian economic assistance amounts to nearly 40% of the total economic assistance that Nepal garners. The nature of Indian aid to Nepal has been altering with respect to the developments in Nepal's political sphere. This research aims to trace and analyze the recent trend in the deployment of Indian aid to Nepal and its varying political implications after the promulgation of the constitution of Nepal in 2015. It also analyzes the current political standing of India in Nepal's economic domain with rising Chinese involvement and increasing Chinese investment in Nepal.

Keywords: Foreign Aid, Nepal, India, Constitution of Nepal

0517141 NAHIDA, AKHTER (.....) CONFLICT, AGENCY AND PROPAGANDA: A CASE-STUDY OF WOMEN IN AFGHANISTAN

Afghanistan has been embedded in deep patriarchy. The cultural codes, religion and brutal armed conflict all add up to furthering suppression of women. Traditional sources of patriarchy and, the liberal world plays a role. Afghan women have traditionally been excluded from the public sphere, but have recently emerged as a political and social force, as their participation in civic and political arenas is increasing. Most importantly, their participation is crucial for further development of the country and achieving stability in national security. However, women still face vast challenges, in the form of violence, security threats, lack of education and employment opportunities, which are limiting their opportunities in life.

In the past 17 years, however, women have gradually emerged as a social, political and economic force. Despite recent progress, women still face security challenges, including threats of violence, lack of economic and political empowerment, illiteracy and lack of equal rights, limiting their abilities to participate in the social, economic and political life. Violence, oppression, lack of education and employment opportunities, and limited access to legal protection are highly critical threats facing many Afghan rural women on a daily basis.

The west automatically becomes a protector of women in Afghanistan and assumes that Kabul is Washington. Thus pitching Afghan men against Afghan women, and using it to justify "war on terror" and war of liberation. The propaganda machines of west and the religious actors in Afghanistan unequivocally snatch the agency of Afghan women and appropriate to the extent of suiting their own agenda.

This paper tries to understand the oppression of women in Afghanistan with reference to its historicity and analyse the debate on agency of women in Afghanistan as battle between men of east and men of west and its deliberate denial. This paper will try to debunk media myths sustained due to propaganda over the years, thereby also dwelling onto contemporary role of women in Afghanistan.

Key Words: Afghanistan, Conflict, Women, Patriarchy

0517142 BEIG, MOHD MANSOOR (Center for International politics, School Of International Studies, Central University of Gujarat, Gandhinagar, Gujarat), **THE CHANGING NATURE OF KASHMIR CONFLICT IN THE 21ST CENTURY: EXAMINING MAJOR SHIFTS**

The Kashmir has remained the unresolved dispute since the partition of Indian subcontinent in 1947. It has begun as a territorial dispute and evolved as a highly politicised conflict in the region, which has later on taken multiple dimensions. The 1998 nuclear tests of India and Pakistan had changed the dynamics of Kashmir conflict, which has taken a fresh turn, making the region of South Asia most dangerous place in the world. After that, the rivalry had intensified between the two countries. Nevertheless, the issue of Kashmir is central of the larger confrontation between the two countries. The Kashmir conflict is hard to manage and may prove costly to resolve because it is a conflict in which each stakeholder views itself as vulnerable and threatened and resists to negotiate and compromise. Moreover, Kashmir conflict has become one of the crucial aspect for both India and Pakistan, which is becoming a major challenge for regional stability. As tension will remain between the two countries the nuclear arsenals aimed into the hearts of either country. The nuclear war between these two countries will be unbearable damage for the region. Consequently, it is vital to understand the Kashmir issue in the 21st century, which is a digital era. So, it will be interesting to examine how both the countries are perceiving the Kashmir issue in the digital world. Thus, the article will study the major events which happened aftermath of Kargil war in 1999. It will also analyse the major shift in international public opinion vis-à-vis Kashmir issue since 2000. These changes are because of the growing influence of India in terms of its political, economic and security aspects.

Key Words: Partition, Subcontinent, Territorial Dispute, Nuclear Tests, Kashmir Issue, Regional Stability

0517143 CHAURASIYA, MANISHA (Centre for International Politics, Organization and Disarmament, Jawaharlal Nehru University, New Delhi 110067). **THE INDO-US BILATERAL RELATIONSHIP IN THE 21ST CENTURY: ANALYSING INDIAN FOREIGN POLICY PRIORITIES AND THE NUCLEAR DEAL**

The foreign policy of a country is a reflection of its national interest. A resultant of this are the bilateral relationships it fosters. The Indo-US bilateral relationship is one such strategic partnership marked by dynamic and multifaceted interests of both India and the United States. The paper evaluates the Indo-US bilateral relationship in the light of changed foreign policy priorities for India in the 21st century and the Indo-US Civilian Nuclear Cooperation Agreement or the Nuclear deal. At the onset of the new millennium the Nuclear Deal emerged as a catalyst and hope for an improved relationship between two of the world's greatest democracies.

In almost two decades since the turn of the millennium the bilateral has matured into a strategic partnership. The paper attempts to understand, (a) the Indian foreign policy priorities for the new millennium, (b) understanding the need of energy security, especially the civilian nuclear energy for India, (c) the strategic need for shedding non alignment approach, in practice, in its foreign policy behaviour in post-Cold war changed world order. The paper then traces the signs of improvement in India and the United States of America bilateral with a brief historical overview of the same. The growing stature of India around the globe and the emerging economic and political clout attention. Also, alongside this, there is a pressing requirement for India to gain long awaiting respectable position in the nuclear non-proliferation regime with equal nuclear trade and commerce opportunities like other great powers in the world. Towards the end the paper traces the growth and development in this strategic partnership in the present times.

The paper analyses future trends in this journey. There is great positivity in the relationship with both India-US identifying the irritants and then maturely addressing them. The Indo-US bilateral suggests that diplomacy certainly holds the mystic power to do the the undoable.

0517144 DEVI, SUSHMA AND SINGH, T K (Centre for Security Studies, School of International Studies, Central University of Gujarat). INDIA'S DIGITAL AGE AND CYBER SECURITY: ANALYSING THE PROSPECTS AND CHALLENGES

The IT sector in India has emerged as one of the most significant growth catalysts for its economy. This sector is positively influencing the lives of its people either through direct or indirect contribution to several socio-economic parameters like standard of living, employment, diversity among others etc. Besides, it has played a vital role in transforming India as a global player. Further, the government sector has facilitated increased adoption of IT enabled services and programmes like Unique Identification Development Authority of India (UIDAI) and National e-governance Programmes (NeGP). The adoption of such programmes has created large scale IT infrastructure and promoted corporate participation. However, despite the growth in IT sectors of India, there has been a tremendous need to secure computing environment as well as build adequate confidence and trust in this sector. The presence of such environment enables a need for the creation of suitable cyber security ecosystem in the country. Almost, all the financial institutions as well as Indian banking industry have incorporated IT to its full optimisation. This at the same time makes these economic and financial institutions vulnerable to cyber-attacks in their daily activities. It is in this context that the paper would attempt to explore the various cyber security threats in India, along with the responses both at institutional and policy levels to combat with such threats.

More recently, the Indian government has adopted the "Digital India" programme, aimed at ensuring government services available to citizens electronically by increasing internet connectivity and improving online infrastructure. Besides, the project aims at creating skill enhancement and jobs in the Broadband Highways, Electronic delivery of services and e-Governance, Universal access to Mobile Connectivity and Information for all and thereby taking the nation forward digitally and economically. However, the implementation of this project is a great challenge, given the obstructions like poor infrastructure, digital illiteracy, lack of coordination among various departments as well as low internet speed. The paper attempts to examine the various prospects that the programme would likely provide to the citizens, along with the challenges for its successful implementation.

Keywords: Digital, Cyber-attack, Opportunities, Cyber Security, Internet, Information Technology.

0517145 GUPTA, ISHU (Lovely Professional University, Phagwara, Panjab). AFRICAN ECONOMY AND THE POWER DYNAMICS OF SOUTH ASIA

India and China are the two major players when it comes to the sphere of influence in the South-Asian region. The major factors at play – military, politics, diplomacy, and influence – when amalgamated, contribute significantly to each parties' power and influence in the region. Going back in the history, what is realized is the significant, non-replaceable role of economy and wealth in raising a nation's power dynamics. Even in the contemporary sense of rise of influence of Asian countries, it is now relying on the apparently backward nations of Africa to increase its wealth and boost its own economy – vaguely comparable to the European Colonization of the world. Both, China and India are putting in billions worth of monetary investments and credit in the potential countries of Africa. While this appears to be simply monetary investments put in to raise one's own economy – much like an individual's investment in the stock market – it opens the possibility to explore the patterns. Firstly, how the western private institutions and corporations injected themselves into the Asian and other economically weaker countries and induced as major lobbying players. Secondly, how colonization by the Europeans started off as mere trade routes and merchants – could this be a similar attempt by the Asian players? Whatever the case may be, there have been various speculations by economists, and political scientists as to how it may play out for all the stakeholders. Africa has gained a significant traction and boost in the eyes of new emerging players in the international diplomacy and it remains no less than entertainment for the old players to see how both, India and China would be competing with the outsiders alongside competing side-by-side to be the major player in the South Asia. These all remain connected and affected with the debates, differences, and diplomacy going on in the South Asian region.

0517146 GULAB, MIR RAHMANY (Department of Sociology, University College for Arts and Social Sciences Osmania University, Hyderabad 500007, Telangna). **FOREIGN RELATIONS OF INDIA AND AFGHANISTAN DURING 2001-2016**

In this paper efforts have been made to examine the achievement and foreign relationship of India and Afghanistan. The incident of 11 September opened new pages on the internal and external Afghan political system, the regional cooperation agencies of the region, and Afghanistan entered a new political literature.

The expansion and prosperity of various countries in Afghanistan, especially India, was among the most promising for Afghanistan's foreign policy. Diplomatic relations in various fields such as expansion, economic growth, cultural, technical, capacity building, military and other needs of Afghanistan were at the forefront of foreign policy in India.

India is one of the countries that, after the September 11, 2001, and Taliban leadership, managed to gain more opportunities for the people of Afghanistan. Its non-hostile contributions to the countries of the Middle East and the Middle East have created a special place for the Afghan people. As Afghanistan is in the context of the geographic position of the Atrium, it is in contact with Central Asian countries. The attention of different countries and the world's economic multinationals has become self-evident and attracted by the wisdom of each country in the world. However, India, after its independence in 1947, started its friendly relations with Afghanistan two years later, up to now, the enthusiastic and dedicated have made their donations to Afghanistan.

The Afghan people in this regard have benefited from the Indian government's such as: the construction of the Salma Dam in Herat, construction of Delaram Road, more than 700 scholarships for Afghan students human resources development, the repair Afghan foreign minister complex, establishment of Afghanistan Parliament house. Opening the Port of Chabahar in Afghanistan' as commercial and financial markets, Strengthening the equipment of Afghan military forces and India's efforts to get Afghanistan's membership in regional cooperation agencies such as SAARC, BRICS, Asia heart "Istanbul Process" and others points are discussed in this article.

Keyword: Indian and Afghanistan cooperation, Afghanistan's Foreign Policy towards India, India and Afghanistan Friendship, Role of regional cooperation and 2001 and 2016.

18. JURIDICAL SCIENCE

0518147 JALAL, IRFAN (Department of Islamic Studies, Islamic University Of Science & Technology, Awantipora, Pulwama, Kashmir). ISLAMIC LAW OF DIVORCE: DIVINE OR DRACONIAN

Under normal circumstances, the basic guiding principle of Islamic family law is to preserve marriage and avoid divorce being a civil but sacred contract and a social fortification, on the one hand. On the other hand, under unfortunate circumstances, it can be dissolved in many ways, by both parties keeping in view the dynamism and flexibility of Islamic law, when the objectives of marriage and welfare of parties are not covered. The classical laws and the civilized societies which don't acknowledge and claim any divine origin for their laws, still recognize marriage as an established form of human relationship. Because of that sacramental nature, some religious sects and societies declare that marriages are made in heaven and can't be ever broken. As such, the Islamic system of divorce is attacked from all sides. The Islamic law presents definite procedures and ethics for divorce while imposing obligations and checks on the unilateral power of the husband, especially when Talaq is concerned, where the knot lies in the hands of man. Simultaneously, there are other options to dissolve it. If divorce is given by man, it is termed as Talaq, if by woman, it is Khul'a, if by mutual consent it is Mubara'at, if written on marriage agreement, it is Talaq-i Tafwidh, and if nullified by Court/Judiciary, it is Faskh. Some of its types are controversial and confusing within Muslim and non-Muslim writing, as they put it. As such, it is necessary to examine the position of Islamic law of divorce in historical and classical background with modern interpretation vis-a-vis in the context of movement for gender equality, human Rights and Indian constitution.

Keywords: **Sacred, Sacramental, Discord, Dignity, patriarchy, Gender Equality**

0518148 MISRA, JAYDEV, MALLICK, PRIYADARSHINI, AND MUKHERJEE, PRATYUSHA (Economics, Dhruba Chand Halder College, South 24 Parganas, West Bengal). THE BOONS AND BANES OF 'DIGITAL DUNIYA'

The 'Kalash of Amrito' (immortality) cannot be achieved without experiencing the torment of 'Kalash of Bish' (poison). The verses of scriptures explicates that the way towards boon opens up after crossing the path of curse. Thus the 'human future in digital era' is a compilation of both privilege and punishment.

The greatest creation of God is human beings and the greatest creation of human is technology. We are living in a world where we are encompassed by gadgets and machines. Inter-alia the most popular inventions are the computers and its circulatory system, i.e. the internet. Standing in this era can we imagine our daily activities without internet and web services? The answer is 'No'.

In recent times, the Digital India movement has achieved immense popularity, due to which the globe has come within the viable reach via smartphones. In order to reduce paper work, save time and save man power the concept of Digital India was introduced on July 1st, 2015 by the Government of India. Amongst many other facilities of Digital India, 'Digital Locker' stands in the first row. It digitally stores the important documents of an individual like PAN details, passport, testimonials and Aadhaar details. It also provides access to the documents issued by the Government. E-mail, e-application form, e-attendance, e-signature, e-education, e-shopping, e-services have already announced the inception of the digital era. This 21st century can be truly regarded as digital era where starting from net banking to online shopping, from Aadhaar-linking to all our personal informations are accessible by clicking the mobile phone.

Thus the contributions of digitization in our lives are undoubtable. But at the same time a million dollar question arises that is, how far we are safe today? How far our personal informations are within safe hands? To what extent they are safe? Do we have any digital threat?

The present penman would like to accentuate the issues of Conflicts, War, Peace and Social Security under the lime light of Juridical Science. Efforts shall be made to highlight the legal implications of future of humans becoming inclined towards 'Digital Duniya' (World); causes and effects of indulgence and proliferation of cyber

crimes; need of cyber protection by focusing to some of the recent researches and surveys undertaken by eminent scholars and jurists. Overall analysis of Information Technology Act, 2005 and highlighting the problem as of why we need to have more stringent laws in regards to the same to fight these upcoming cyber threats.

Keywords: Digital Duniya, Digital era, internet, cyber crime, cyber protection

0518149 PANDA, RASHA KUMARI (Berhampur University). HUMAN RIGHTS TO SPEEDY TRIAL: CRIMINAL JUSTICE

Human rights are those minimum rights which are compulsorily obtainable by every individual as he/she is a member of human family. The constitution of India also guarantees the equality of rights of men and women. The dictum justice delayed justice denied, that an unreasonable delay in the administration of justice constitutes an unconscionable denial of justice. Speedy justice is sine qua non of criminal jurisprudence. There is no mandatory law on the intervals between actual time of committing the crime and the time for commencement or completion of the trial. Disposal of cases within a reasonable time is an essential and an integral part of fundamental right to life and liberty as enshrined in Article 21 of the constitution of India. The mounting arrears in the trial and appellate court coupled with increased institution of court cases on account of awareness of rights on the part of the citizens ,enactments of numerous laws creating new rights and obligations ,industrial development in the country increase trade and commerce and legislative and administrative measures touching the lives of citizens at all levels have assumed serious proportions .the manner of delay not only discerns justice denied but is now versioned as justice circumvented, justice mocked and the system of justice undermined.

Key word: criminal justice, fundamental Right, Human Right.

0518150 RANGASWAMY, D (Department of Law, Karnataka State Law University, Navanagara, Hubballi). THE GEOSPATIAL INFORMATION TECHNOLOGY: A CRITICAL NOTE FROM A LEGAL PERSPECTIVE

The collection of adequate and appropriate information relating to crucial issues such as environment, natural disaster, climatic change and agriculture etc plays a vital role in the development of the country. The ability of the state to protect society and individual against certain crucial man-made as well as natural disasters depend upon the adequate data. The geo-special technology has widely been used to collect such kind of data and to prepare a relevant policy to address the issues. The policymakers and scientists have extensively relied upon the data collected by using this kind of technologies. Though the countries have substantially benefited from this technology, the countries across the globe have failed to perceive negative threats posed by this technology. Important issues such as confidentiality of the information, security of the nation and the privacy of the individual etc., have emerged as critical problems due to extensive use of geo-spatial technology in recent years. Presently, there is no specific law to address the hazardous consequences of geo-spatial technology. Accordingly, the present paper attempts to trace out the nexus between geo-special information and its impact on threats posed on individual, society and State. The paper analyses the existing law relating to areas affected by the geo-spatial information and need of the law to be revised in the backdrop of this emerging technology. The author is of the firm opinion that though there is no such kind of organised quantitative data as to the negative consequences of this technology, as this unattended technology could pose serious threat for the efficacy of law and legal system, it is a need of the hour to take care of the situation and address the problem in well advance.

Key Words: Geo-spatial Technology, Information, Law, Nation, Society

0518151 TARENIA, AMARENDRA (Dhenkanal Law College, Sambalpur University, Sambalpur Odisha). INDUSTRIALIZATION, URBANIZATION AND WATER POLLUTION: A BRIEF CONSPECTUS

Water is one of the most fundamental requirements for survival of mankind and predominant component of all life forms plant and animal kingdom. Right to access water is also a basic human right but one of the crises, the

country facing is, distressed water sources. Indiscriminate exploitation of water resources and inadequate protection measures have led to water depletion and deterioration at an alarming rate. Water pollution is now a major problem in our country. It is most serious in its implications for health and well being of our citizens. In recent years due to rapid industrialization and urbanization,water pollution has become very gigantic. Pollution free water is the only hope for a healthy life, which has been embodied in Article 21 of the Constitution of India. About 10% of the waste water generated is treated, the rest is discharged as it is, into our water bodies. Pollution of rivers and streams also caused increasing damage to the county's economy. Industries at Rourkela, the super thermal power plants at kaniha,thermal power plant at Talcher,NALCO smelter and CPP at ANGUL,coal mines at Talcher and a number of steel plants in jajpur district.(Kalinga Nager).Besides,river Bramhani receives municipal sewage and waste water at Rourkela,Bonai,Angul and talcher and from small towns in the downstream. In odisha attention to the Brahmani river pollution , it's basin occupies 15% of the total geographical area also affects the health of major people of Odisha due to industrial activities of defective swage and waste water problem. For conserving water quality for pollution sincere efforts have been made by Indian legislature towards water laws which include the water (Prevention and Control of Water pollution) Act 1974,the Environmental (protection) Act 1986,the Water (Prevention and Control of Pollution) Cess Act 1977,the Public Liability Insurance Act1991,theNational Environment Tribunal Act1995, and the National Green Tribunal Act 2010. The constitution of India originally did not contain direct provisions regarding the protection of natural environment but later on after Stockholm Conference of1972 brought out amendment in the constitution and added Articles 19(1)(g) & 48A on water pollution and environment conservation. In this way,by invoking Article 32 and 226,the Indian judiciary has also played significant and dynamic role to conserve water bodies in the country in pronouncing its Land Mark Judgements in the case of Ganga pollution case (M.C. Meheta vs. Union of India,AIR 1988 SC 1115) Vellor citizen Welfare Forum vs. Union of India,(AIR 1996 SC 2115) . Calcutta Tanneries case (M.C. Meheta vs.Union of India, AIR 1997 SC 734), and Jagannath vs. Union of India (AIR 1987 SC 811). Despite stringent laws, intensive judicial initiatives and well planned policies,there has not been any effective improvement in water quality of the country. Rapid industrialization, urbanistion and water pollution are serious threat to mankind and animal kingdom.It requires multidimensional approach to check. It is already high time for all of us to show environmental patriotism and observe environmental spiritualism.

19. LINGUISTICS

0519152 GREESHMA, B (.....) LANGUAGE DISCOURCE IN DIGITAL ERA

Language always facing certain transformations. It is said that gestures and signs are the first mode of language for communication. Oral language and scripts were the successors of gestures and signs. There are many myths and debates on how language has formed. This paper attempts to examine as to how language is used and handled in this digital age. Information technology and the digital culture has made several changes to language. The major objective of this paper is to find out the changes that are arised from technological advancement.

0519153 PRAKASH, OM (Gautam Buddha University). IDENTITY, COMMUNICATION, AND EMERGING LINGUISTIC REALITIES OF THE NETWORK SOCIETY

The digital revolution and the consequent rise of the Network Society ('*…a society whose social structure is made of networks, powered by microelectronics-based information and communication technology*' (Castells, 1997)) has facilitated supplying of uninterrupted information consumed by masses in real space and time without any public scrutiny and social censorship. This change in the socialization process has resulted in major changes in cultural, social and political expressions originated, shaped and disseminated among empowered audiences in the media spaces formed by television, radio, print media, film, and web-networks. In this sense, the technology has acquired a pervasive effect, influencing our lives. This space is being appropriated and mediated by continuous supply of information for continuous consumption. The quantum and quantity of such use has created new forms, loud and loaded expressions, and a whole new set of expressions that encompass multiple voices in the public sphere. The structural changes in network society are markedly influencing the forms of language and their use. In such a case, language forms and their use are overarching in capturing this change. The structural change in network society has considerably affected the social, cultural, and political institutions inherited from the post-industrial revolution. The uninterrupted supply of contents and mass consumption of information are attributing linguistic changes at a high prolific rate that cannot be overlooked or undermined in any linguistic inquiry. The conventional and familiar social/cultural engagements are being mediated and modified by pervasive media to the effect that the collective virtual experiences are being identified with by the people who may never meet in the real time and space. The digitized media sphere has generated an assertive and politically charged environment for sharing, exchanging and expressing identities and their constructed meanings. The social and political radicalism, quest for collective identities and images, increasing degree of directness are triggering changes in the language forms in its becoming ideologically loaded. The process of digitization may have started as a technology revolution but gradually it has acquired the status of a social phenomenon that has transformed the process of socialization. Digital technologies have created a new environment which has transformed the conventional modes of communication. The language usages in the digital space are marked with euphemism, hedging, taboo words, directness, ideologically loaded expressions, implicature, and fuzziness. '*Politics and discourse are inextricably intertwined. Political interaction requires language structures and linguistic behavior necessarily involves structures of domination and legitimation*' (Gastil, J. 1992:469). The technological advancements in media and digitization of media sphere have made the identity and communication partners virtual and fluid. In this sense, the scope of the theoretical understanding needs to be extended to such communication events that have become a virtual reality. If society is to be taken as context and language as text then any structural change in the context correspondingly affects the form and patterns of the text as well. In the context of the above construct, this paper attempts to delineate the nature and scope of these new linguistic realities which in turn are fuelling emerging patterns in socialization, communication and identity construction in virtual space.

0519154 SAFNA, M (Department of Linguistics, Malyalam University, Tripur, Kerala). SPECIAL LANGUAGE IMPAIRMENT AND COMPLEXITIES OF BILINGUAL EDUCATION

Language acquisition and Special Language Impairment (SLI) are two important area in linguistics which is linked together. Special language impairment affects the children's language ability, then how can they learn other language. It's an interesting area of discussion.

Language acquisition is a complicated process of brain. SLI children are impaired in their language and they are always suffering with their language. If they suffer within his mother tongue itself, how complicated the second language will be. Considering all this facts, it is important to think off our education system, especially multilingual education system and how it affects the children with SLI.

All children are different from each other, to provide professional support to the children in consideration of all differences is a responsibility of teachers and parents. Here in this piece of writing I am trying to find out whether the SLI children getting this chances or what happened to them, when they compel to learn a foreign language.

The proposed study is a comprehensive analysis of special language impairment and compulsory bilingualism in our education system these days.

Key words: bilingualism; special language impairment (SLI); language acquisition.

20. MANAGEMENT SCIENCE

0520155 KARIMI, ASFIYA AND MATIN, ABDUL (Department of Sociology, Aligarh Muslim University, Aligarh). CSC: IN PERSUIT OF DIGITAL GOVERNANCE

Digital Governance has become a buzz word in the first quarter of the twenty-first century. Governance in general and good governance in particular means providing opportunities and proper delivery of goods and services to the people in a fair, just, effective, responsible and open way with transparency. Digital governance is the effective use of Information and Communication Technology (ICT) for good governance by an improvement in the system of governance that is in place and thus provides better services to the Citizens.Government of India has commitment for digital governance in its pursuit of transforming the country into digital India. The proposed paper makes an attempt in highlighting various models of digital governance in section-I after a brief general introduction. In the next section, it critically examines the role of CSC as a model of governance at the grass root level. There is an attempt on critically examine the functioning of the CSCs at the microscopic level in two villages of Uttar Pradesh: one located in Aligarh and another located in Bhadoi district. Primary data have been generated using qualitative approach from both the villages.

Key Words: Digital Governance, Models of Digital Governance, CSC.

0520156 NAYAK, BIBHUTI BHUSAN (P.G Department of Public Administration, Utkal University, Odisha). E-GOVERNANCE POLICY FOR MODERNIZING INDIA: TOWARDS EXCELLENCE IN DIGITAL DEMOCRACY

The enabling role of the Information and Communication technology (ICT) in the delivery of services in the public and government sector has gained acceptance. As a result, a revolution in terms of governance is taking place all over. E-Governance assumes greater importance in the context of management of today's governmental structures to achive rapid economic growth and improved quality of life. E-governance initiatives are common in most countries – industrialised as well as developing, as it promises a more citizen-centric government with reduced operational cost. Unfortunately most of these initiatives have not been able to get the claimed benefits. Often the reason for this failure is a techno-centric focus rather than a governance-centric focus in the initiative. This paper explores the necessary attributes of a governance-centric initiative under the banner ''excellence e-governance' and describes a methodology called 'e-governance engineering.

Access to ICTs alone does not make for successful national e-governance projects in developing countries, India's National e-Governance Plan, key to its administrative reform agenda, proposes to extend the Internet to the remotest of villages. Making this relevant at the local level requires participatory efforts to promote democratic practices. The foundation of this initiative is a program of e-literacy, capacity building, and installation of broadband-enabled computer services based on entrepreneurial public-private partnerships. Lastly the paper highlights some suggestion for strengthening e- governance policy towards excellence in digital democracy in India.

Key Words: E- Governance, Digital Democracy, Techno-Centric, Excellence and Economic Growth

0520157 PANI, AMRITA (DDCE Utkal University, Bhubaneswar). ENHANCING QUALITY OF TEACHING THROUGH DIGITAL TECHNOLOGY IN MANAGEMENT EDUCATION IN INDIA

Over the last few years Information and Communication Technology (ICT) has transformed the world into a versatile global village where technological revolution has brought enormous reduction in time, distance and cost. In this age of technological advancement, innovations, business pressure and cut-throat competition organizations are forced to adopt latest technologies to accomplish competitive advantage. It has become a necessity for all organization to be a part of both the digitization and digitalization rebellion to sustain in the global competitive economy. So all the organizations from Banking, Manufacturing, Media and entertainment or education are rapidly adopting the latest technologies to thrive in the fierce competition. The most prominent of the recent advancements in Information and Communications Technology (ICT) has been the emergence of the Internet and Web-based

technologies as a part of digital revolution which have been used as potentially powerful enabling tools for educational change and reform. Furthermore the synergy between Digitalization and Management education also develops a mutually supportive learning platform that facilitates students to study at their suitable time , pace and convenience. The main objective of this paper is to highlight on the emerging role of ICT to enhance quality of teaching in Management education in India. This paper also highlights on the major issues and challenges faced by Management Education providers to implement digital based teaching in their pedagogical system. Based on the data collected through secondary sources this paper makes an assessment of the effectiveness of techno based teaching in Management Educational Institutions.

Key Words: Digital Technology, Management Education, ICT, E-Learning, Virtual Classroom

0520158 SIVAPRASAD, V (.....) ADMINISTRATIVE SERVICE DELIVERY AND ITS EVOLUTIONARY CHANGES IN INDIA

Administration is an art of statehood where as a discipline it was much discussed since the contributions of Woodrow Wilson till today. In India also this art was much visible since ages from Indus valley civilization passing through Manu, Vishnuguptha, Todarmal, many unknown wazirs, several Mir-i-Bakshis, Lord cornwalis and Lord Rippon and many of known and unknown eminent scholars of the nation.

The post colonial administrative development was inclusive and coexisting with economic and social transformations in the nation allowing the way for New Public Administration in India. But the administrative system does not change much from the British establishment. It only shows a transformation from the colonial system to a new independent democratic pattern. In 1966 Administrative Reforms Commission (ARC) came up with ideal change in the administration. But the quality administrative service didn't change since 1947 till 1991. After 1991 the new economic policy started the structural reformation and service delivery transformation in India. The Technological advancement and educational development in the society transformed the social behavior also. The change in the attitude of citizen and bureaucratic behavioral change created a new platform for the advancement in the administrative services delivery.

The service delivery mechanism of Independent India was a mere continuation of the British method till 1990s. In the due course India implemented several administrative transformation programmes but which wasn't influenced the citizen's behavior. But the economic liberalization started in 1991 holistically transformed the administrative approach. Meanwhile the telecom revolution in the nation rationalized the administrative services and delivery mechanism. In this background the article is trying to evaluate the behavioral transformations in Indian Public administration according to the socio-economic changes after Independence.

Keywords: Administrative behavior, Indian administration, Development administration

21. MATHEMATICAL AND STATISTICAL SCIENCE

0521159 BHARDWAJ, RASHMI (University School of Basic & Applied Sciences, Nonlinear Dynamics Research Lab, Room No. B 504, Guru Gobind Singh Indraprastha University, Sector 16C, Dwarka, Delhi). **DIGITIZATION WITH CONTINUOUS WAVELET TRANSFORM AND WAVELET COHERENCE OF CARBON MONOXIDE**

Digitization with Continuous Wavelet Transform and Wavelet Coherence of Carbon Monoxide which is a gas found in air. High levels of carbon monoxide are poisonous to humans and, unfortunately, it cannot be detected by humans as it has no taste or smell and cannot be seen. The natural concentration of carbon monoxide in air is around 0.2 parts per million (ppm). Natural sources of carbon monoxide include volcanoes and bushfires. The main sources of additional carbon monoxide are motor vehicle exhaust and some industrial activities. In this paper, Wavelet squared coherence estimates based on the continuous wavelet transform measure the co-movements of daily data from different locations of Delhi, India for the last five years. The paper compares the results to coherency spectra based on Fourier transforms and comparison between a pair of time series of air pollutants using wavelet transform methods is studied. From Continuous Wavelet Transform (CWT) of two-time series of air pollutants we constructed the Cross wavelet transform (XWT) which exposed their common power and relative phase in time-frequency space. A measure of Wavelet Coherence (WTC) between two CWT is studied to find significant coherence even though the common power is low. The cross wavelet transforms and wavelet coherence for examining relationships in time frequency space between two times series of same air pollutants recorded at different locations. For the wavelet analysis, it employs the commonly used Morlet wavelet and defines a new smoothing operator for wavelet coherence estimates with the latter function. Phase angle statistics is also studied to get more insight in causal relationships between the time series into the problem. Results show an increased interrelation between CO monitored at different locations. Therefore, diversification benefits attained became less pronounced during the most recent years, especially for long- and medium-term predictions of air pollutants. The highest levels of CO typically occur during the colder months of the year when inversion conditions (when the air pollution becomes trapped near the ground beneath a layer of warm air) are more frequent. It is found that an essential factor of the analysis is played by the observation period over which the analysis is performed. As a consequence – as the analysis with the coherency spectrum revealed – the benchmark method seems to be affected, whenever the data bring about a time period of largely affected air pollution with large CO movements. Essentially, this is a consequence of the required stationarity assumption, which is unlikely to be fulfilled for time series. The analysis with the continuous wavelet transform, however, is not dependent on such restrictive assumptions and is capable of detecting both high and low correlations in relation to time and frequency and hence yields a better tool for the diversification analysis. Given this, it is evident that the analysis by means of squared wavelet coherence estimates provides an extremely useful and powerful tool for analyzing diversification and thus for making policy decisions to control the air pollution.

Keywords: Digitization; Wavelet coherence; Continuous Wavelet Transform; Cross wavelet transform; Morlet wavelet; Air pollutant.

0521160 JENA, SWARNALATA (Department of Mathematics, Centurion University of Technology and Management, Odisha). **DIGITIZATION MICROPOLAR NANOFLUID FLOW**

This manuscript is a mathematical expression for two dimensional MHD micropolar nanofluid flow and heat transfer over a stretching sheet which is permeable. Here the micripolar nanofluid which is water based, contains different type of nanoparticles such as alumina, copper and titania. The similarity approach has been adopted here to obtain the ordinary differential equations from respective basic equations. Using an analytical method that is adomian decomposition method the nonlinear coupled ordinary equations are solved. From the computational aspect it has been assured that results of shooting technique (Fauzi et.al [23]) and adomian decomposition method (present method) yield same results for special case. Computations are obtained for velocity, microrotation and temperature profiles for different pertinent parameters.

0521161 SINGH, SAUBHAGYALAXMI (Department of Mathematics, Centurion University of Technology and Management, Odisha). **GENERALIZED DIGITAZATION m^{th} ORDER GEOMETRIC DIFFERENCE SEQUENCE SPACES**

By introducing a few new geometric difference sequence spaces $(C,1)_G(\Delta_G^m),[C,1]_G(\Delta_G^m),(V,\lambda)_G(\Delta_G^m)$ and $[V,\lambda]_G(\Delta_G^m)$ of m^{th} order in this paper and prove certain topological properties and inclusion relations. Also we compute their statistical convergence and also compute new sequence spaces which are defined as orlicz functions.

PANEL DISCUSSION ON

DIGITIZATION WITH DIGITAL TWIN: THE PHYSICAL WORLD MEETS THE DIGITAL WORLD

0521162 BHARDWAJ, RASHMI (University School of Basic & Applied Sciences, Nonlinear Dynamics Research Lab, Room No. B 504, Guru Gobind Singh Indraprastha University, Sector 16C, Dwarka, Delhi). **DIGITIZATION WITH DIGITAL TWIN: THE PHYSICAL WORLD MEETS THE DIGITAL WORLD**

Objective

To discuss the Digitization of the various scientific and engineering discipline concerned with understanding the complex processes from a computational perspective based on different techniques for understanding the degree of complexity of the physical processes, determining the dependency on various factors and further improving those for the better output. To discuss all the possible methodologies of cognitive sciences, machine learning, soft computing approach, artificial intelligence and computational aspects of the simulation.

Significance

• Physical processes are sustained by different inherent processes whose effective functioning is responsible for the essential outputs on which the system can grow.
• These processes are interaction based and depend on several factors that determine the efficiency of the system.
• These interactions and processes are governed by some rules or logic, which is expressed by digital processes.
• Thus, the artificial intelligence and machine learning have facilitated the evolution of processes computationally.

Important Aspects for Discussions:

• What makes digital twins compelling?
• What are the priorities and risks of investing in a digital twins initiative?
• What are best practices to avoid digital twin failures?

DIGITAL TWIN CONCEPT

• Digital twin refers to a digital replica of physical assets (physical twin), processes, people, places, systems and devices that can be used for various purposes.
• The digital representation provides both the elements and the dynamics of how an Internet of things device operates and lives throughout its life cycle.
• The Digital Twin Concept or Digital Twin Technology is one among the top 10 strategic technology trends named by Gartner Inc. in 2017.
• Digital Twins incorporates Big Data, Artificial Intelligence (AI), Machine Learning (ML) and Internet of Things

Working of Digital Twins

• Digital Twins, the virtual counterparts of the physical assets are created as digitalized duplicates of machines or physical sites using sensors.
• These digital assets can be created even before an asset is built physically.
• Throughout the product development life cycle, right from the design phase to the deployment phase, organizations can have a complete digital foot print of their products.
• To create a digital twin of any physical asset, the engineers collect and synthesize data from various sources including physical data, manufacturing data, operational data and insights from analytics software.

The economic value of the future would involve scenarios such as:
• A field service engineer would be trained on a virtual machine, without having a dedicated trainer or simulator

• Artificial intelligence (AI) and machine learning would make machines autonomous, self-optimizing, and able to diagnose, heal, and repair themselves, thereby reducing human intervention

Applications of Digital Twins

By implementing Digital Twins, organizations can gain better insights on product performance, improve customer service and make better operational and strategic decisions based on these insights. Applications of Digital Twins in the following sectors:

• Manufacturing
• Automobile
• Retail
• Healthcare
• Smart Cities
• Industrial IoT
• Customer experience
• Performance tuning

Clearly, what is needed is a comprehensive portfolio that empowers the enterprise to excel at the fundamentals of digital twin by enhancing the core to create a culture of continuous improvement and innovation like never before.

As per reports, Gartner predicts that by 2021, half of the large industrial companies will use digital twins, resulting in those organizations gaining a 10% improvement in effectiveness.
Success has only on amazing formula: “Stop thinking in terms of LIMITATIONS & Start thinking in terms of POSSIBILITIES”

The main challenge is covering how the internet of Things, robotics, AI, Machine learning, blockchain, analytics, virtual and augmented reality, 5G and a range of other technologies are transforming connecting business and making organizations of every size more efficient, productive and profitable.

22. MEDICAL AND HEALTH SCIENCE

23. PHILOSOPHY

0523163 CHATTERJEE, MADHUMITA (Department of Philosophy, Barasat Govt. College). IMPACT OF DIGITAL TECHNOLOGY – ON THE FUTURE OF HUMAN MORALITY

The task of philosophy, particularly moral philosophy, is to make a reflective inquiry regarding some questions as to what is right or good for man? How Man ought to live in order to thrive meaningfully? In answer to these questions moral philosophy proclaims that man can live meaningfully only by living in a society where he continuously interacts with other members of the society. History reveals that man cannot live in a isolated state and regularly require other's help. This sense of dependence has encouraged man to form a society which demands collective sharing or more explicitly equal distribution of wealth and natural resources as well as opportunity to enjoy .In this venture man has invented certain rules and norms which govern and regulate human conduct. Technology, on the other hand, is also invented by man as an aid which helps one towards an enriched quality of life. Technology, therefore, comprises an inseparable and indispensible component of human achievement and creativity which in turn has enhanced material prosperity, bringing enormous benefits to the contemporary society enriching quality of human life. Morality, therefore, means proper and adequate sharing of wealth of the society and technology is a means to achieve the end. Unfortunately, technology which has gradually become more sophisticated and complicated has undermined crucial aspects of human existence, where empathy, care, concern for others, belief in one's integrity altruism seen essential. Undoubtedly, such technology which has assumed the connotation of digital technology fosters human progress while essentially ignores the ideal of promoting social welfare. Truly speaking, the philosophy on which modern science and technology have nourished and nurture rational more specifically cognitive values, which, on the other hand, have adversely affected social, emotional and ethical values necessary to foster a humane society, where life can acquire true meaning of its existence. Digitization in fact has motivated human potential enhancing economic status where the large majority of population of the world live amidst poverty and are continuously exploited at the hands of few wealthy persons. It is because man today works with the robots, operates amidst smart automation and works using artificial intelligence where human labour is not sufficiently required. Discovery of automated robots and mechanical intelligence had deprived many men from job opportunities. Many men have been left homeless, shelter less struggling for existence. Mobile phones computers, machines have taken the place of human labour creating great economic disparities nurturing non, moral values where instead of trust care and concern, domination and exploitations rule. But still a pertinent question remains whether man is able to attain wisdom which benefits man in the long run. Digital age has transformed humans into robots, where development of mechanical intelligence has prompted man to be progressive in the material sense but such progress lacks purpose, values and rules behind which govern life. As a result, harmonious and cooperative living which is a precondition for leading a moral life has been replaced by a environment of uncertainty where theft, rape and indiscriminate murder. New and new technology has contributed greatly towards easier and cruel modes of aforesaid phenomena. It, therefore, cannot however, be denied that moral values and not simply cognitive abilities constitute the main foundation of an age which pre-eminently ought to regulate expectations, aspirations and intentions of human society as well as govern man's interactions with others in the society.

The paper titled impact of digital technology – on the future of human morality, intends to explore the relation between morality and technology and how far technology will abide by the rules of moral philosophy. However, certain positive impacts of digital technology which undoubtedly exercises great impact on human life will be discussed in the paper. The next section will try to indicate adverse affects of digitalization which has miserably failed to upheld the ideal of society where sharing natural resources, developing emotional bonding between man and man and proper relationship between man and society have been neglected. How human autonomy which acts as an clement of human culture and civilization has been replaced by machines will also be pointed out in the course of the discussions. The last section will come to a conclusion, justifying that we need to develop a society where technology should follow the moral principles where human cognition, social interaction, emotion and, ethics are not controlled and regulated by digital services any more. A new comprehensive awareness, therefore, seems essential which will govern human relation within society, directing man to live harmoniously with others, not by using too much technology but by developing a eco- friendly technology which essentially requires widening the concept of moral community, which has been being confined to humans only.

Key words: Humanity, Digitalization, Science and technology

0523164 DAS, SHUBHRA JYOTI (Department of Philosophy and Comparative Religion, Visva Bharati, Santiniketan, Bolpur West Bengal 731235). THE FUTURE OF EDUCATIONAL INCLUSION IN THE DIGITAL ERA: A PHILOSOPHICAL APPRAISAL

The draft of the 12th plan (2012 – 17) of the Planning Commission of India, envisaged expansion of access to higher education by scaling up capacity in existing institutions rather than increasing the number of institutions, with the exception of new institutions needed to address critical regional and social gaps. It also prescribes the use of digital technology for such capacity building. The former is very important since we need to think of educational inclusion as, given all the barriers like economic condition, caste, gender, ethnicity, language, disability etc., a very miniscule percentage of the truly marginalised section of the society manage to come to the higher education. But the problem lies in treating digital technology as an indispensible tool. When we see technology as 'human activity', borrowing the definition from German philosopher Martin Heidegger, this appears to have created problems to the young generation of readers, cutting across national boundaries, in the developing world. A study by the UNESCO (2014), in the developing countries, suggests that advent of electronic gadgets have severely eroded book – reading habit in the age group of 16 – 35. Secondly, in a country like India, a section of students in the higher education still suffers from economic deprivation. But digital technology has become a part of our life and therefore we need to capitalise on the prospects that it has opened up for us rather than focussing on the problems. We need to note that the way digital technology has entered our lives, it has not only helped us in preserving many of the invaluable resources available in the form of 'out of print' manuscripts but also has opened the 'reserved' resources to the open world of learning. The paper examines the pros and cons of digital technological opening, by the institutions of higher education, in the domain of the young readers and explores the viability of such an option in the larger context of the downtrodden, both economically or otherwise, section of the students.

Key Words: Digital Technology, Erosion, preservation, opening, learning.

0523165 GAUTAM, AYESHA (Department of Philosophy, University of Delhi, delhi 110007). DIGITAL TECHNOLOGY AND THE ADVENT OF SOCIETY OF CONTROL; ETHICAL ISSUES AND CHALLENGES

As a normative enquiry, Ethics takes up the task of devising a code of conduct, standards/ norms which ought to be followed by individuals as well as communities in their personal as well as professional relationship. It is envisaged that by taking recourse to these ethical norms and standards, moral dilemmas in real life scenarios can be resolved. Further the aim is to devise standards via which harmony in interpersonal relationships can be maintained. Given the enormity of ethical disagreements and variations in moral codes , it has been a challenge to come up with one unanimous answer about what is morally wrong and what is morally right course of action?. With the advent of digital technology, the challenge has got further intensified because ethicists are called upon to devise a code of conduct not for the actual world but for the virtual world. Digital ethics is an attempt to devise a code of conduct for users and participants in online environment. In Michael Foucoult's and Deleuzes's word, we are moving from disciplinary societies to control societies.Disciplinary societies were ruled by precepts; digital or controlled societies on the other hand have passwords or codes as their key. With the advent and advancement of digital technology, one of the most grave challenge which has erupted is that rather than governing and controlling machines, we are being governed by the machines or informational technologies. This change has further resulted in the loss of human agency by reduction of agency to data and samples. The present write up will be an attempt to undertake a critical inquiry into the ethical challenges which has come up with the advent of socity of control or digital technology. The enquiry will be undertaken primarily via the work of Michael Foucoult, Gilles Deleuze and Felix Guattari.

0523166 MANNA, ANUP KUMAR (Department of Philosophy and Comparative Religion, Visva- Bharati, Santiniketan–731235). EMERGENCE OF CIVIL RIGHT MOVEMENT AND BLACK THEOLOGY

For around 350 years, the Blacks in America were deprived of land, property and equality in every sphere of life. Most of the African Americans are descendants of various ethnic groups, mostly from Western and Central Africa, brought directly from Africa to America as slaves. Therefore, the history of Blacks is considered as African American history rather than American history.

During 1960s, Civil Right Movement started in America under the leadership of Martin Luther King Jr. The movement started with the claim of lost identity of the Black masses. It incorporated social movements in the United States, with the goals to end racial segregation and discrimination against Black Americans by White Americans and to secure legal recognition and federal protection of the citizenship rights. The Civil Right Movement led to the emergence of Black Theology by means of interpreting the Gospel in the light of the sufferings and hopes of the Black Americans.

Black theology gives importance to the experience, history, culture and tradition of the Blacks in the interpretation of the Bible. Though there are several Black theologians who wrote on Black liberation, James Hal Cone made a revolutionary impact and he is considered as the founder of Black Liberation Theology theoretically. Black religious thought reflects on the liberative folk impulse that has powered every struggle of African people in North America. As an institutional manifestation of the evangelic message of freedom from injustice and oppression, the major task of Black church came to mean the pursuit of the end of racial discrimination and the realization of equality.

The paper attempts to analyze how Civil Right Movement helped to concretize Black Theology. How the racial discrimination paved the way for counter-theology out of Biblical reinterpretation of the Gospel in the light of experience of the Blacks? To what extent Black theology helps the Blacks in the process of achieving equality and eradicating racial discriminations? These are some of the issues that are dealt in the paper.

Key Words: Civil Right Movement, Black Theology, African Americans, Biblical Reinterpretation.

0523167 IRSHAD, MOHD (Department of Philosophy, University of Delhi, Delhi 110007). **ETHICAL EXPLORATIONS OF THE INFORMATION: LUCIANO FLORIDI'S PERSPECTIVE**

In the early history, the term 'information' had been discussed very effectively in scientific studies alone, however, not significantly enough, in the philosophical arena. It had never been considered an area which can possibly be explored, philosophically. Recently, after the philosophical invasion of the information many prominent thinkers have meaningfully articulated and conceptualized the discourse, which revolves around this field. In forecasting the new scheme, many prominent scholars like Luciano Floridi, Bynum and Moor, Dretske, Wu Kun, P. Frey, Rafael Capurro and others have played a very pivotal role in introspecting about the ontological, epistemological, logical and ethical viewpoint of the information. However, in this short paper, I will restrict my inquiry to explore about the ethical dilemmas, problems and conflicts of the information. Thereafter, paper will aim to respond to such concerns by introducing the information ethics of the Luciano Floridi.

Information ethics (IE) seeks to inquire about the Plethora of questions such as; why land ethics, professional ethics and environmental ethics cannot provide substantial solutions to the newly emerging informational concerns in the age of information and communication technology?. I must emphasize upon the Floridi' liberating approach of information ethics, which states that Information ethics is an onto-centric, patient-oriented, ecological macro ethics, which has potential to embrace all, whether it is a living entity, a non living entity, artifact and book, for that matter within the infosphere. I have regarded his approach towards information ethics as a more inclusive and egalitarian for the ethical use of the information society, which has been developed after the technological advancements.

Keywords: **Information Ethics, Computer Ethics, ICTs, Information Society or Infoshpere, RPT Model, Luciano Floridi and Rafeal Cuparro.**

0523168 MUKHERJEE, GARGI (Department of Philosophy and Comparative Religion, Visva-Bharati University, Santiniketan). **READING STRATEGIES IN POST-COLONIAL ERA**

With the hermeneutical turn provided by Roland Barthes and Paul Ricoeur, the reading of a text got its significance and especially their theories provided the equal democratic status both for the reader and the author of a text. Saidian intervention in the Orientalist knowledge production made the much needed impact on the reading of the colonial texts from the standpoint of the colonised. Hence, *Orientalism* became one of the foundational theories of postcolonialism. Postcolonialism is a field of contesting cultural practices and its builds it momentum on the fact that colonial residues remain even after the end of formal colonialism. Postcolonialism is essentially a textual practice which gives importance to 'rereading' the texts and discursive practices which were produced with the Orientalist gaze and the colonial exegesis.

According to John McLeod "The act of reading in postcolonial contexts is by no means a neutral activity. How we read is just as important as what we read... the ideas we encounter within postcolonialism and the issues they raise demand that conventional reading methods and models of interpretation need to be rethought if our reading practices are to contribute to the contestation of colonial discourses to which postcolonialism aspires. Rethinking conventional modes of reading is fundamental to postcolonialism". There are various reading strategies available for the postcolonial intervention in the textual and discursive practices. Among the various strategies of reading/rereading, the present paper analyses three different reading methods/interventionist approaches within the postcolonial tools.

The first reading strategy is based on the 'contrapuntal theory' of Edward Said. He defines contrapuntal method of reading as a reading practice which is simultaneously aware of "both metropolitan history that is narrated and of those other histories against which (and together with which) the dominating discourses act". In this way, the rereading does not devalue the original text in anyway; but it contextualizes the text along with the other texts that counter the claims of the dominant discourse. The second reading strategy is based on what Said claims as 'Late Style'. The 'late style' is about how artists and writers change their minds and ideas over the years. According to Said, the early style differs from the late style of the author in two different ways. Ideas are fluid, and so while ideas are in change, history also is on the move. Hence, different ideas get shaped over the years among the artists and writers, either in conformity with the early style or heretic from the early style, according to which the text and its meanings are to be deciphered. The third reading strategy is the rhetoric of 'representation' because representation is one of the major rhetorical devices by which colonial ideology exercises its power. Representation is about construction of the other and the same time it is also about how such constructions stereotype the identities of the dominant and the dominated through literary exercise or through discursive practice.

In this paper an attempt is made to show how all these reading strategies do enable us to picture and even better yet, envisage an alternative world which may not be accessible if one is confined to one text.

Key Words: **Postcolonialism, Rereading, Contrapuntal Method, Late Style, Representation.**

0523169 MURMU, DASARATH (Department of Philosophy, Suri Vidyasagar College, Suri, Birbhum District, West Bengal). **DIGITISATION AND ITS IMPACT ON SANTALS' ECOLOGY–A PHILOSOPHICAL OUTLOOK**

The Santals are one of the adivasi communities of India. Their way of living and cultural identity is uniqueness. Their livelihood and survival is intimately linked with nature. Their life co-exists with the nature, not in the way to dominate the nature but to have mastery over the nature so that the life, both human and non-human, can be preserved without depletion. In this way, interconnectedness with the natural environment makes their life as eco-friendly. But, gradually, some forest products acquired commercial value due to nationalization of non-timber forest products and they are now included in trade to earn cash money.

In this article, an attempt is made to understand the Santals' ecology philosophically, and how their way of life is threatened due to digitisation. For example, many tribals in Odisha, especially Santals whose subsistance

depends on collection of Sal leaf and making plates and bowls out of them, are directly affected by GST. Further, tribal communities in central India depend on tendu leaf collection for subsistence but due to imposition of GST on it resulted in the abrogation of tribal rights over these. In contemporary India, due to the notions of the modern development, globalisation and industrialisation through the corporate houses, the trade and infrastructure is designed to feed its personal profit interests. As a result, tribals are getting deprived. The strategy of Indian development, globalisation and industrialisation inherently implies alienation, deprivation and inequality of tribals. The anthropocentric conceptions of modern development and globalisation depleted the ecological balance and destroyed the customary tribal matrix of harmonious, holistic and anticipatory equilibrium between nature and culture. And such manoeuvres eliminate the very existence of indigenous collective identities and knowledge systems.

Due to lack of cash during demonitisation tribal daily labourers did not receive their wages on regular basis, especially notes of smaller amount. They felt that bank transactions are for rich people only as if the amount hacked or deposited money will not get back in time. For withdrawing money they have to spend whole day. Again, majority of their survival depend upon daily works. So, they used the new technology only for entertainment purpose. Further, modern technology changed their agriculture model as instead of using available traditional fertilizer from their locality they are using modern fertilizer these days. They are taking modern medicine in place of locally available traditional ones. Imitating the modern music and musical instruments they are avoiding their traditional style. Furthermore, advent of social media the majority of Santal youths are addicted in Face book and Whatsapp and increasing the lack of interest in work. Moreover, as modern wine has come in the market they are gradually not consuming homemade rice beer.

India is dreaming to become efficient by 2032 by generating 63 Gigawatts of nuclear power. So, large scale of uranium mining is started by the government. As a result, large number of health hazards, such as, muscular dystrophy, illness and so on occurred in Jadugora of Jharkhand. Furthermore, due to Bullet Train project Maharashtra government has recently begun the process of obtaining land. Recently anti-coal mine activist Suresh Oraon shot dead in Purnadih Chatra as he was protesting against land grabbing of Central Coal fields Limited. In Uttar Pradesh the police brutality n which several women, children were attacked on 18th May as they were claim to forest land under Forest Rights Act 2006.

Keywords: **Santals, ecology, digitalisation, mastery and dominance, modern development**

0523170 SAMUEL, M P TERENCE (Department of Philosophy and Comparative Religion, Visva-Bharati, Santiniketan, 731235 W.B). **DIGITAL TECHNOLOGY AND TRANSFORMATION OF KNOWLEDGE PRODUCTION**

Postmodernism identifies liberation of humanity and the speculative totality of knowledge as the two metanarratives that legitimised knowledge, science and technology during modernity. However, with the advent of digitisation, such metanarratives have undergone the legitimisation crisis, writes Lyotard, and such a problem of legitimisation has affected different aspects of life as well as the domain of knowledge production too. What is the status of knowledge, information, science, technology and technocracy today after digitisation? The technological transformations have their effects in the way the knowledge is produced and circulated. Knowledge and its principal functions, namely research and transmission of learning, have been translated into quantities of information; with the hegemony of digitisation and its functional logic, there comes certain prescriptions as to what is considered as 'knowledge'; there is thorough exteriorisation of knowledge, with respect to the knower, as the old principle that the acquisition of knowledge is indissociable from the knower becomes more and more obsolete. With such transformations, knowledge ceases to be an end in itself and it loses its use value in favour of its exchange value. With the transformation of value of knowledge as a commodity, aided and abetted by the capitalism, there would be the struggle among nation-states for the control of information and it has its consequent effects on the disparity between the developed and developing nations, says Lyotard.

With the rise in multinational corporations, the forms of circulation have gone beyond the control of states; with the mercantilisation of knowledge along with the problem in the relationship between the state and economic

powers, the notion that knowledge production is under the purview of state will become more and more outdated; with the tussle between the state and economic powers over the control of information, the state intervention will be felt as undesirable in the domain of knowledge production under the ideological guise of 'communicational transparency' and 'borderless global village'. It will have its repercussions on the relationship between the corporations and civil society also. The distinction between knowledge and ignorance will fade away and it is replaced with the distinction between 'payment knowledge' and 'investment knowledge', that is, the knowledge necessary for daily maintenance framework and the knowledge necessary for optimal performance of a project; hence, the value of the 'educational' importance and 'political' pertinence of knowledge in civil society will no longer be valid.

Following Lyotard's arguments in *The Postmodern Condition: A Report on Knowledge*, this paper will attempt to analyse the transformation of knowledge production and its functions in the society after the technological transformations introduced due to computerisation and digitalisation.

Key Words: Knowledge, Digitalisation, Legitimisation, Lyotard

0523171 SHEIKH, MD ACHHER ALI (Raiganj University). SUICIDE IN BUDDHIST PHILOSOPHY

Suicide is a key factor in Buddhism. The issue of suicide raises the questions about human value and his autonomy. It may be easy to say that self harm in the Buddhist Philosophy has not been banned, whereas someone suffering psycho spiritual, it is not even said that those who commit suicide will be punished for their actions.

In the book "End of life", The Buddhist view; Damien Keown, the researcher of London's Goldsmith College, mentions that 'Buddhism does not support the killing of any kind. Even for the purpose of preventing someone's pain. The person who does not bear the least signs of physical or mental sign of life, this religion also tells him to be saved. In Sayttya Nikaya we found three cases of monks who committed suicide, Channa, Vakkali and Godhika.

Channa

Early texts of Buddhist philosophy have many signs or examples of suicide which Buddhist themselves have supported. In the Theravada tradition we found the some instances of self-killing. The Buddhist monk Channa, Vakkali and Godhika committed suicide. The Channa and Vakkali were considered to have never been arhats before their death, although they were extensively enlightened at the moment of death. But it is important to note that the Buddha himself supported or praised their suicides. But it is not because of their suffered untimely disease, but because of at the moment of their death, their hearts was a hate free, liberal, free-of-hearted. It is important in Buddhist philosophy that these monks were seen to be virtuous in this argument. For example, Channa described the incident of his physical degradation – "I will use the knife, friend Samputta, I have no desire."

Vakkali

But on request of The monk Vakkali suffered severe discase for a long time. When Buddha came to know about his condition, he expressed his extreme admonition and expressed regret but said that he could not meet her because of physical deterioration. In reply to this, Buddha asked him, "why do you want to see this fool body? One who sees the Dharma sees me; one who sees me sees the Dharma." Vakkali told his colleagues to take him out of the house to the open place where he wanted to die. On that night, two assistants met Buddha and asked him about Vakkali will attain find liberate.

Godhika

The Monk Godhika was a very enthusiastic devotee of Buddha. Despite repeated attempts, he failed to attain the final liberation because he was very sick physically. After repeated attempts, he reached the temporary liberation level and at the moment he finished his own throat. He believed that if he died in normal condition then

his rebirth is uncertain but if he dies at super conscious level then he will be reborn in Brahma realm. Someone thought that Godhika's suicide was a result of the frustration because of repeated trials that went down to the commonest level. If she Buddha used to oppose suicide but was overwhelmed by Godhika's mental stability and effort, he said that Godhika had passed on to Nivvana.

0523172 TRIMAKHE, TEJASHREE SHARAD AND ALAM, PARVEZ (Department of Philosophy, University of Mumbai, Kalina Campus, Vidyanagar, Mumbai - 400096). **CAN THE METHODS OF NATURAL SCIENCE BE APPLIED TO SOCIAL SCIENCES?**

This paper aims at exploring the debate on the application of natural science methods into social sciences and philosophy. For this purpose, it is important to deliberate a discussion on a set of philosophers who have advocated different methodologies. Why do we distinguish natural sciences from social sciences? What makes a science a concrete science? All these questions are important to develop a discussion on methodology in different areas of knowledge.

To begin with, it is important to throw light on the factors that decide methodology for a particular science. Natural sciences deal with different phenomena than social sciences. They study nature and they form laws on the basis of empirical observations, experiments, testing hypotheses and so on. They deal with particular cases and through induction move on to universal laws. They believe that there is uniformity in nature. On the other hand, the subject matter of social sciences is such that it requires a different kind of method which arrives at the knowledge that constitutes the subject. These sciences deal with a great deal of abstraction and conceptualisation. The issues at disposal of the social sciences are multifarious and there is plurality of methods.

This paper aims at exploring the methods in philosophy and political science and touch upon some other disciplines as well.

24. PHYSICAL SCIENCE

25. POLITICAL SCIENCE

0525173 AHMED, ZULAFQAR (Departmentof the Political Science, Aligarh Muslim University, Aligarh). INTERSTATE WATER DISPUTES IN INDIA: PROBLEMS AND PROSPECTS

Water is the most essential resource for the survival of living beings. This resource has been depleting with the increase of population and pollution day by day. Use of water has become multiply because of increasing domestic, agricultural and industrial use all over the world. Scarcity of water, inequity in distribution, pollution has triggered horrible interstate water disputes in India. These disputes have become more complex in the federal democratic country like India where most of the rivers are interstate flowing. In India water comes under state list, central government is the final authority which can intervene in the disputes, orders of Supreme Court are advisory in nature so due to all this procedural ambiguities, inter-state water disputes become more complex in India. States at several occasions refused to accept the decrees of Apex court and awards of the Tribunals because neither Supreme Court nor Tribunals have absolute jurisdictions over the disputes. It was comparatively easy before 1967 or during the single party dominance system in India to resolve interstate water disputes amicably. But after the end of this era new regional assertive powers arose which held political differences with the centre. Now, it is very difficult to take all the disputed parties on the discussion table for ensuring peaceful settlements of the disputes. In this paper, an attempt has been done to explain what are those intricacies and procedural ambiguities which complicate inter-state water disputes in India. Moreover, an attempt has been made to find out that how politicization of water disputes turns these manageable disputes into dreadful violence. In the end, researcher has given some suggestions how to tackle inter-state water disputes amicably.

Keywords: Scarcity, Federal, Ambiguities, Assertive, Amicably

0525174 BABU, GIFTY ANN (Department of Political Science, University of Hyderabad, Hyderabad 500134). DEVELOPMENT AND UNDERDEVELOPMENT IN POST-COLD WAR AFRICA: A CRITICAL STUDY ON CHINESE ENGAGEMNT

Several decades have passed since China made its first formal presence in Africa in 1955, since then China has become a major actor with vital interests in the continent. After the end of the Cold War, when the US emerged as the sole superpower, China was the only potential rival to her. And in the first decade of the 21st century, China has been able to enter into political, military and commercial deals with many countries. It had improved its relations with Africa also. In November 2006, China signed a strategic partnership with Africa at a major feast of leaders celebrating the friendship and co-operation between the two. Historically, Africa has been known to be a resource rich continent, it has always been a bone of contention for imperial powers. In order to combat its rivalries and boom its economy China decided to intervene in Africa from the 1950s itself, just after some years of its formation as an independent nation.

The dependency theory is one of the theories that explain the condition of development and underdevelopment in the global south. The dependency theory emerged during the 1950s in Latin America to explain why developing countries stay poor while industrialized, developed countries become wealthier. This issue has put forward by many scholars that time and tried to give many explanations and solutions to this problem. Many scholars have criticized the dependency theory while many other scholars argue that it still has life. Here the question is that whether Africa has the benefits as much as China has and does this relationship unequal.

China, African relations are very crucial as it can be a stepping stone for further economic development and for Africa its fate depends on its economic partners as African nations are not economically self-sufficient. This study analyzes the problem of African dependency on China for its survival. China emerged as an economic partner to Africa in the second half of the 20^{th} century only. Now, China is one of the largest economic partners of Africa. The Chinese role in Africa is multidimensional. China tries to control Africa in different ways, by providing economic aids and infrastructural developments. One of the examples is that by providing infrastructures, China gets profits by using their own technology, giving their people employment and the works undertaken by Chinese companies. Another example is that many of the natural resource and mining places in Africa are owned by Chinese

entrepreneurs. This study seeks to address this major issue and it intends to investigate how dependency theory can explain the nature and adequately describe the relationship of China and Africa.

0525175 BEHERA, MANAS (Department of Political Science, Rama Devi Women's University, Bhubaneswar, Odisha). **EXCLUSION, MARGINALIZATION AND DEPRIVATION OF THE TRIBAL THROUGH DEVELOPMENT: A STUDY OF THE TRIBALS IN SUNDERGARH DISTRICT OF ODISHA**

Everybody across the ideological divide talks of inclusive development today. But development itself does not bring benefits to all, particularly to the marginalized like the tribal unless there are policy interventions in this regard. The paradox of development is more prominent in this district than in any other place. The district is rich in minerals with coal, iron ore, dolomite etc. and has one of the biggest steel public sectors, RSP (Rourkela Steel Plant) along with another Navaratna Public Sector, Mahanadi Coal Fields Ltd. But the development paradigms implemented in different times by different governments has failed to bring any radical changes in the life and livelihood of the tribals who constitute 51% of the population of the district. Seen from a historical perspective, the non-tribals have established their hegemony over the tribals in different periods of history. The colonial state appropriated the resources like the land and the forest which was under the communal ownership under the tribals and transformed the character of the land from communal to individual private property. The development policies that the governments in post-Independent times implemented with focus on investments in industry and infrastructure brought disastrous consequences for the life and livelihood of tribals. Industrialisation and allied activities, mainly in areas largely inhabited by the tribals have destroyed forest land and have displaced a large number of tribals from their land and livelihood. Forests don't only provide livelihood resources to the tribal people but they are an integral part of the tribal life and culture. The state led development discourses did not take into account the questions of tribal life, livelihood and their culture into account. This paper aims at studying the impact of development on the life and livelihood of the tribals in a tribal dominated district, Sundergarh, Odisha. This will help in analyzing the causes of their deprivation and marginalization and in developing an alternate paradigm of development which will be inclusive for the tribals.

Key Words- Development, Marginalisation, Deprivation, Tribal, Inclusive

0525176 ANANDITA, BISWAS (Department of Political Science, Diamond Harbour Women's University, West Bengal). **THE REFUGEE CRISIS AND THE MODERN STATE WITH SPECIAL REFERENCE TO THE ROHINGYAS**

Since the Treaty of Westphalia in 1648, the refugee regime has evolved in parallel with the modern state system, reflecting changes in international law, politics, economics and ideology. The state along with its authoritative cohort has invited tremendous amount of intellectual debate and thoughtful introspection. How sovereign are the 'nations' in the modern state system, what is the legitimacy of the state institution, the correlation between the 'nation' and the 'state' and the reasons behind the sustenance as well as crisis of democracy in modern day world are some of the queries this paper will try to address under the broader theme of the refugee crisis. The article makes a special reference to the Rohingyas of Myanmar. This paper endeavours to propose some tentative hypothesis while establishing inter-connections amongst phenomenon of human rights, refugee crisis and formation of state system in South Asia. In an age of 'borderless' world, every experience is perceived through the prismatic glorification of state structure. The question that needs to be addressed is where shall we actually 'locate' the "stateless" people and who decides whom to accommodate and whom to exclude? We live in an age of democracy. Ironically however, the authoritarian system also seeks legitimacy under the veil of democracy. The idea of democracy also takes within its fold the concepts of human rights, rule of law, independent judiciary and a free media. Andre Beteille commented that the successful operation of democracy depends on 'democratic reasoning.' Democratic reasoning proceeds through debate, discussion, negotiation and mutual accommodation. This article will try to understand if democracy is only meant for the people residing within the state boundary? The state has been in an uneasy relationship with the stateless humans. States have increasingly come to see the mass arrival and prolonged presence of "stateless" people as a security concern and a burden on local and national economies. A

solution to the problems of forced migration requires not only humanitarian measures but also co-ordinated political and strategic responses. For over half a century, poor human rights and prolonged conflict in Myanmar (Burma) caused one of the most protracted refugee situations in Asia. For the past several decades, the Burmese military's persecution of ethnic minority population caused refugee outflows to neighbouring countries. In northern Rakhine state, the Burmese army has pursued a policy of harsh discrimination against the Muslim Rohingya population. Government policy has not only rendered the Muslim Rohingyas stateless, but in many instances has systematically crushed the cultural, religious and ethnic aspiration of the Rohingya and other minority peoples. Rohingya crisis in terms of calibration, intensity, escalation and newer ramifications constitute the vilest form of wholesale ethnic expulsion till date. The present study is based on historical approach which is both exploratory as well as explanatory in nature. It seeks to formulate the research problem for more intensive investigation and the hitherto unexplored areas of the subject are unfolded which are significant for future research on the area. The study finds that the present crisis of refugees and forced migration, human rights violations and coordinated violence are much more politically motivated and strategically executed that involves groups and parties intoxicated by certain incorrigible fundamental semiotics. The proposed paper undertakes the task of unravelling the concept of 'human rights' with a particular focus on the human rights of the refugees. It will, in detail, analyse the recent military crackdown on the Rohingyas in Myanmar that began post 25th August 2017 with its effect on political and security aspects of India.

Keywords: Human Rights, Minority, Democracy, Nation-State, Rohingyas.

0525177 GHATAK, SANDIP KUMAR (Asansol Girls' College, P.O.-Asansol, Dist-Paschim Bardhaman, Pin-713304). MARCH FOR BETTER FUTURE THROUGH SELF-HELP GROUP- A CASE STUDY AMONG THE SANTHALS OF BIRBHUM

Tribes constitute a major part of the country in general and the State of West Bengal in particular. One of the biggest problems among the tribal community of the country in general and the tribal community of Birbhum in particular is their economic problem. And this economic problem also influences other areas of their life like education, culture, and so on. Without improving their economic conditions it is hardly possible for them to settle their life in every respect. In fact, there is a positive correlation between their economic condition and the condition of their other areas of life. To avail the benefits of the fruits of digital India the tribal community of the country have to improve their economic conditions.

Birbhum district is an administrative unit in the Indian state of West Bengal. It is the northernmost district of Burdwan division—one of the three administrative divisions of West Bengal, Birbhum.

Birbhum is primarily an agricultural district with around 75% of the population being dependent on agriculture. Principal industries of the district include cotton and silk harvesting and weaving, rice and oilseed milling, lac harvesting, and metal ware and pottery manufacture. Bakreshwar Thermal Power Station is the only heavy industry in the district.

Microfinance for the poor and women has received extensive recognition as a strategy for poverty reduction and for women's economic empowerment. There are good reasons to target women. Experience shows that Self-help group among the women running very successfully and as a result their family not only improving their economic condition but also improve their other aspects of family life.

Against this background the purpose of the present study is to explore the positive impacts of self-help group among the tribal community as a result of which they have improved other aspects of their life. With a view to fulfill the objective the study is based on the Participatory Rural Appraisal (PRA) method among twenty SHGs of Naguri Grampanchayat Under Suri (I) block(Ma Kamala Group, Ma Laxmi Group, Ma Bsanti Group etc.) and twenty SHGs of Charicha Grampanchayat under Md. Bazar block (Jay Ma Kali Group, Ma Manasa Group, Ma Swaraswatti Group etc.) Interaction was made with the group members in two phases according to their available time and dates. In the first interaction the issue was about the origin of the SHGs, reason behind the formation of the SHGs and factors contributing the formation of the SHGs. In the second interaction the issue was to study the

impact of SHGs upon these rural women. On the basis of the study it has found that with the help of the self-help group they have changed and improve their life in comparison with their previous life.

0525178 JAISAL, E K (Department of Political Science, University of Hyderabad, Hyderabad). **DATA-MINING AND ANALYTICS: RISING CONCERNS OVER PRIVACY AND PEOPLE'S SECURITY**

Data-Mining and Analytics have been the catchwords raising concerns of those engaged with the question of privacy infringements and state surveillance. In an era when smartphones come with fingerprint sensors and iris scanners with Artificial Intelligence (AI) dominating the imagination of the end-user, the charm and convenience of digital personal assistants and AI-based camera, social-media and cloud storage applications equipped with face-recognition, location access etc. have driven the consumers to use them extensively to store information. A large section of the consumers blindly take these services into confidence, even with highly sensitive and personal details, while often ignoring the fact that most of these services store the data on their servers located in foreign countries. The threat lies in the fact that some of these countries require firms to comply with regulations such as to furnish the details of the consumers upon demand, as is the case with China.

The consumers, in a majority of cases, often accepts the Terms and Conditions (T&C) or the End-User Licence Agreement (EULA) without giving any attention to the terms of service spelled out by the service provider or the equipment manufacturer, which in several cases seeks access to share personal information and user behaviour in order to provide customised advertisements. Several services access and store the internet search-history and also read text messages (SMS) or e-mails of the user, and some even push the limit to keep a log of whatever is being typed on the keyboard, which may include important passwords, sensitive information and so on. The mere fact of an individual's privacy being sold out to foreign corporates for customised advertisements is in itself disturbing as one's personal information is being commodified, but is relatively harmless. But the situation becomes dangerous and poses a threat when analytics takes a step further to generate more information, from the information already available, about the individual's behaviour in the real world to predict activities such as electoral behaviour. Such a situation could lead to manipulation of the populace to achieve certain economic or political gains and the great boon of Information Technology (IT) could deteriorate into 'misinformation technology' where information such as News could be selectively served to the audience so as to direct the narrative and discourse in favour of those who aim to achieve desired results. The role of political consultants such as the 'Cambridge Analytica' and the like in influencing the Indian elections had stirred a row regarding this matter.

Also, a recent report (10th December 2017) by the British Broadcasting Corporation (BBC) about China's pilot project, in the City of Guiyang, of a massive surveillance system with artificial intelligence based cameras that requires only a photograph to locate and identify any person in a matter of minutes raises concerns, as several States are investing huge amount on artificial-intelligence based warfare wherein drones equipped with weapons could hit individual targets, in large scale. A monopoly in this realm could lead to an end to the balance in international politics attained through the threat of Mutually Assured Destruction (MAD) and Nuclear Deterrence.

This paper attempts to give an overview of the impending dangers of data-mining and analytics clubbed with artificial intelligence to individual privacy and national security.

0525179 JAMSHED, QAZI MOHD (Deptartment of Political Science, A.M.U., Aligarh). **ARTICULATING COMMUNITY RIGHTS: MUSLIM LEAGUE 1923-1929**

This paper makes an attempt to study the endeavor of Muslim League to protect the rights of Indian Muslims by way of finding out a solution to Muslim representation in the Legislatures during the period 1923-29. The issue of Muslim representation in the Legislatures was considered the bone of contention between Congress and Muslim League in particular and the Hindus and Muslims in general since the conclusion of the Lucknow pact in 1916. They raised their voices against the separate electorate and blamed the All India Muslim League for the prevailing communal tension**.** The Muslim League and its leader Jinnah in order to find out a consensus formula for the amicable solution of the communal problems,[1] represented by Hindu Mahasabha and the communal fringe of the

Congress, succeeded in convincing the Community to sacrifice separate electorate and settle for a compromise formula popularly known as the Delhi proposals but failed to win the hearts of the majority community. An agitation was launched against the Delhi Proposals and Congress was strongly criticized for the acceptance of Delhi proposals and even Motilal Nehru, Jawaharlal Nehru and other Congressmen came under the pressure of the Mahasabha on the reservation of seats for the Muslims in Bengal and Punjab. The Muslim delegates, surprised by such volte-face of Congress leaders emphatically stated that they would not accept any deviation from Congress resolution of Madras session. Wounded and shattered by the treatment meted out himself and to the genuine amendments, he left the convention and called it " parting of the ways". And outcome was the counter proposals to the Nehru report which came to be known as Jinnah's fourteen points.

Methodology adopted is descriptive as well as analytical and the conclusion drawn are based on sustained analysis and critical research of the available sources and scholarship on the topic.

Key words: Muslim League, Congress, Lucknow pact, Delhi proposals, Nehru Report, Fourteen points.

0525180 KUMAR, VIKAS (Department of Political Science, JP University, Chapara, Bihar). स्वतंत्रता आन्दोलन में उत्तर बिहार के सारण जिले की भूमिका :सोनपुर के शहीद महेश्वर के संदर्भ में।

भारत के स्वतंत्रता आन्दोलन में 1942 के अगस्त क्रांति का बड़ा ही महत्व है। 8 अगस्त 1942 को बम्बई में गिरफ्तारी के बाद गाँधी जी के द्वारा दिए गए ''करो या मरो'' के नारे के साथ उत्तर बिहार के सारण जिले ने एक नया इतिहास रच डाला। इस नारे को यहाँ की जनता ने अपना लिया और सभी प्रमुख नेताओं के जेल चले जाने के बाद भी आन्दोलन ने ऐसी गति पकड़ी जिसने ब्रिटिश साम्राज्य की जड़ों को हिला कर रख दिया। मशहूर इतिहासकार ''सुमित सरकार'' ने अपनी पुस्तक ''आधुनिक भारत'' में यह वर्णन किया है कि अंग्रेजों के द्वारा उत्तर बिहार के सारण जिले को देष का सबसे कुख्यात जिला घोषित कर दिया गया था। सारण जिला में इस आन्दोलन ने अनेकों नौजवानों की शहादत ली उन्हीं शहीदों में सारण जिले के सोनपुर प्रखण्ड के युवा छात्र महेश्वर सोनपुर में शहीद हुए थे।

15 अगस्त 1942 को सोनपुर के रेलवे प्लेटफार्म पर अंग्रेजो की गोलियों से महेष्वर की षहादत हुई थी। जो उस वक्त पटना के बी.एन. कॉलेज के चतुर्थ वर्ष के छात्र थें। पटना विश्वविद्यालय ने बी.एन. कॉलेज के प्रांगण में उनकी मूर्त्ति लगाकर उन्हें सम्मानित भी किया है। बिहार के कोने–कोने में क्रांति की आग जिस तरह से ज्वाला बनकर फैली उसका सबूत यह अमर बलिदान था। उत्तर बिहार में पुराना सारण जिला शहादत के मामले में एक विशेष स्थान रखता है।

अगस्त क्रांति में सारण जिला कीं स्थिति गंभीर हो चुकी थी। सर्वत्र हड़ताल, जूलूस और सभाएं की जा रही थी। स्टेशन, डाकघर और अन्य कार्यालयों पर आक्रमण किया जा रहा था। तिरंगा झंडा फहराये जा रहे थे और रेलवे तार एवं सड़कों को तोड़–फोड़ की कार्रवाई भी सघन रूप से की जा रही थी। 14 अगस्त को हजारो की भीड़ छपरा के भगवान बाजार रेलवे स्टेषन पर प्रदर्षन करने आई उस समय गाड़ी से कैप्टन ''मैंकिटोस'' और एक अन्य व्यक्ति यात्रा कर रहे थे। उनके पास मौजूद रिवाल्वर भी छीन लिए गए थे। सारण के दाउदपुर में भी एक सभा हुई इसमें पंडित गिरिश तिवारी ने लोगों से निश्चित कार्यक्रम के अनुसार स्वतंत्रता की लड़ाई जारी रखने को कहा। 15 अगस्त 1942 को छपरा के टाउन हॉल में श्रीमति शांति देवी की अध्यक्षता में एक विराट सभा हुई। उसी दिन छपरा कचहरी रेलवे स्टेशन को जला दिया गया, हजारो लोगों की भीड़ ने सोनपुर रजिस्ट्री ऑफिस पर आक्रमण कर के उसे तहस–नहस कर दिया और सोनपुर स्टेशन पर उत्तरी रेंज के पुलिस दस्ता ने लोगों पर गोली चलाकर कई लोगों को घायल कर दिया रेलवे स्टेशन पर पुलिस की गोली से मरनेवालों में सोनपुर के एक प्रतिष्ठित परिवार के युवा क्रांतिकारी महेश्वर प्रसाद सिंह प्रमुख थें।

निश्चय ही महेश्वर बाबू का नाम क्रांति के इतिहास में अमर हैं। एक सम्पन्न परिवार के उदीयमान नक्षत्र जिन्होंने सुनहरी तरूणाई के साथ जीवन शुरू की थी और परिवार वालों ने जिनके बारे में न जाने कितने सपने संजोये होंगे वह कली खिलने से पहले ही भारत माता की जंजीरों को तोड़ने के लिए बलिवेदी पर समर्पित हो गयी। डॉ. के.के. दत्त का कथन है कि इन छात्रों के आत्म–बलिदान ने भारत के आत्म निर्णय का अधिकार हासिल करने के मार्ग में जो बाधाएं थी उन्हें समाप्त कर दिया।

0525181 MISHRA, RENU (Department of Political Science, MM Women College, Ara, Bihar). स्वतंत्रता संग्राम में स्वराज पार्टी की भूमिका

यह निर्विवाद रूप से सत्य है कि स्वराज पार्टी ने भारतीय राजनीतिक चिन्तनधारा में एक क्रान्तिकारी भूमिका निभायी है।

सन् 1922 ई0 में असहयोग आंदोलन को अचानक स्थगित कर देने से राष्ट्रीय आन्दोलन में अनिश्चितता और गतिहीनता पैदा हो गयी। देश में निराशा एवं उत्साहहीनता फैलने लगी। काँग्रेस रचनात्मक कार्यो में लगी हुई थी, किन्तु मात्र इन कार्यो से ही स्वतंत्रता

नहीं मिल सकती थी। ऐसी ही दशा में देशबन्धु चितरंजन दास के मन में कॉंग्रेस के सामने एक नया कार्यक्रम प्रस्तुत करने का विचार आया। यह विचार था कि विधानमंडलो में प्रवेश कर उनके अन्दर असहयोग की नीति का प्रयोग किया जाय। इसके विपरीत कुछ लोग कॉंग्रेस के पहले के कार्यक्रम पर ही डटे रहना चाहते थे। इस प्रकार कॉंग्रेस के अन्दर स्पष्ट रूप से दो गुट हो गए– परिवर्तनवादी और अपरिवर्तनवादी। पहले गुट के नेता सी.आर. दास, मोतीलाल नेहरू, हकीम अजमल खॉं और विठ्ठल भाई पटेल आदि थे। इन लोगो का विचार था कि आगामी चुनावों में भाग लेकर कौंसिल में पहुँचा जाय और वहॉं उन्हें अन्दर से तोड़ा जाय। सन् 1922 में कॉंग्रेस का अधिवेशन हुआ। सी.आर. दास ने अध्यक्ष पक्ष से अपनी नीति को प्रस्तुत किया जिसे गॉंधीवादी विचारकों ने अस्वीकार कर दिया। फलस्वरूप सी.आर. दास. मोतीलाल नेहरू, हकीम अजमल खॉं और विठ्ठल भाई पटेल आदि नेताओं द्वारा 1 जनवरी 1923 को कॉंग्रेस से अलग हो कर एक नए दल के गठन की घोषणा की गई।

इस तरह देशबंधु दास तथा पं0 मोतीलाल नेहरू के नेतृत्व में संसदीय पद्धति द्वारा संघर्ष आरम्भ करने के लिए 1923 में स्वराज पार्टी का जन्म हुआ।

इस पार्टी के अग्रलिखित मुख्य लक्ष्य थे :–

1. स्वराज की प्राप्ति करना।
2. उस परम्परा का अन्त करना जो अंग्रेजी सत्ता के अन्तर्गत भारत में विद्यमान थी।
3. कौंसिलों में प्रवेश कर असहयोग के कार्यक्रम को अपनाना और असहयोग आंदोलन को सफल बनाना।
4. सरकार की नीतियो का घोर विरोध कर उसके कार्यो में अड़ंगा डालना जिस से उसके कार्य सुचारू रूप से नही चल सके और सरकार अपनी नीति में परिवर्तन करने को विवश हो।

स्वराज पार्टी ने सन् 1923 के नवम्बर में चुनाव में भाग लिया। इसमें स्वराजवादियों को विलक्षण सफलता मिली। मध्यप्रदेश में वे बहुमत से विजयी हुए। बंगाल, उत्तर प्रदेश तथा बम्बई में उन्हे प्रधानता मिली। केन्द्रीय विधान सभा में कुल 143 सदस्य थे– 103 निर्वाचित और 40 मनोनीत। मनोनीत सदस्यों में 25 सरकारी थे और 15 गैर सरकारी। निर्वाचित सदस्यों मे 51 सामान्य, 30 मुस्लिम, 2 सिख, 7 जमींदार, 9 युरोपियन तथा 4 भारतीय वाणिज्य निर्वाचन क्षेत्रो से आये थे। स्वराज पार्टी सामान्य, मुस्लिम तथा सिख निर्वाचन क्षेत्रो से ही चुनाव लड़ सकी थी। इन 83 स्थानों में से उसे 45 स्थान मिले। उस समय सदन में पं0 मोती लाल नेहरू स्वराज पार्टी के नेता थे और विठ्ठल भाई पटेल उपनेता। आगे चलकर 22 अगस्त, 1925 को पटेल सदन के अध्यक्ष निर्वाचित हुए।

स्वराज दलीय सदस्यों को केन्द्रीय विधानसभा में पं0 मोतीलाल नेहरू, विठ्ठल भाई पटेल, पं0 मदन मोहन मालवीय, लाला लाजपत राय तथा सी.एस. रंगा अय्यर जैसे राष्ट्र विख्यात् नेताओं का प्रेरणादायी नेतृत्व मिला। इनके नेतृत्व में सदन में जब भी अवसर मिला, उन्होंने सरकार की साम्राज्यवादी नीतियों एवं कार्यो का विरोध किया।

इस प्रकार स्वराज दलीय सदस्यों ने केन्द्रीय विधान सभा तथा विभिन्न प्रान्तीय विधान परिषदों में विघटनात्मक और रचनात्मक ढ़ंग से कार्य किया।

0525182 MISHRA, PRITIMAYEE (Department of Political science, Utkal University, Odisha). **INDIA US COUNTER TERRORISM STRATEGY AFTER 9/11 ATTACK**

India and U.S experienced very cold and rocky relations for a long stretch of during the cold war era when strategic divergence and political complexities kept two sides at arm's length. However the post cold war era marked the commencement of a new strategic cooperation between two sides driven by the new challenges and opportunities of the post cold war global order . According to 2012 global terrorism index India ranked 1st among all countries. Today the two sides enjoy a very close and cordial relation relationship Based on the convergence of interest ,the bilateral relationship has developed into a global strategic partnership ensuring a broad spectrum of areas like defense ,education, science and technology ,energy security and environment etc .One of the most important aspects of this transformed relationship is the counter terrorism cooperation which emerged largely as a response to the events like "9/11"and 26/11" which threatened the security of both sides , it not only ruined the back bone of India and U.S but also bring a special kind of threat towards world peace and security .cooperation in this field has seen a considerable progress in past several years with the signing of t he initiative like counter terrorism cooperation initiative in 2010,and announcement of homeland security dialogue in November 2010, which aims at creating additional opportunities for the two countries to face the menace of terrorism .However kipping in the will and capacity of the two countries much more needs to be done to face this common challenges. Strong political commitment on the part of the leaders of the countries, putting in place strong anti-terrorism institution, equipping Indian intelligence agencies with latest technology and sharing to eliminate the menace of terrorism .

This paper seek to analyze the contours of the Indo U.S counter terrorism cooperation with an emphasis on exploring the prospects and challenges there in that way it can determine the future trajectory of this new avenue of cooperation and anlyse the bilateral counter terrorism measures undertaken by both the countries to tackle the menace of global terrorism.

Key words: cold war, bilateral relationship, counter-terrorism, cooperation, homeland security dialogue.

0525183 RANI, DIVYA (Department of Political Science, Indira Gandhi National Open University, New Delhi) ARTIFICIAL INTELLIGENCE: PROSPECTS AND CHALLENGES FOR INDIA

In today's technology-driven world, Artificial Intelligence (AI) has the capacity to impact every aspect of human requirements such as health, military, technology and education. It is used in a wide variety of fields, from science and technology to social sectors. AI has become an important determinant in global politics; however, excess accessibility of AI has created both opportunities and challenges. The U.S, China, Russia, Germany, Israel, Canada and Japan all these nations are competing each other for the supremacy of AI in terms of its accessibility and usability. As the other nations are using AI in science and technology, heavy industries and in defence, India has a wider scope to use the power of AI to solve societal problems in the country. Moreover, India can lead globally by using AI in the social sector as this area is untouched by many AI advanced countries. India's AI policy is more soft power oriented despite using AI technology in defence. Indian policymakers are using AI more in health, education, banking, Information technology and other social sectors. AI is creating threats/ challenges for many developing nations especially in terms of security, economy, and technology enhancement and India is not exceptional. AI is like a revolution that has all capacity to transform every sector, but it also has power of creating menace in the country. It can reduce the job at a massive level, and it would be the biggest challenge for a nation where unemployment and unskilled labours are in the majority. This paper will discuss the prospects and challenges of Artificial Intelligence in India and how the nation and policymakers can use this miracle for growth and development without hampering the job market and economy.

Keywords: Artificial Intelligence, India, Economy

0525184 SARANGI, SURESH PRASAD (Department of Political Science, P. S. Degree College, Deogaon. Bolangir, Odisha). INDO-RUSSIAN FOREIGN RELATIONSHIP : A HISTORICAL PERSPECTIVE, 1991— 2018

The relation between India and erstwhile Soviet Union and present Russia, has a very friendly, cordial and traditional in nature. Historically, India has shared a multidimensional and strong partnership with the Soviet Union and then with Russia. The relationship began with a visit by Indian Prime Minister, Sri Jawaharlal Nehru to the Soviet Union in June, 1955 and Khrushchev's return trip to India in the fall of 1955. While in India, Khrushchev announced that Soviet Union supported Indian sovereignty over the disputed territory of the Kashmir region and over Portuguese coastal enclaves such as Goa. After the disintegration of Soviet Union and the emergence of Russia as an independent State, has been considered as a successor of the USSR. Traditionally, the Indo-Russian strategic partnership has been built on five major components: politics, civil nuclear energy, anti-terrorism, co-operation and space. Since the signing of "Declaration on the India-Russia Strategic Partnership" in October, 2000 during the visit of Russian President Mr. Vladimir Putin the relation has been more deepened and the bilateral relationship has enhanced in several field including, political, security, trade and economy, defence, science and technology, and culture. While commenting on the India's relations with Russia, the former President of India, Sri Pranab Mukherjee told "....India-Russia relationship is one of deep friendship and mutual confidence that would not be affected by transient political trends. Russia has been a pillar of strength at difficult moments in India's history. India will always reciprocate this support. Russia is and will remain our most important defence partner and a key partner for our energy security, both on nuclear energy and hydrocarbons". Meanwhile, the recent visit of the President of Russia Mr. Putin has also strengthened the bilateral relation between both the countries and as a gesture of goodwill both the countries signed 8 key pacts including the purchase of $5 billion S-400 Triumf missile system despite the US warning. After the ending of the 19th India-Russian Annual Bilateral Summit in Hyderabad House,

in a joint statement Prime Minister Modi said that today's talks with Putin have given a new direction to Indo-Russia strategic partnership. He exuded confidence that the special strategic partnership between India and Russia will achieve new heights.

In this context, the objective of this research paper is to mention briefly about the historical background, it depicted how since the very early time both the countries are linked and depended on each other and also give special focus to the events during the period 1991 to 2018. This paper also tries to highlight both the state's foreign policy structures which indicated the importance of their bilateral relations and their common foreign policies. This research paper also focuses on various joint declarations and high level visits from both sides and presents the bilateral and multilateral meetings and agreements on different period of times and how Russia is now developing a friendly relation with Pakistan which is a major cause of concerned for India.

0525185 SHAH, MAZAR ALI (Department of Political Science, Aligarh Muslim University, Aligarh). CHINA INDIA IN THE AGE OF GLOBALISATION

The rise of China and India is the story of our times. The unprecedented expansion of their economic and power capabilities raises profound questions for scholars and policy makers. What forces propelled these two Asian giants into global pacesetters, and what does their emergence mean for the world? With intimate detail, Mazar Ali Shah's China and India in the Age of Globalization explores how the interplay of socio historical, political and economic forces has transformed these once poor agrarian societies into economic powerhouses. Yet globalization is hardly a seamless process, because the vagaries and uncertainties of globalization also present risks and challenges. This paper examines the challenges both countries face and what each must do to strike the balance between reaping opportunities and mitigating risks.

Keywords: globalisation, liberalisation, India and China

0525186 SHARMA, SRIJANA (Department of Humanities and Social Sciences, Sikkim Manipal University). MACHIAVELLI ON DIPLOMATIC APPERCEPTION OF POLITICAL- ETHICS IN THE STATE-CRAFT

Through the historical perspective, the tradition of modern political thought emerged against the backdrop of the Renaissance. As a consequence, Niccolo Machiavelli (1469-1527) Italian philosopher was held to be the First Modern Political Thinker, is called the Child of Renaissance. Machiavelli's most celebrated work "The Prince" in fact was the most revolutionary work that opened the new chapter as far as the realm of modern political philosophy is concerned. The human-centered forms of philosophy that emerged during the European Renaissance are best suited to acquire, retain and expand power politics in Machiavellianism. His advocacy of two different sets of the rule of conduct, one for The Prince that is, the ruler and other for the people denounced him to be the "devil's disciple" and "despot's tutor". The origin of the concept of "dirty hands" is usually traced in the philosophy of Machiavelli, who held the use of immoral means for achieving political ends. Machiavelli advises the ruler to set aside moral bindings in order to achieve political ends. However, he did not think the conventional morality was totally irrelevant or redundant in the context of politics. Therefore, the present paper is intended to focus on Machiavelli's view on the diplomatic apperception on politics and ethics in the execution of state politics/ statecraft, which led to departure on critical review in his state-craft.

Key Words: Renaissance, Machiavelli, Ethics, Politics, Statecraft

0525187 PRABHPREET, SINGH AND NAVJOT (Panjab University, Chandigarh). MAPPING THE IDEA OF SOCIAL JUSTICE OF DR. B.R. AMBEDKAR : IN CONTEXT OF SUBALTERNS IN ALTERNATIVE MEDIA

Dr. Bhim Rao Ambedkar, the great social reformist leader, which also to be claimed by Dalits as their leader, now a day's evoked a mixed response among the oppressed communities for the claim over Ambedkar as their leader. Ambedkar the architect of Indian Constitution, not only work for emancipation of the scheduled castes of India but also represent equally as the representative of Scheduled tribes, nomadic tribes, women and other

weaker sections of society. The drafting of Indian constitution by Dr. Ambedkar is like as a victory of the long mass struggle that will abolish caste, sexual and class inequalities inextricably linked to the struggles of the Scheduled Castes and Scheduled Tribes. The proposed paper is attempt to analyze how Ambedkar and his thoughts can be the representative of all forms of protest in support of the movement for the liberation and empowerment of India's oppressed section in contemporary times. It is an attempt to find out how the Ambedkar can be taken as the symbol of the protest for justice which be seen from Jantar Mantra, Delhi to Aizawal. The proposed research paper tries to underscore the unity that other subalterns shared with schedule castes in context of Dr. Ambedkar. The proposed paper also tries to highlight the space of Tribal's protest and movements in Dalit literature especially in context of Dalit Dastak and Begumpura Shaher weekly. It is an attempt to find the way of presentation about tribal issues by the Dalit mouthpieces on the name of Alternative media.

0525188 SOAM, SWATI (Department of Political Science, Central University of Haryana, Mahendergarh, Haryana). DALIT WOMEN AND PATRIARCHY IN HARYANA: A CASE STUDY OF MAHENDERGARH DISTRICT

In India Women as a class do not constitute a homogeneous group and caste positioning along with patriarchal practices culminate into emergence of many sub class within the broader categorization of gender. The exclusion make these Dalit women subjugated in both private and public spheres, which works as the constraint to achieve the goal of inclusive development which consist all marginalized and excluded groups as the stakeholder in development processes of the society.

The proposed paper is an attempt to explore how the caste and gender based exclusion of the one group challenges the notion of inclusive development. Further it tries to analyze the political, economic, social and educational status of Dalit women with empirical evidences and theoretical literature related to gender discourse in general and of Dalit women in particular.

Main Research Objective:

- To analyze the positioning of Dalit women in the Indian society.

Methodology:

The proposed study would be analytical, exploratory, and descriptive in nature. For the purpose of the study data has been collected from eight different villages belonging to the four different developmental blocks of the Mahendergarh district of Haryana through the process of random sampling method. Close ended questionnaire/ structured interview schedule was used for the collection of data. Besides, different reports and data published by the government as well as research organizations have also been utilized for the purposes of comparison and analytical part of the study.

Sample size: total of 225 women belong to different castes and categories were as the respondents of the study.

Major Findings:

- Indian society is impregnate with the primordial identities and patriarchal in nature.
- Gender and caste based exclusion & discrimination is a failure of human rights.
- Dalit women suffer double discrimination in the society.
- Have low level of literacy, less aware for political, economic, and also on health issues.

0525189 TRIPATHI, TARAK NATH (Nagarik PG College, Jhangai, Jaunapur (U.P). IS NAXALISM OUTDATED AND ARE NAXALS OUTCAST

History is replete with examples of violent and non-violent, organized and unorganized protest movements against established order on account of their failure to meet people's aspirations and deliver the goods for benefit and welfare of the large masses of the society. Evolution and origin of governance based on ideological

preoccupations and preferences has been hotly debated by its proponents as well as opponents in view of their effectiveness in addressing the major concerns of the people. How far people are meaningfully involved, and how far their views are reflected in development of governing systems determine their acceptance and rejection resulting in peace, progress and prosperity or protest movements. The irony of the situation, however, is that both the stakeholders-the governors and the governed always remain skeptical to each other's view, and rarely sit across the table to understand each other in order to find out an acceptable and lasting solution. It is rarely realized that the origin of such movements are caused and facilitated by the failed systems of governance, and this would never come to an end so long as the responsible factors giving rise to such oppositions continue to exist and remain in order. The rise of Naxalism and Naxals who carry it out is not against any government per se, but is against prevailing inequality, injustice, discrimination, denial of basic human right and exploitation meted out to the large masses of the society whether societies are governed by authoritarian rules or democratic principles. The present paper looks into the factors responsible for origin of Naxalism, and identify the main issues of people's concerns on the basis of secondary sources of information. It is concluded that it is grossly unjustified to call such people (Naxals) an outcaste, and their doctrines (Naxalism) who selflessly rise above the occasion to safeguard people's interest outdated under the existing socio-economic and political conditions. The people ought to be treated as human beings and their concerns ought to be given religious status and top priority in government's agenda of activities for peaceful order with progress and prosperity of all the people. Some policy suggestions are also made in order to make governance meaningful for all.

Keywords: violent and non-violent, governance, Naxalism, Naxals inequality, injustice, discrimination, exploitation

26. PSYCHOLOGY

0526190 ANSARI, HABIBULLAH (Division of Social Psychology, A N Sinha Institute of Social Studies, Patna-800001). ENVIRONMENT FRIENDLY CARE OF ELDERLY IN THE ERA OF DIGITAL TECHNOLOGY

Designing technology environment friendly for independent living and social interactions of older persons is essential for their good health, well-being, comfort and safety. As the elderly are advancing in their age the weakness and disability increases. For their safety and easy mobility particularly at public places- such as parks, public offices, railway stations, bus stops etc and at home are very important. India is supposedly advancing in technology per se but more in digital technology but however in designing the technology keeping mind for the needs elderly has not been yet initiated. Policy and planners are also aloof to the needs of the older and disable persons. In some countries it has been focussed on such technologies developing from the walking stick to the humanoid robots for the care of the elderly. In India there is a little focus on such issues. The planners and developers are hardly sensitised to create such technologies for the elderly. Elderly while come out from the home for social interactions or for commuting to somewhere they face lots of trouble due to the barriers they face at public places. At home due to absence of the proper designing of the home environment such bath rooms, toilets, staircases etc they face trouble in daily life. Many a time they are on risk of fall down which sometimes occurred in severe injuries and sometimes even death. Digital technology such mobile phones, computers, laptops, automatic machines etc are very strange for them. They feel self-pity while they are exposed to such digital technology. This paper analyses the issues regarding creation and designing of technology for the environment friendly care to elderly so that they could live an independent life with care and safety and enhance their mobility and fulfil their daily needs.

Key Words: Designing Technology, Environment friendly, Older Persons, and Disability.

0526191 DUBEY, SUJEET KUMAR (Department of Psychology, A.N.College Patna,Patliputra University, Patna). IMPACT OF ENVIRONMENTAL POLLUTION ON THE ANXIETY LEVEL OF TRAFFIC POLICEMEN IN PATNA

Patna has been declared as the most pollutant city of India. The objective of the present study was to analyze and evaluate the pollution effects upon the anxiety level of Traffic Policemen of Patna. The research was a survey conducted on 50 Traffic Policemen working in different locations of Patna town. Among these 50 traffic Policemen, 25 were working on home duty i.e, working at different Government offices. And other 25 were those who are doing field duty. Sinha Anxiety scale has been used in this study. Results have been revealed that those Traffic Policemen working on house duty have shown less anxiety as compared to the anxiety level of Traffic policemen on field duty. Because of working in the different crossings of the city, they face more noise, smoke, and dust which result them in lungs problems, vision problem, hypertension and other respiratory problems. All these affect their behavior as they get more anxious, irritating and aggressive. It is such an arming issue to be focused.

Keywords- Environmental Pollution; Anxiety; Traffic Policemen; Patna

0526192 KALAISELVI, P AND MANGAYARKARASI K (Department of Women's Studies, Bharathiar University, Coimbatore – 641 046). PSYCHOLOGICAL IMPACT OF INFERTILITY AMONG MARRIED WOMEN WITH SPECIAL REFERENCE TO COIMBATORE

This study estimates the psychological impact of infertility among married women with special reference to Coimbatore. The purpose of this study to measuring the Back anxiety Inventory, Back Depression Inventory was used for collecting the data. The major objective of the study is mainly focused on socio-economic profile, impact of anxiety, and depression among infertility women. Data for this study have collected from 75 infertile women from different private fertility hospitals and clinics by adopting purposive sampling technique. This outcome of the study will be helpful to suggest that infertile women regarding their social stigma, psychological well-being of the study area.

Keywords: Socio-Economic, Impact of Infertility, Back Anxiety Inventory, Back Depression Inventory and Well-Being.

0526193 KUMAR, AAYUSH, SINGH, VARSHA AND LATA, SWARAN (Department of Psychology, Faculty of Social Sciences, Banaras Hindu University, Varanasi-221005, U.P., India). PSYCHOLOGICAL CORRELATES OF INTERNET ADDICTION AMONG YOUTH

The digital revolution has taken the world by storm and has become an important part of everyone's life. Everyone is enjoying this change. People have become internet dependent and spend maximum time on it. It has led to the emergence of several psychological problems e.g. internet addiction. People prefer to spend their quality time on a computer or electronic gadgets and thereby it adversely affects their health. This is widely prevalent in youth and responsible for physical, social and psychological problems among youth.

The present study aims to explore the correlates of internet addiction among youth. It also aims to assess gender difference in internet addiction among youth.

The sample consists of 80 youth (40 male and 40 female; age range: 21-24 years). Internet addiction scale (Young 1998), The Positive and Negative Affect Scale (Watson, Clark and Tellegen, 1988), Perceived stress scale (Cohen, 1983), and Beck Anxiety Scale (Aaron T. Beck 1988) were administered. Descriptive statistics, correlational and regression analysis were used to assess relationship between these variables.

Correlational analysis shows that there is significant positive correlation between internet addiction and anxiety and through t test significant gender difference was found in internet addiction. Further with the help of step-wise regression analysis it was found that stress, negative affect and anxiety emerged as significant predictor of internet addiction.

Anxiety, stress, and higher negative affect can make youth prone towards internet addiction. Among all these variable anxiety emerged as significant predictor of internet addiction. So the current study throws light on the relationship between internet addiction and its psychological correlates.

Keywords- Internet addiction, Psychological Correlates, Stress, Affect, Anxiety.

0526194 KUMARI, SANGITA (Division of Social Psychology, A.N. Sinha Institute of Social Studies, Patna, Bihar). IMPACT OF DIGITAL TECHNOLOGY ON LIFE OF DIFFERENTLY ABLED CHILDREN

India's population is 1,210,193,422 out of these 26,810,557 are people with disabilities who constitute 2.21% out of total population who are suffering from some and the other types of disabilities. They are also facing different types of problem in daily life. New technologies can ease the life of differently abled children. Technology puts a positive impact on life of the differently abled children. Independence and productivity of differently abled children can be increased through technology. And they can be physically, socially, academically, recreationally, and vocationally integrated into the community. Their essential needs could be easy through using technology such as movements by mobility and transportation aids, assistive technology to help them in their daily lives, special keyboards or software to magnify computer screens helps to visually impairment children in learning, enhance personal expressive communication through manual and electric picture boards etc. Technical improvements in the physical environment, such as better housing, safer roads, and poison-prevention packaging, have significantly reduced childhood injury and disability. In this way technology plays the potential role for improving the lives of children with disability, which could also minimize the impacts of a disability, improve quality of life, enhance social participation, and improve life skills, mobility and cognitive abilities. But it is possible only when every differently abled child should have access to the technology. So, the Government should arrange technology to access for everyone who are in immediate need. So, initiative should be taken to improve the condition of differently abled children everywhere by giving proper care by the help of technology.

Keywords – Disabilities, technology, positive impact and barrier free environment.

0526195 MISHRA, NEERAJ KUMAR (Clinical Psychologist, Nai Subah Varanasi, UP, India). COGNITIVE DRILL THERAPY AND JACOBSON PROGRESSIVE MUSCLE RELAXATION IN THE TREATMENT OF OBSESSIVE COMPULSIVE DISORDER (OCD) : A CASE STUDY

Cognitive drill therapy (CDT) focus on repetitive verbal exposure related to preoccupied feared consequences, it is a psychological management of (OCD) and phobia and patient having fear of mental contamination. The index patient was a middle class, widow age 37 years, doing a job in a school. Her obsessive thought was triggered about one year back when her husband was admitted to the hospital. She was taking selective serotonin reuptake inhibitor (SSRI) treatment. She felt preoccupied contamination either touch with things or only proximity of dirty things or people who involve in such things, she spent her most of time in cleaning house, washing hands, she starts avoiding to go out from home. Her cognition of ideation is fear to become contamination, and this contamination convert into lethal disease and act was washing, cleaning, avoiding things & outside from home. She referred for psychological management. The baseline assessment was used for measure the status of (OCD). Tools were used Y-box rating scale. Beck depression scale (BDI) and subjective unite of distress (SUD).This is a single case study. Therapy was 3 phase (12 session -2hours once a week).Initial phase comprising a therapeutic alliance, psycho education and baseline assessment. Middle phase comprising Jacobson progressive muscle relaxation(JPMR) & cognitive drill therapy. Termination phase comprising post-assessment and follow-up. In this therapy session, Jacobson progressive muscle relaxation was used as a distracter to reduce anxiety or discomfort.

Key Words: Cognitive drill therapy (CDT), Obsessive Compulsive disorder (OCD), Jacobson Progressive Muscle relaxation (JPMR), contamination & SSRI.

0526196 PATHAK, ABHIJIT (.....) MENTAL HEALTH AWARENESS & MEDIA: PROGRESS & POTENTIAL

Mental Health is a vital concern across the globe and it thrives on physical, social, and economic well-being in continuum. Awareness of it itself play a role in maintaining mental health. Mental health awareness has dual aspect; first, self awareness of mental well- being which substrates a person to avoid those social, cultural environment which results in behavioral adversities to health; especially mental health. The second aspect is more positive in nature and constructs positive perspective among people and develops empathy towards a person suffering from mental illness and thus, prevents their ostracisation. Online media which composed of audio- visual media, social media have first vaguely introduced the mental illness with paranormal activities to catch attention and after grabbing it, sustained it by bringing bio-medico technicalities and highlighted their impact on sufferer and their families on the basics of socio, cultural and economic factors. Thus, people understood family expectation and responsibility to self and moral sensitivity towards other. This is what a progress has been achieved by mental health field with the assistance of media so far in last couple of decades. But potential of media is not confined to urban centers and small towns. Rural mass can be informed and made aware- progress in continuation- and their explanatory model of ignorance can be transformed into consciousness towards mental health if govt agencies extensively use All India Radio (99% coverage), audio visual clips by NGOs in 'gramsabha' and many more. So, demand driven approach by raising consciousness will lead to fulfillment and realization of objectives of mental health awareness generation and mental illness prevention.

Key Words - Mental Health, Awareness, Media, Explanatory Model, Mental Health Policy & Mental Health Act.

0526197 RAI, GAURAV KUMAR, TRIPATHI, SWATI AND AHAMED, AFTAB (RGSC, BHU, Mirzapur). INTERNET ADDICTION, MENTAL HEALTH AND COGNITIVE FAILURE AS FUNCTION OF GENDER AND RESIDENCE

Internet have been readily praised, there is a growing amount of literature on the negative side of its excessive and pathological use. Main objective of this study to see the gender difference on internet addiction, mental health and cognitive failure. Moreover, residence type (i.e. Hosteller and Non-Hostler) was also examined in this study in respect of internet addiction, mental health and cognitive failure. Total 120 students from Banaras Hindu University was participated in this study, which was equally divided according to research design i.e. 2 (Male and female) X 2 (Hosteller and non-hostler). Results shows that non hostler female were reported more visual problem (p =.01; η_p^2 = .06) with higher level of internet addiction (p =.05; η_p^2 = .03). Furthermore, cognitive failure was reported in terms of distraction (p =.05; η_p^2 = .03) and memory failure (p =.06; η_p^2 = .03) more in non-hosteller male and female students. Moreover, hostellers scored higher on almost all dimension of mental health. These findings may useful to understand the internet addiction among youth and also in intervention and policy making.

Key Words: Hosteller, Gender, Internet Addiction, Mental Health and Cognitive Failure

0526198 VISHWAKARMA, AMIT KUMAR AND KUMAR, SANDEEP (Department of Psychology, Banaras Hindu University, Varanasi, India). **IMPACT OF WESTERN CULTURE AS A SOURCE OF WORKPLACE BULLYING ON INDIAN PEOPLE AND THEIR MENTAL HEALTH**

All we know that culture makes to everyone unique by her/his languages, dressings, music, foods, festivals, lifestyles, modernization, educations, films/movies, and their works. In India, its a land of diversity where has various languages, religions, cultures, tradition in which Indian peoples celebrate their own life. Today, some negative aspect of society and culture is destroying their own beliefs slowly because they believe that western culture is modern and advance. They attract western lifestyle, nuclear family, geographical structure, working lifestyle, education system, urbanization, dressing sense, party and programme culture, fast food culture, car culture and some other known and unknown things. This paper will discuss how and why Indian people adopt western culture? how and why this adoption create many mental health-related issues? how and why adopted western culture play a role as a mediator between Indians and their mental health? How adopted culture make a link to workplace bullying? What types of impact have on their behavior and personality? All the above question has made by from previous researches and all the above question will be answered by from some previous researches, experience, reel and real-life observation and history. This paper will make people aware about their own culture, beliefs, language, dressing and all other local things and make sure that your all things are good and perfect according to their inborn geographical structure, culture, and tradition. This topic has a broad term in which some relevant topic will be discussed and some other virginal factors will make this paper as the limitation. Many indian live in foreign and when they return to india and they affected to their own enviornment. This is the main reason of workplace bullying.

27. SOCIAL WORK

0527199 GHOSAL, MAHUA AND TRIPATHI, NITU (Adamas University, Barasat, Kolkata) WOMEN EMPOWERMENT THROUGH SELF-HELP GROUPS: AN INDIAN PERSPECTIVE

Women's subjugation and exploitation besides their ill-treatment and torture are well known in the Indian society since ages inspite of several legislative measures enacted to protect their interest and protests made by Non-governmental organizations (NGOs) and civil society. The subordination of women in the male dominated India's society is deeply embedded in its normative socio-cultural structure practised and strongly defended over generations. The concept of Self-Help Groups (SHG) based on the successful experience of Bangladesh was a path breaking initiative to mobilize women to organize themselves in small groups and effectively start activities which may provide new meaning to their lives. The present study is based on primary data collected from randomly selected 300 respondents from three villages of the West Medinipur district of West Bengal. Qualitative data were also collected from the focus group discussion in three groups especially constituted for the purpose. The purpose of this exercise was to find out if people's ideas were similar to the findings of the quantitative data. The primary objective of the study is to find out the functioning of the self-help groups, and also to examine how far the formation of self-help groups and their activities have been effective in empowering women. The findings of the study reveal that self-help groups have certainly been effective to a large extent in creating scope for women to think and act independently resulting in their empowerment and enhanced say in household and community affairs because of their independent income and newly acquired assertiveness. However, there remains a long way in restoring and creating parity with their male counterparts. The study also makes some policy suggestions on the basis of the findings of the study in order to make women empowering efforts further effective.

Keywords: Self-Help Groups, women empowerment, Bangladesh, independent income, assertiveness

28. SOCIOLOGY

0528200 AHMAD, SANA (D/o Sarfaraz Ahmad, Road No. 1/B, White House Compound, Gaya 823 001, Bihar). DIGITAL TECHNOLOGY IN THE 21ST CENTURY: REIMAGINING THE SOCIAL, CULTURAL AND POLITICAL

Having entered the "information age" as M. Castells (1996) has argued, we, as a society, have come a long way when it comes to digital technology with it's scope expanded to different spheres of our lives. The banal and profound presence of the digital in different facets of life, having not just local but global repercussions, is too overwhelming to be ignored. In this paper, I aim to sociologically analyze how the digital has come to be intertwined with the social, cultural and political domains and explore how this intertwining is a two way process rather than a unidirectional one. In the course of this analysis, the paper underlines the potential of digital technology in formulating new identities, networks and collectivities as well as reproducing, reimagining and reasserting the already existing ones.

In my pursuit of critically analyzing the positives and negatives of digital technology, I also look at the different approaches that have been used to study the digital and it's overall impact. So while the digital acts as a catalyst for socio-economic development of a nation, it may not necessarily mean 'development for all' or, in other words, inclusive development. It has provided a platform to the subaltern to voice their concerns, giving them a chance to be heard, but at the same time it has also opened up new avenues of suppression and has given birth to new forms of inequalities like in terms of access and use of digital technology. On the one hand, it helps in the dissemination of information, making people aware of what is happening around the globe while on the other we still lack adequate filtering processes which increases the chances of spreading of 'misinformation' and 'propaganda messages' something that in turn may lead to a situation of chaos, doubt, hatred and intolerance ultimately resulting in violent outbreaks. Therefore the question that acquires uncommon immediacy in such a situation is 'Is the scope for sympathy entailed by the digital broader than the chances of conflict?'

The paper concludes by specifically highlighting how the impact of digital on the cultural and social realms is full of paradoxes and that we need to be sensitive to not just the divide that it creates or reinforces but also to the diversity it brings to various walks of our everyday life.

0528201 ALI, SOMI (Department of Sociology, Banaras Hindu University, Varanasi). सूचना एवं संचार प्रौद्योगिकी का संस्थागत बच्चों की शिक्षा पर प्रभाव

सूचना एवं संचार प्रौद्योगिकी एक व्यापक क्षेत्र है, जिसमें सूचना के संचार के लिए हर तरह की प्रौद्योगिकी समाहित है। पिछले कुछ दशकों से प्रौद्योगिकी ने हर संभव मार्ग से हमारे जीवन को पूरी तरह बदल दिया है। भारत एक सफल सूचना और संचार प्रौद्योगिकी से सज्जित राष्ट्र होने के नाते सदैव सूचना और संचार प्रौद्योगिकी के उपयोग पर अत्यधिक बल देता रहा है, न केवल अच्छे प्रशासन के लिए बल्कि अर्थव्यवस्था के विविध क्षेत्रों जैसे स्वास्थ्य, कृषि और शिक्षा। शिक्षा निःसंदेह एक देश की मानव पूंजी के निर्माण में किए जाने वाले सर्वाधिक महत्वपूर्ण निवेशों में से एक और एक ऐसा माध्यम है जो न केवल अच्छे साक्षर नागरिकों को गढ़ता है बल्कि एक राष्ट्र को तकनीकि रूप से नवाचारी भी बनाता है और इस प्रकार आर्थिक वृद्वि की दिशा में मार्ग प्रशस्त होता है। सूचना एवं संचार प्रौद्योगिकी शैक्षिक अवसरों को विस्तृत करने, शिक्षा के क्षेत्र में उल्लेखनीय विकास करने एवं शिक्षा की गुणवत्ता बढ़ाने के लिए एक प्रभावशाली साधन है। शिक्षा के क्षेत्र में सूचना एवं संचार प्रौद्योगिकी के सर्वाधिक महत्वपूर्ण योगदानों में से एक है अधिगम्यता पर आसान पहुंच। सूचना एवं संचार प्रौद्योगिकी से छात्र अब ई–पुस्तके, पिछले वर्षों के प्रश्नपत्रों आदि देखने के साथ व्यक्तियों, विशेषज्ञों से विश्व के किसी भी कोने पर आसानी से संपर्क कर सकते है।

प्रस्तुत प्रपत्र अन्वेषणात्मक शोध प्रारूप पर आधारित होगा जिसमें साक्षात्कार - अनुसूची के द्वारा जानने का प्रयास किया जाएगा कि सूचना एवं संचार प्रौद्योगिकी का संस्थागत बच्चों की शिक्षा पर किस प्रकार से प्रभाव डाल रही है।

संकेतक शब्द– सूचना एवं संचार प्रौद्योगिकी, बच्चे, शिक्षा, विकास, प्रभाव।

0528202 CHAUDHARY, NEHA (Sociology, DAV P.G College, Banaras Hindu University, Varanasi). THE INTERNET AND RISKS OF MISINFORMATION IN INDIA

False news and videos circulating on the messaging app have become a new headache for social media giant Facebook, already grappling with a privacy scandal. People are dying across the country from misinformation.

Fake news spread instantaneously over WhatsApp chat groups and Facebook is causing a firestorm in India and resulting in the loss of lives. “Kalu became a victim of India’s fake news fire storm Across India eight lives have been lost in this latest wave of fallacy defeating fact. The platform is now rife with all kinds of misinformation, whether political, religious, historical, medical, social or legal. Political parties use the platform to rally supporters, and “IT Cells” are believed to be using the platform for spreading misinformation and hate speech. These are then forwarded by their supporters to millions of others, from person to person. Local administration often doesn’t know what to do when mobs start collecting and rioting, apart from shutting down Internet access. According to SFLC.in’s Internet shutdowns tracker, India had 70 Internet shutdowns in 2017, and in the first six months of 2018, we’re already at 65. More recently, mobs have attacked and killed people, following the spreading of a video clip warning about gangs kidnapping children. This is going to get worse. The reason for such a high-level of ‘fakeness’ is not difficult to fathom. Unlike Facebook and Twitter — where any and all content is permanently tagged to the account that originally uploaded it — WhatsApp does not give an easy means to track down the original uploader of a message or post. However, the core of the problem remains the near total anonymity that the platform affords to the original ‘content creators’. Until this issue is addressed to some degree, the problem of fake news can perhaps not be tackled effectively.In other words, if you create a fake ‘post’ on WhatsApp and forward it to someone, and that someone forwards it to another person, the second recipient cannot see the message and make out that you are the one who created it.

This is a complex problem with no single solution: there is no silver bullet here. Solutions include counter speech, user education and debunking of misinformation from both the government administration and media. We need strong law enforcement to prevent mobs, as well as speedy justice for the victims (as a deterrent). The challenge with dealing with Fake News and misinformation is that WhatsApp’s end-to-end encryption doesn’t allow even the platform to access messages. While the encryption provides privacy for users when they’re messaging, given the anonymity involved in forwarded messages, the platform becomes an enabler for the spread of misinformation.

The main focus of the study to examine the range of misinformation and its impact on indian society. Study based on secondary source.

0528203 CHAUDHARY, RUCHIKA (Department Of Sociology, C.M.P. Degree College, Allahabad). CRIMES AND DIGITAL TECHNOLOGY

Digital technology has become a necessity for all Countries of the World. Internet and computer technology has also connected the virtual territories of different Countries to a collective area known as Cyberspace. This connectivity element has provided many opportunities and benefits to Cyberspace Netizens and stakeholders at large. However, this connectivity has also given rise to the possibilities and opportunities for committing crimes by various criminal elements. Some people use the cyberspace for their own dubious schemes, as they target unsuspecting individuals, companies, banks and even the military and government agencies. Emerging use of computer technology, computer-related crime and cybercrime have become a significant global challenge. Cybercrime is a new type of crime that occurs in this science and digital technology ears.

Cybercrime can be defined as crimes committed on the internet using the computer aseither a tool or a targe ted victim (Joseph A E, 2006). With the increasing proliferation of information and communication technologies (ICTs) and the growing opportunity for real-time borderless exchange, cyber security is a complex transnational issue that requires global cooperation for ensuring a safe Internet. According to a 2011 Norton study, threats to cyberspace have increased dramatically in the past year afflicting 431 million adult victims globally or 14 adults’ victims every second, one million cybercrime victims every day. "The Norton Cybercrime Report: The Human Impact," which examined the personal toll that cybercrime has on a group of 7,000 Web users worldwide, indicated that a 65 present total of Internet users -- and 73 present of Internet users in the U.S. -- have at some point been victims of a cyber-attack, which includes computer viruses and malware, online credit card fraud and identity theft. The U.S. was the fourth most victimized nation, following China, at 83 present, and Brazil and India, both of which registered 76 present. Cybercrime has now become a business which exceeds a trillion dollars a year in online

fraud, telemarketing Internet fraud, credit card account thefts, identity theft, and lost intellectual property affecting millions of people around the world, as well as countless businesses and the Governments of every nation. In a digital age, where online communication has become the norm, internet users and governments face increased risks of becoming the targets of cyber-attacks. As cyber criminals continue to develop and advance their techniques, they are also shifting their targets focusing less on theft of financial information and more on business espionage and accessing government information. To fight fast-spreading cybercrime, governments must collaborate globally to develop an effective model that will control the threat.

The paper based on secondary source and focuses on digital technology related crimes. In this paper we will endeavour to know how the whole world is facing the problem of cyber-attacks and which efforts can be done by the government's agencies to maintain cyber security. It will also see how by means of information and communication technology cybercrime is curbed.

0528204 CHAUHAN, RASHMI (Masters of Arts in Rural Development and Governance-Tata Institute of Social Sciences, Hyderabad). DIGITAL WORLD: A GOOD SLAVE BUT A BAD MASTER

The paper tries to analyze the existing correlation between the fast paced world of our digital interaction and changing dynamics of society's way of life. Contemporary society witness traditional and modern cultures at the crossroad and this state is constantly been subjected to contesting ideas and norms.It is in context to this information age, that culture has been changing like never before. The particular research has made an attempt to understand these changes and produce an outcome on the kind of effect produced on the end users who consume unprecedented information through cyberspace. In order to find the inferences, correlational research design has been chosen to study the subject deeply. For doing the study, it is highly imperative to understand the link between changing ways of socialization to that of fast changing cultural norms and values. At this juncture, it is infered that increasing access to cyberspace has certainly shrinked the conventional framework of social space and people are withdrawing more frequently from conventional social settings or gatherings.This phenomenon has been affecting people's lives and broadly shifting the contours of culture. Easy accessibility and affordability to internet has certainly opened ways and means for people to use increased cyber space. Empirical study reflects that although there are huge advantages of living in a digital world but only when it is restricted to few hours in a day. It is found that in case of crossing the threshold, it proves to be detrimental to the quality time people spend with their near ones. Recent development also highlights other negative trends since high density of information in the cyber world does not attest of reliability of the information coming from infinite sources. It is also examined as to how the binaries of digital world have come to play a major role in shifting society's cultural contours. Today's culture is undergoing metamorphosis as it is subjected to ubiquitous digital presence through multiple social networking platforms.Conventional norms of socializations are turning obsolete and people's tendency to adjust has seemingly found to be reduced especially in the case of metropolitan cities. It is also found on the basis of empirical study that people's preference of engaging in a collective activity during leisure time is consistently decreasing and online activity is starting to replace it. Although, outcomes also reflects variability of the outcome depending upon various other factors that paper tries to uncover.Holistically it can be said that culture of collective conscience is weakening yet new norms have not completely replaced the established norms.

Keywords: Culture, Cyberspace, Correlational Research Design, Collective

0528205 GHOSH, SREYASHI (Indian Statistical Institute, Kolkata). UNDERSTANDING THE PRIVATE SPHERE OF THE MARRIED WOMEN WORKING AT THE CORPORATE SECTOR IN URBAN KOLKATA- AN EMPIRICAL STUDY

The rise of the industrialization and the subsequent subtraction of the production from consumption made it a rule for men to go out and work and the women to adhere to domestic duties. The sexual division of labour that germinated from the time of hunters (predominantly men) and gathers (predominantly women) got concretized in the form of private and public spheres or in other words, spaces were formally gendered where women were denied access to the public realm for a long time. It was the first wave feminism that demanded the public sphere to be made accessible to women and it was accomplished to some extent with women gaining voting rights in 1920s (New

Zealand was the first country to extend suffrage to women in 1890). Women entered the labour force in large numbers during World War I but remained mostly confined to the secondary labour market with low paid jobs. But with the passing decades and growing awareness, women have been able to make inroads into arenas which are believed to be the strongholds of men including politics. As far as India is concerned, the condition of women have been unique with the interplay of various factors like religion, caste, race, rural-urban division, making India a glorified example of intersectionality. Despite the ostensibly impervious intrinsic factors woven into the very fabric of the Indian society, the effects of globalization in this country are quite tangible and have been manifested in the accelerated entry of the women in the fast developing corporate sector.

In this paper, the author has engaged in a descriptive study of the domestic sphere of the married women working at the corporate sector in urban Kolkata. Based on the survey of 155 married women working in various companies in the I.T hub in Kolkata, the study tries to understand the structural and functional organization of the private sphere as these women are moving between spaces, the way work-life balance is struck by the married women and how the maintenance of this balance has shaped the identity and agency of these women. The study is an amalgamation of the quantitative and qualitative methods thus striving to understand the phenomenon from both objective and subjective perspectives. The objective is to study the changes (if at all) with in the private realm as women are transcending the private sphere. The changing family dynamics (if at all) has also been dealt with by the authors along with the spatial discourse.

Keywords: Public sphere, private sphere, corporate jobs, family, I.T sector, globalization, married women.

0528206 GUPTA, NIRBHAY KUMAR (Department Of Sociology, Banaras Hindu University Varanasi, 221005). HOW TO MAKE INDIA A BETER PLACE TO LIVE WITH THE HELP OF TECHNOLOGY

In contemporary time not only india facing lots of development related problem which are seems to be unresolved byu the social thougt, but now a days a new kind of era has come, ERA OF TECHNOLOGY, which can help to eradicate all the problem which are abstacle for India, but there is a problem related to solving problem , how to make a social structure based on technology where woud no any curruption no intransparency. Thats the major problem, so solving all these problem, we have to go through technology, and not only technology, but also in the awareness of contemporary issues thats can make people to think about the life vale. In india there is many comlex issues which are seems to be not resolve becouse of diversity so with the help of technology we can solve these problem

0528207 GURG, LEENA (Jaago Teens, India). IMPACT OF DIGITAL INFORMATION TECHNOLOGY ON FAMILY AND SOCIETY

Today we are living in the digital age where most of the information is in digital form, especially when you compare it to the time when computers were not being used.

Digital transformation is taking place at a very rapid rate. As per Science News (1), 90% of world's data has been generated in just the last two years. Quantum computing is leading to collection of vast amounts of data. And, analysis of this huge amount of data or big data analytics is fuelling the Internet of Things or IOT and AI.

The future has a lot in store for us. But, with so much of data being collected, data privacy and cyber security will be a significant issue in the near future. Instances of cyber crimes like stalking, honey trapping, child abuse, financial fraud, are already on the rise.

To study and identify key data privacy issues, the government formed a ten-member committee. This Expert Committee was chaired by Retd. Justice B.N. Srikrishna. One of their suggestions to the IT minister was that personal data will need to be stored on servers located within India, and transfers outside the country will need to be subject to safeguards.

As per an Oxford University study, close of 45% of the jobs in the US, in the near future, will be non-existent as these jobs will be automated. Looking at this trend, working people in all countries will need to re-skill themselves. As per the World Economic Forum,Singapore is preparing itself for the machine age by re-skilling its people through its SkillsFuture Credit programme.

As with all other advancements in technology, the effect of digital technology on families and society is fairly visible now. People belonging to lower socio-economic backgrounds find social media a great equalizer as it allows them unrestricted expression of thoughts and communication. Hearing- impaired people are exploring this new platform of social interaction, if you are wondering how, then aren't all people deaf and mute when they are online!

Senior citizens are enjoying their time on social media platforms, staying connected with friends and family. Children are surfing the net, chatting, gaming, but parents will need to monitor and control this usage, and discuss digital safety with them.

Exposure of children to age inappropriate content and games has led to some serious consequences. The recent media reports on the Blue whale game, Dehradun hostel rape case hold testimony to the possible harmful effects of unmonitored usage.

In this hyper connected world where people are sleeping less, having fewer face to face conversations, Jaago Teens could provide them much needed succour and relief, it can help them disconnect from their machines and connect to their own inner selves.

We, at Jaago Teens also teach children ethics in the digital future, no machine will teach a child how to be a good human being.

0528208 MISHRA, ARVIND KUMAR AND MISHRA, RAVI KUMAR (Department of Sociology, Iswar Saran Degree College, Allahabad). सोशल मीडिया और युवा : एक समाजशास्त्रीय अध्ययन

किसी भी समाज की जनसंख्या सरंचना में कार्यशील जनसंख्या के अन्तर्गत युवा आबादी को प्रमुखता दी जाती है। परिवर्तित सामाजिक, सांस्कृतिक, राजनीतिक परिदृश्य में युवावर्ग नई चेतना, गतिशीलता, परिवर्तन का समर्थक, वाहक और उम्मीद है। सामाजिक, सांस्कृतिक, राजनैतिक आन्दोलनों के मुद्दे तय करने, आन्दोलन को संचालित करने और हस्तक्षेप को सार्थक करने में युवाओं की भूमिका प्रभावशाली है। इस दृष्टि से यह भी उल्लेखनीय है कि आज का युवा वर्ग सोशल मीडिया पर पर्याप्त सक्रिय है सक्रियता फेसबुक और वाट्सएप पर ज्यादा देखी जा रही है।

प्रस्तुत शोध आलेख सोशल मीडिया और युवाओं पर केन्द्रित है। 20 से 30 वर्ष के 80 युवाओं पर केन्द्रित इस अध्ययन में यह जानने का प्रयास किया गया है कि युवा सोशल मीडिया पर अपनी सक्रियता में किन–किन पक्षों को वरीयता देते है, किनसे ज्यादा प्रभावित होते है, सोशल मीडिया से उनकी प्रत्याशायें क्या हैं, और सोशल मीडिया की भूमिका को लेकर उनका क्या दृष्टिकोण है।

प्रस्तुत शोध आलेख निम्न उप शीर्षकों में विभाजित किया गया है –

1. समकालीन भारत में युवा आबादी
2. सोशल मीडिया : सामान्य परिचय
3 सोशल मीडिया : प्रत्याशायें और सक्रियता
4. सोशल मीडिया : युवाओं का उन्मुखन और प्रत्युत्तर
5. निष्कर्ष

0528209 MISHRA, OM PRAKASH (Department of Sociology, Nagrik P.G. College, Janghai, Jaunpur-212401).EMERGING CHALLENGES OF RESPONSIVE URBANIZATION

Rapid urban growth on account of natural birth as well as internal migration though inevitable in view of the prevailing economic conditions, has given rise to complex challenges neither intended or foreseen before, nor being sincerely attempted to find our an effective and lasting solution. Resultantly, whether one calls it overurbanization or rurbanization, urban problems have gone up many fold covering almost all walks of life. While migration in industrially advanced countries took place in response to jobs and demand created, in newly developed

urban centres, movement of people from rural hinterland to urban centres in most of the developing countries especially India took place primarily on account of livelihood or challenge to survive because of the sluggish and saturated rural economy which may only be found or arranged in the urban economy despite all odds being present there. The present study based on secondary sources of data attempts to find out the nature of migration, management of people's survival strategy, problems faced and solutions arranged by them in absence of suitable and effective policy measures to address their concerns. The findings of study reveal that though migrants know very well about the existing complex urban challenges they remain confident of urban responses in finding, creating, managing or arranging something for their survival, for them, it is not a question of their survival alone, but is the question of the larger family left back in the village which keeps them tied to the urban centres despite all kinds of adversaries being present there. The study also makes some policy suggestions with regard to adoption of appropriate and pragmatic strategy to redress the emerging challenges of responsive urbanization.

0528210 MOON, SMRUTIKA (Sociology and Social Anthropology, A.N Sinha Institute of Social Studies, North-West of Gandhi Maidan Patna, 800001). **SOCIAL EXCLUSION OF FARMER WIDOWS IN VIDARBH**

Farmers in Maharashtra's Vidarbha region are committing suicide due to droughts and mounting debt, with their widows left to deal with the state, moneylenders, in-laws and social stigma. Women suffer from financial stress and live in increased insecurity about the future of their family. When a farmer commits suicide, it leaves the entire family in a situation of distress. The widows not only just lose their husbands but also their means of livelihood and most importantly, they lose their hope. When we designate these women as widows, we are reducing their identity to a narrow dimension," says P. Sainath. The surviving family members of those who killed themselves in distress are prone to depression and tend to have suicidal tendencies too. They are experiencing social exclusion in day to day life. In the ongoing debate on the causes and cures for the agrarian tragedy, not much is said about the fate of the widows and children left behind by the farmers who have committed suicide. From facing pressures from her in-laws to struggling to keep her financially afloat, the widow's life changes drastically. This research paper is based on empirical study. Hundred Respondents from Wardha district of Vidarbha region are interviewed. For these widows life is a tale of suffering from social exclusion. Life is not easy for a farmer's widow. They have to face severe problems when they become widow. They are facing physical, sexual, mental, emotional and economic exclusion in day-to-day life. Apart from the fear of physical safety, once women indicate a desire for their share of land they often face social ostracism. Farmers without thinking for the future of the family commit suicides. But after their death their wives have to play a major role in facilitating the existence of family. This paper deals with suffering and various aspects of social exclusion faced by widows of the farmer and the role of social fabric in handling these problems.

Keywords :- Suicide, Moneylenders, Depression, Agrarian, Widow, Exclusion

0528211 NASKAR, SANCHARI (Department of Sociology, Women's Christian College, Kolkata). **NETAJINAGAR: MAKING OF A POST-COLONY**

This paper is based on Netajinagar, a refugee colony formed in 1951in the Jadavpur area of the southern part of Calcutta. The residents of the colony received independent legal land-ownership rights in the year 1989. Ever since the area has undergone a vast change with respect to the landscape, demography and culture, apart from the changes in socio-political aspects. I intend to map the vast changes that the particular locality has undergone after the residents there received ownership of land from the late 1980s. My main focus would be to take the receiving of the patta/legal ownership of land as the starting point.

In the late 1990s the erstwhile refugee inhabitants became landowners enjoying the same legal status as the rest of the private landowners of Calcutta. This triggered a whole new phenomenon - the area came under massive real-estate attention and activities. The colony was divided into plots of land measuring within 2 to 3kathas. The 2nd gen inhabitants dividing the land among the brothers and constructing multi-storied residential buildings became a popular trend in the colony. As a result two crucial changes emerged which are of great significance to my study. First, Netajinagar saw an inflow of people from outside of the colony, who considered the strategic positioning of

the colony near a Metro-station and inside the now greater metropolitan Kolkata, as lucrative to invest or rent for residence. And secondly, the real estate boom saw a partial the rise of living standards of the original residents of the colony. As a result Netajinagar locality could be considered to be upwardly mobile, ushering a dramatic change in the earlier scenario of the refugee colony. The upwardly mobile population of Netajinagar has followed a particular trend that is crucial in the post colony phase. A considerable part of the colony population, riding their economic prosperity, has moved out of the colony to settle in areas which are more developed compared to a refugee colony. Moreover, the new population has also exerted cultural influence on the present milieu.

This paper not only endeavours to look into the changing nature of the colony but also unravels the underlying socio-cultural dynamics that work underneath the vastly variegated scenario that Netajinagar today is. It studies the first and the second generation members of the colony on themes like the spatial arrangement, the social landscape, the language, choice of life and livelihood, and the family morphology and contrasts the same with the third generation. My study aims to understand the social, cultural and economic factors that have gone into creation of economic and cultural inequality across Netajinagar.

0528212 PANDEY, POOJA AND GOPANI CHANDRAIH (GB Pant Social Science Institute, Allahabad, U.P.). YOUTH LIFE AND ITS EMERGING MAINSTAY IN URBAN SPACE A STUDY OF 'STUDENT LODGE' IN ALLAHABAD CITY, UTTAR PRADESH

Allahabad is a city of Uttar Pradesh which is known as a faster growing city listed under the project of smart city as well as holding the religious privilege. Here students come across UP for preparing government job and in this duration they spend their crucial time in living Allahabad. While coaching centers are meant to provide coaching for various competitive exams and the 'lodge' are meant for renting room for student. Coaching are the spot of aspiration for youth whether lodges are the space where caste, class, social relation, network, political collectivity shared and non shared feelings are practicing. Most of the lodges are named on caste surname of lodge owner like Shukla lodge, Sonkar lodge and Maurya lodge. These lodges are not only a place where students live in passive way rather than these are the spaces which shape the life of students because they spend here a struggling period of their life. In this meanwhile they become socialized in different way by adopting some new way of living like they take participation in discussions, they make their political life along with focusing on carrier. In this way how lodge and coaching centers become important mainstay and play an active role in the life of students as well as itself take a new form by their inhabitant and give different mean to urban space are the main focusing points of this paper.

From last few years scholars has started to target the accommodation problem by caste in urban space but they did not target the youth and on their life whose mobility are more in number as compare to others. This research work is an attempt to fill this gap in academia as well as in society. In this research work qualitative research method has used and two different caste named lodges (Shukla and Ambedkar), one coaching center are selected by purposive sampling method and each lodge is considered as a case. In each lodge 15 students and lodge owner are taken for in- depth interview which conducted by open ended Questionnaire. Semi participatory observations and Focused Group Discussion (FGD) research practices are used to see the student hope and aspiration in the era of globalization, liberalization, social networking, easily accessing of information and media. Going throws this way it throws light on importance of surname and social capital to establish the identity and getting accommodation in urban space. And also on how lodge become a space apart from their family and kin where students relationship with each other provide them strong mainstay to cope with frustration, economic crises and joblessness in urban space.

Keywords: Caste, Youth, Urban Space, Students lodge, coaching centers.

0528213 RAVI, MINAKSHI KUMARI (Department of Sociology, Ranchi University, Ranchi). डिजिटल युग में मीडिया और सामाजिक परिवर्तन

आज संचार का युग है। संचार व्यवस्था ने सूचनाओं की तीव्र गति से पहुंचाने में महत्वपूर्ण भूमिका का निर्वहन किया है। जिसके कारण समाज में व्यापक स्तर पर इसका प्रभाव पड़ रहा है। प्रस्तुत उशोध पत्र का देश्य है कि मीडिया द्वारा लाए गए परिवर्तनों

का स्वरूप क्या है। साथ ही समाज को किस प्रकार प्रभावित किया है। डिजिटल युग को एक विकासवादी प्रणाली के विकास के रूप में देखा जा सकता है।

मीडिया के विभिन्न रूपों का फैलाव विगत वर्षों में तीव्र गति से हो रहा है और आज भी जारी है। देश में टेलीविजन और रेडियो केंद्रों का जाल सा बिछ गया है। समाचार पत्रों के प्रसार में अप्रत्याशित वृद्धि हुई है। इनमें प्रतिस्पर्धा इतनी तीव्र है की छोटे से भी शहर में भी चार–पाँच अखबार छाप रहे हैं, और बिक्री भी हो रहे हैं। समाचार पत्रों के माध्यम से समाज में जागरूकता बढ़ी है।

मीडिया का एक अन्य स्वरूप फिल्म है जो परिवर्तन का एक प्रमुख स्रोत है। फिल्मों के नकारात्मक एवं सकारात्मक प्रभाव से समाज में काफी वाद विवाद खड़ा हुआ है। इलेक्ट्रॉनिक मीडिया एवं प्रिंट मीडिया के माध्यम से सामाजिक परिवर्तन व्यापक स्तर पर हुआ है। मीडिया में व्यवसायीकरण के प्रवेश के कारण यह आज दीन हीन अवस्था में पहुंच गई है। आज के समय में मीडिया एक वस्तु हो गई है जिसे मूल्य चुका कर खरीदा जा सकता है। यह एक बिकाऊ उत्पाद हो गया है। आज के इस डिजिटल युग में मीडिया ने देश की अर्थव्यवस्था पर भी प्रभाव डाला और समाज में व्यक्तियों के चयन के विकल्प को बढ़ाते हुए संग्रह करने की प्रवृत्ति को प्रोत्साहित करते हुए लोगों में उपभोक्तावादी संस्कृति के प्रति आकर्षण पैदा कर दिया है। यह एक महत्वपूर्ण सामाजिक परिवर्तन है जो विगत दो दशकों में भारतीय समाज में आया है। मीडिया ने भारतीय समाज में जनमत निर्माण में भी महत्वपूर्ण भूमिका निभाई है। ऐसे अनेक अवसर आए हैं जब मीडिया में प्रकाशित और प्रसारित खबरों के आधार पर सरकारों के बनने और बिगड़ने का अंतर पड़ा।

निष्कर्ष के तौर पर कह सकते हैं कि वर्तमान डिजिटल युग में मीडिया का स्थान महत्वपूर्ण हो गया है यह समाज का एक सक्रिय सदस्य बन गया है। यह लोगों के विचारों को प्रत्यक्ष और अप्रत्यक्ष रूप से प्रभावित कर रहा है।

0528214 SHARMA, SHIKHA (Department of Sociology, Banasthali Vidyapith, Banasthali - 304022 Rajasthan). NOTION OF DIGITIZATION WITHIN SOCIETIES: A SOCIOLOGICAL IMAGINATION PERSPECTIVE

The sociological imagination enables it's processor to understand the meaning of the inner life and the external career of a variety of individuals to know their daily experiences often become falsely conscious of their social positions. Digital makes possible new way of contributing to society the ongoing digitization of society doesn't only present and important topic of investigation, it also has the potential to transform the very role that social research itself plays in society across society, digital infrastructure, devices and practice are widely seen to offer important new opportunities for making social research relevant to social life for turning knowledge about society into action. The first fruit of this imagination that individual can understand his own experience and gauge his own fit only by locating himself period, that he can no his own chances in life only by becoming aware of all those individuals in circumstances. The sociological imagination enables us to grasp his history and biography and the relations between the two within society. There has been much interest in the new ways of knowing society that digital technology makes possible, both inside and outside the university, the complex interaction between digital technology, social research and social life have received and digitization of society make possible a new way of knowing and intervening in society.

We must equally consider whether and how the digital and entails change in the relation between technology and social life, between knowledge, society and technology. Digital transformation invokes importantly debates from sociology past and about the roles of ideas and technology in social life. So the study has emphasized on structure essential components on structure of society and how does differ from the varieties of social order where does the society stand in human history and what varieties men and women. Now prevail in this society and in this period sociological imagination is now to grasp what is going in the world and to understand what is happening in themselves as minute points of intersection of society. The sociological imagination is the most fruitful form of this self conscious.

Keywords: Notion, Digitization, Society, Sociological Imagination, Perspective

0528215 SHUKLA, POORNIMA (Department of Sociology, Banaras Hindu University, Varanasi). DIGITALIZATION: DEVELOPMENT AND TRIBAL COMMUNITY IN INDIA

Development can be assessed in a country by understanding the manner in which the country is using the Information communication technology (ICT) to its fullest utilization. Information communication technology plays

a major role in individual's development in developing their socio-economic statuses. We are using the internet for many purposes in our day to day life. Indian Government too has put lot of efforts to connect the individuals in the country through the digital India project like E-ration card, e- certificates, e-health card, e-education etc. Rate of mobile phone and internet subscriptions are increasing rapidly. Day to day development of ICT is a basic and necessary need for the individual. This paper discuss about the challenges faced by the tribes to access of information technology for their need and development.

Objectives: - Objectives of the study are as follows-

- To find the ICT usage among the tribal people.
- To understand the Information Technology devices used by them.
- To understand about the challenges faced by them to access ICT.
- To understand the existence of the digital divide among the tribal people.

Methodology: - The researcher has used primary and secondary sources of data. She used purposive sampling for selecting respondents. The study carried out among 55 tribal people. The field of study chosen for purpose was Shahdol district of Madhya Pradesh. Data collected through semi structured interview schedule.

Finding and Conclusion: - Finding of the study shows that there exists a digital divide among the tribal people. Several schemes by the Government have not reached remote areas. People who live in rural area are unable to access the ICT because of lack of knowledge.

Key Words: ICT, Internet, e-ration, e-education, e-health card, e-certificates, digital divide.

0528216 SINGH, ANURAG (Dept. of sociology, K.K. P.G College, Etawah-UP). DIGITAL SOCIETY AND CHANGING NATURE OF SOCIAL RELATIONSHIP

Digital society is a modern society. It is formed by the integration of Information and Communication Technologies (ICT) at home, work place, education and recreation. It is advanced telecommunications and wireless connectivity systems. In this time man is connected to society, distance is no maters. Digital society is affecting our social relationships. Social networking sites, due to high speed data, cheap phone calls changing nature of social relationships.

Objectives- Objectives of this paper are as follows-

- To find out whether digital society is changing nature of our social relationship.
- To what extent digital society is affecting our social relationships.
- To explain the digital society.
- To how can we avoid the negative impact of digital technology on our social relationships.
- How this digital transformation of our society is addressing problems of basic needs of hunger, employment and poverty.

Methodology- In this paper researcher used both primary and secondary sources of data. Researcher used observation, interview schedule technique. Sample size is about 50. Researcher used books, journals, different reports and internet contents.

Findings and conclusion- Digital society is affecting our social relationships. Digital society is creating digital divide. Most important thing is how it is addressing our societal basic problems hunger, poverty, unemployment, education and health.

Keywords: Digital society, ICT, digital transformation, digital divide.

0528217 SINGH, UDAYVEER (Department of Sociology, K. K. PG College, Etawah). डिजिटल प्रौद्योगिकी एवं सामाजिक अलगाव

वर्तमान युग डिजिटल प्रौद्योगिकी के विकास का है। डिजिटल प्रौद्योगिकी सूचना एवं संचार प्रौद्योगिकी के रूप में हमारे घर, कार्यस्थल, शिक्षा एवं मनोरंजन में प्रवेश कर चुकी है। डिजिटल प्रौद्योगिकी ने एक ओर हमारे जीवन को सरल, सुरक्षित बनाया है तो दूसरी ओर सामाजिक अलगाव से भी ग्रस्त किया है। इसने व्यक्ति को आत्मकेन्द्रित एकाकी, चिन्ताग्रस्त किया है।

उद्देश्य –

प्रस्तुत अध्ययन के प्रमुख उद्देश्य इस प्रकार हैं–

1. डिजिटल प्राद्योगिकी ने व्यक्ति के जीवन को पहले से अधिक सुरक्षित, सरल किया है।
2. क्या डिजिटल प्रौद्योगिकी ने व्यक्ति में सामाजिक अलगाव को बढ़ावा दिया है।
3. डिजिटल प्रौद्योगिकी ने कहाँ तक सामाजिक अलगाव को बढ़ाया है?
4. डिजिटल प्रौद्योगिकी से उत्पन्न सामाजिक अलगाव से व्यक्ति को सुरक्षित रखने के क्या उपाय है?
5. डिजिटल प्रौद्योगिकी का व्यक्ति के जीवन, सामाजिक सम्बन्धों पर समग्र रूप से क्या प्रभाव पड़ा है?

शोध प्रविधि –

प्रस्तुत शोध अध्ययन में शोधकर्ता ने प्राथमिक एवं द्वितीयक स्रोतों से प्राप्त आंकड़ों का उपयोग किया है। इसमें अवलोकन, साक्षात्कार अनुसूची आदि प्रविधियों का प्रयोग किया गया है। द्वितीयक स्रोतों के रूप में पुस्तकों, जनरल्स, विभिन्न पत्र–पत्रिकाओं एवं इण्टरनेट पर उपलब्ध सामग्री का उपयोग किया गया है।

निष्कर्ष–

प्रस्तुत शोध अध्ययन में डिजिटल प्रौद्योगिकी एवं सामाजिक अलगाव के सम्बन्ध पर विचार किया गया है। वस्तुतः डिजिटल प्रौद्योगिकी ने एक ओर तो व्यक्ति को बहुत सी सहूलियतें दी हैं तो दूसरी ओर उसे भीड़ में अकेला कर दिया है।

बीज शब्द– डिजिटल प्रौद्योगिकी, सूचना एवं संचार प्रौद्योगिकी

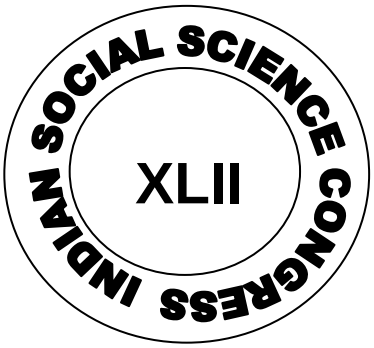
0528218 SRIVASTAVA, JYOTSNA (Faculty of Social Sciences, Banaras Hindu University, Varanasi).

MARRIAGE AND MIGRATION: CHANGING PERSPECTIVES

Marriage and migration has long been intertwined. As traditionally brides move to husband household upon marriage, but in contemporary marriage migration the distances involved can be substantial and may span national borders. Countries often introduce immigration policies that are built around family reunification which inculcate positive reunion narratives. Whereas Contemporary migration scholarship prioritizes labour mobility over mobility associated with marriage and family formation. Governmental perspectives on marriage–related migration also vary which clearly poses a major challenge to governmental attempts to manage migration process. Contemporary marriage related migration is diverse worldwide. The experiences are count on making migration-stream from a particular place to romance-tour of Eastern Europe. Gendered imaginaries underlie while making companionships, in view of South to North movement. Affluent Diasporas are seeking Traditional marriages from highly educated, modern-progressive to transnational up-hierarchy marriages (from South to North) have been in progress. Choices are varying as online websites facilitate relationships across globe and induces new forms of relationships as mail order brides from different ethnic- racial backgrounds in developed countries.

This article focuses on the substantive dimensions and theoretical debates located at the intersection of research on marriage and migration. These trends of marriages are reconfiguring gender relations and power equation at both societies. Through analysis of reports, data and available literature the paper will examine nature of amplifying patriarchal control on married women through data and reports from grievances addressing mechanism set up by Government and civil societies. The paper also explores major reasons of transnational marriages and reconfiguring restrictive immigration policies that are professing major socio-psychological impact on women and families.

Key Words: Gendered, migration, transnational, Immigration, Diaspora, reunification, ethnicity.



PART VI

THEMATIC PANEL'S PAPERS

ON

HUMAN FUTURE IN DIGITAL ERA

PART VI

THEMATIC PANELS

01. CONFLICT, WAR PEACE AND SOCIAL SECURITY

0601219 MUKHERJEE, DHRITIMAN (University of Hyderabad, Hyderabad). **ANALYZING THE RATIONALE BEHIND INDIA'S NUCLEAR POLICY FROM 1947-1998: TESTING SCOTT SAGAN'S ARGUMENT OF "WHY DO STATES BUILD NUCLEAR WEAPONS?**

The rationale for nuclear proliferation and nuclear restraint varies for different nations. The conventional wisdom is that security and strategic concerns of a country is the main reason for which it decides to build nuclear weapons. On the contrary it is also found that countries choose the path of nuclear weapons proliferation even if there is a lack of security threat and sometimes countries having security concerns fail to proliferate. This proves that there are other reasons for which countries decide to proliferate. Neorealism has been used as a theoretical framework to understand nuclear proliferation decisions and nuclear deterrence, but it is academically pertinent to point out the gaps in neorealism to explain the proliferation of nuclear weapons. It is important to look into the domestic reasons of nuclear proliferation along with the exogenic structural factors of neorealism. Scholars like Scott Sagan, Itty Abraham, Jacques C. Hymans, Kanti Bajpai have discussed about the domestic compulsions of nuclear proliferation that includes the domestic political scenario of a country, leadership qualities, psychological and normative factors. Scott D. Sagan points out three reasons for nuclear proliferation- Security concerns, Domestic political-bureaucratic reasons and Normative Factors. The paper will focus on these three factors and take India as a case study.

India tested its first nuclear device in 1974 but India's nuclear history dates back to 1945, when the Tata Institute of Fundamental Research was established, and India's nuclear program started to grow under the leadership of Homi Bhabha. Bhabha was the premier scientist who spearheaded India's nuclear program till his death in 1966. He was very keen to prove to the world that Indian scientists were at par or even better than their counterparts in the Western countries and India's Prime Minister Jawaharlal Nehru kept the weapons option open if there was any nuclear threat from an adversary but morally he was in favour of nuclear disarmament. The paper will be divided into two different phases, one from 1947-1974, second 1974-1998 and my arguments will be based on Scott Sagan's paper titled 'Why Do States Build Nuclear Weapons? : Three Models in Search of a Bomb'. The paper will point out that in India how the three variables mentioned above have influenced the decision- making regarding nuclear proliferation in the two different phases.

The first part of the paper will introduce the three models given by Scott Sagan that analyzes the rationale for nuclear proliferation in a country. The next part will take India as a case study and show that in the first phase (1947-1974) India's nuclear program was guided by normative as well as security concerns and in the third part the paper will try to point out how all three reasons (domestic, normative and security) combined in the run up to the overt nuclear weapons test of India in 1998. In the concluding part the future implications for India's nuclear policy in the 21st century will be dealt with.

Keywords: Nuclear, Proliferation, Rationale Security, Domestic, Normative.

02. DEMOCRACY AND HUMAN RIGHTS

0602220 BASU, AMITAVA (Governing Council, Centre for Environmental Management & Participatory Development, New Delhi). DEMOCRACY AND HUMAN RIGHTS SUPPORT DEVELOPMENT

Development of people creates real wealth of a nation, and it lies in empowerment of citizens. Empowerment of people entails individual freedom, participation of citizens in making decision on matters that directly concern them, and protection of human rights. The Nobel Laureate, Amartya Sen, propagates in his book "Development is Freedom" that democratic governance contributes to establish individual freedom and it is ensured by strong national institutions. In year 2000, the Heads of State and Government signed the Millennium Declaration, which proclaims, "We will spare no effort to promote democracy and strengthen the rule of law, as well as respect for all internationally recognized human rights and fundamental freedoms, including the right to development."

Pursuant to the Millennium Declaration, the principles of good governance - transparency, participation, inclusion, effectiveness, and accountability – assume paramount significance. Foundation of good governance lies in building robust institutions together with developing capacity of public administration to deliver basic services effectively and efficiently and engage better with communities, supporting the right to human dignity, gender equity, and the right to have a say in decisions affecting one's life. Freedom of the media and public access to information, respect for human rights of migrants collectively facilitates inclusive, responsive, and accountable governance. Another important element is establishment and enforcement of rule of law, which creates enabling environment for sustained and inclusive economic growth, alleviation of poverty, and realization of human rights and fundamental freedoms - all of which, in turn, reinforce the rule of law. Simultaneously, expanding access to justice and mitigating corruption strengthen democratic governance. In brief, democratic governance, human rights, and sustainable development are intertwined.

To fulfill the global sustainable agenda 2030, ensuring security and human rights to individuals, effecting equity, promotion of peaceful and inclusive societies, establishment and enforcement of rule of law, provision of universal access to justice, building effective and accountable institutions, instituting participatory and representative decision-making, eliminating corruption, as encapsulated in Goal 16 of UN Sustainable Goals, could address the foundation of democratic governance, human rights and development.

The global situation today is worrisome. Violence is one of the most significant and destructive challenge to development and well-being of people. Fatalities resulting from armed conflict are rising in some parts of the world, causing mass displacement within countries and across borders, and resulting in massive humanitarian crises that adversely impact every aspect of developmental efforts. Migration is posing new challenges to human rights worldwide. Crime and gender based violence is also a global challenge. Institutional violence of unaccountable legal and judicial systems and depriving people of their human rights and fundamental freedom constitute other forms of injustice. Corruption in the developing countries cost around US $ 1.26 trillion per year, which money could have been productively used to lift many above the poverty threshold. There is widespread attack against civil society, which is a pillar of a well-functioning state.

Therefore, promotion and the protection of human rights and democracy require a constant engagement to combat tendencies that are detrimental to development.

Keywords: Democracy, Development, Governance, Human Rights, Sustainable Goals.

0602221 JENA, SAMITA (…….). DIGITAL TECHNOLOGY AND DEMOCRACY

Today world is catching up with the digitalized era in a multiplying speed, making technology the central focus of the civilization. The paper will present how the new digital era have affected the democracies all over the world. Basically, it will analyse how far digital technologies affected the objective of democratic governance which includes citizen's participation in political processes; transparency of governance; improving administrative

processes; access to government data and information; and making a platform for mass communication. World has been facing number of major challenges, ranging from increasing inequality, wars and security threats, food crisis and testing the capabilities of our planet being at its maximum point, there is this need to analyse how far this digitalisation have impacted these aspects. If the 20th century brought internet as a decentralized space, 21st century is marked by battles over the control of data; thus data localization or the collection, processing and storage of all data is gaining momentum all over the world. Securing citizens data, data privacy, data sovereignty, national security, maintaining law and order and cybercrimes are the new challenges arose with the digital development. The paper would also analyse the impact of technology in education, health sector, commercial sector, gender empowerment, financial sector and fight against crimes. Summarizing, this paper will present how far digital technologies has contributed or obstructed: government accountability and transparency, civil society's ability to fulfil socio-political watchdog's functions, citizens' participation in decision making, creating alternative mobilization structures for political participation and other socio-political aspects of this generation.

0602222 MANAZIR, SHARIQUE HASSAN AND GOVIND MADHAV (Centre for Studies in Science Policy, Jawaharlal Nehru University, New Delhi). DEEPENING OF DEMOCRACY WITH SPECIAL REFERENCE TO ICT: E-GOVERNANCE PROJECTS OF GOVERNMENT OF INDIA

This paper discusses in details about relations between technology and idea of democracy and how the advent of ICT has transformed the nature of democracy worldwide and in India specifically. Further papers tries to shed light upon how ICT is helping in facilitation of democracy in India using Palmer and Perkins Model from the perspective access to knowledge; connectivity with government; local relationships among society & lastly handling work and the transformation of traditional roles. Thus we suggest that ICT has the potential of facilitating democracy efficiently in form of people relationship to knowledge, governments, nongovernmental organizations and most importantly with their society.

0602223 PANDA, RASHA KUMARI (Berhampur University). HUMAN RIGHTS TO SPEEDY TRIAL: CRIMINAL JUSTICE

Human rights are those minimum rights which are compulsorily obtainable by every individual as he/she is a member of human family. The constitution of India also guarantees the equality of rights of men and women. The dictum justice delayed denied that an unreasonable delay in the administration of justice constitutes an unconscionable denial of justice. Speedy justice is sine qua non of criminal jurisprudence. There is no mandatory law on the intervals between actual time of committing the crime and the time for commencement or completion of the trial. Disposal of cases within a reasonable time is an essential and an integral part of fundamental right to life and liberty as enshrined in Article 21 of the constitution of India. The mounting arrears in the trial and appellate court coupled with increased institution of court cases on account of awareness of rights on the part of the citizens ,enactments of numerous laws creating new rights and obligations ,industrial development in the country increase trade and commerce and legislative and administrative measures touching the lives of citizens at all levels have assumed serious proportions .the manner of delay not only discerns justice denied but is now versioned as justice circumvented, justice mocked and the system of justice undermined.

Key word: criminal justice, fundamental Right, Human Right.

0602224 RADHIKA, E (.....). DEMOCRACY AND HUMAN RIGHTS

The Constitution of India which provided the basic structure of a nation's polity is built on the foundations of some values which are fundamental the vision of the founding father's of India and the aims and objectives which they desired to achieve through the Constitution are specified in the Preamble to the Constitution, the Fundamental Rights and the Directive Principles of State Policy these can be described as the soul of the Indian Constitution. The Constitution makes it mandatory to protect and to assure every citizen a decent standard of living and commitment to promoting the well- being of all citizens irrespective on the grounds of caste, creed, community and gender. Most of the Fundamental Rights provided in the Indian Constitution are based on the human rights mentioned in the Universal Declaration of Human Rights. The rights and freedoms in Socialist Society are legal ties between the State

and citizen. In our country a large number of men, women and children are living a sub-human existence in conditions of subject poverty; utter grinding poverty has broken their back and sapped their moral fibre. The Fundamental Rights for them have no meaning unless their basic needs like-food, drinking water, timely medical facilities and relief from diseases and disaster are met. The most important of the citizens right is to material well being, the conditions for which have to be provided by the State and Society. Indian Democracy will continue to guide the progress of a nation to a position of strength in global arena and in delivering an inclusive society.

0602225 RAI, SHIVANI (Department of African studies , Faculty of social science, University of Delhi, Delhi-110007). DEMOCRACY AND HUMAN RIGHTS: SOUTH AFRICA A PIONEER IN NEW ERA OF DEMOCRATIC AFRICAN WORLD

In modern times, democracy has established itself as the best governance system. Although the marks of democracy are found in the ancient society, it was fully recognized in the early 19th century. Today almost every nation in the world has either done its own democratic rule or is on the move. From all the big thinkers to politicians and the masses, this is considered to be the supreme rule. Democracy boasts many words within inside. In this one word is human rights. Human rights and democracy, both of these seem to have two aspects of a coin, because a long saga of struggle for human rights is hidden behind the establishment of democracy, and on the other hand the biggest supporters of those who demand human rights there is democracy. We can say that these two look weak without each other. If the core values of democracy are talked about, human dignity, their will, desires and even more human rights have to give a strong voice and to establish them. If talk of modern nations, then many nations is giving their support to the creation of a new world by achieving independence, and on the other side of the world, it still remains untouched by it. One such part is the African continent; its nation is still struggling for democracy, human dignity, human rights, independent life.

The African nation is still facing disorderly political-economic rule. Democracy and its essence is still a dream for them today. However, a nation of African continent, South Africa, today has become a role model for African nations, by fighting against a long political-cultural, racial, and economic inequality. This paper will discuss about the history of democracy and human rights as well as keep in mind how South Africa struggled in the opposite conditions and brought the nation into a new world with the values of democracy. Democracy is still a golden dream for the African world's nations, and how much South Africa is playing a significant role in fulfilling of that dream. This paper will also discuss how South Africa, did established ourselves as a pioneer in new era of the African world.

The paper has consisted in five parts the very first we will talk about democracy and human rights; then second part is about south Africa and his long walk for democracy and human rights; third part it will be about African continent and their challenges for democracy. The fourth part is about what South Africa did for African world and what he will have to do for African continent. Last but not the least is conclusion and suggestions. The methodology will be use for this paper is based on secondary data.

Keywords: democracy, human rights, South Africa, Africa, development, human dignity, good governance, politics, racial-discrimination.

0602226 RAVINDRANATH, J (Department of English, GVPCE (A), Visakhapatnam-48). IS TECHNOLOGY A MEANS OF DEMOCRATIC FREEDOM OR CONFORMISM?

At present technology has been playing the role of Frankenstein's monster ready to annihilate its creator, human being. If necessity is mother of invention, the technological invention has become self-perpetuating phenomenon unmindful of its consequences. Rajni Kothari says, "The very instruments of domination and control that modern man has perfected vis-a –vis his environment have taken on a Frankenstinian quality and made him a prisoner of his own achievements. Science and industry –the presumed agents of human liberation –have been transformed from being the means to self-realization, to being ends in themselves". (*Rethinking Democracy* 21) As Marx has written in his Communist manifesto, Capitalism can't survive without continuous technological revolution. The polarization between abundant wealth on one side and the utter destitution on the other side has

become a stark truth. The scale of production has grown huge without any corresponding change in relations of Production. Socialism in the former Soviet union and East European countries collapsed due to the conflict between the two paths-- primacy of class war Vs primacy of technology to enhance production. Abundant production has become a reality in many advanced capitalist countries but globally the contradiction between the advanced and developing countries hasn't vanished materially and digitally.

Technology has increased literacy, education, health care, life span, democracy and at the same time caused political gullibility, misinformation and disinformation , damage to health and environment and distortion of democracy. Manipulation through digital media has raised the concerns of political parties as shown in case of last American elections and the recent concerns of Indian politicians regarding Cambridge Analytica. Al Gore, the former vice-president of the USA refers to 'amygdala politics'. In the present day world of conflicts "if the consent of the governed is extorted through the manipulation of mass fears, or embezzled with claims of divine guidance, democracy is impoverished." (*The Assault on Reason* 73)

Technologism has come to be seen as the panacea for all social and political ills. The issue of cultural change has been relegated to the background. Technology has erased boundaries among nations but increased alienation in humans, thanks to smart phones and Face book. Technology has been in favour of migration to the Mars in the eventuality of total extinction of mankind but is not in a position to bring in social and political justice. In the words of Simon Blackburn, "unbridled capitalism leads to poor or non-existent social provision internally, colonialism and imperialism abroad, and competition between the industrialized nations turning to militaristic expansion and aggressive arms races". (*Plato's Republic* 34).

My paper focuses on how the responsibility for the present chaotic state rests mainly not on the majority of people who have less say in policy matters but on the elite of the rich and developing nations implementing technological model of development and thought policing. The people have to understand the negative impact of the surveillance state as the dystopian vision of Orwell's 1984 and Aldous Huxley in his Brave New World has become a glaring truth. My paper also points out how an individual's freedom is inalienable in the name of collective entity such as religion or party or nation and the urgent need for eco-friendly policies and spiritual values.

Key words: technology, digital, capitalism, alienation, environment)

03. ECOLOGICAL AND ENVIRONMENTAL PROTECTION MOVEMENTS

0603227 DUBEY, N K (Department of Botany, Banaras Hindu University, Varanasi-221005). A BRIEF HISTORY OF ENVIRONMENTAL MOVEMENTS IN INDIA

Environmentalism or environmental rights is a broad philosophy, ideology, and social movement regarding concerns for environmental protection and improvement of the health of the environment, particularly as the measure for this health seeks to incorporate the impact of changes to the environment on humans and animals. The environmental movements are conceived as broad networks of people and organizations engaged in collective action in the pursuit of environmental benefits.

The environmental movement is broad in scope and can include any topic related to the environment, conservation, and biology, as well as preservation of landscapes, flora, and fauna for a variety of purposes and uses Environmentalism seeks to protect and conserve the elements of earth's ecosystem, including water, air, land, animals, and plants, along with entire habitats such as rainforests, deserts and oceans.

India has the heritage of ecological consciousness endowed and endeared by its religion and culture. Indian experience with the environmental issues, specially environmental degradation and therefore, the political experience is marked by the emergence of the environmental social movement. The environmental degradation in India gained momentum with the exploitation of natural resources by the colonial rulers. The genesis of concern for environmental protection in India can be traced back to the early twentieth century when people protested against the commercialization of forest resources during the British colonial period. Some of popular environmental movements in India are elaborated below: Bishnoi Movement (this was begun in 400 years ago by a Sage known as Sombaji),the Chipko Movement ,Narmada Bachao Andolan,Appiko Movement,Silent Valley Movement,Tehri Dam Conflict,Save Ganga Movement.

Save Silent Valley was a social movement aimed at the protection of Silent Valley, an evergreen tropical forest in the Palakkad district of Kerala, India. It was started in 1973 to save the Silent Valley Reserve Forest from being flooded by a hydroelectric project. The Silent Valley Movement is one of the most important ecological movements in India. Silent valley has become a landmark in the ecological movements where a third world group of conservationists prevented the state government from destroying a valuable rainforest. The central issues of the Silent Valley protests comprised the protection of the tropical rainforest, maintenance of the ecological balance, and an opposition to destructive development.

Bishnoi Movement begun in 400 years ago by a Sage known as Sombaji. At a age of 34, Jambho ji founded Bishnoi religion. The Bishnois narrate the story ofAmrita Devi, a Bishnoi woman who, along with more than 363 other Bishnois, died saving the Khejari trees The name of the town is derived from Khejri (*Prosopis cineraria*) trees that were once abundant in the village. In this village 363 Bishnois sacrificed their lives while protecting green Khejri that are considered sacred by the community. The incident was a forebear of the 20th-century Chipko

The Chipko movement or Chipko Andolan is a movement that practiced the Gandhian methods of satyagraha and non-violent resistance. Chipko movement, also called Chipko andolan, nonviolent social and ecological movement by rural villagers, particularly women, in India in the 1970s, aimed at protecting trees and forests slated for government-backed logging .This is mainly done through the act of hugging trees to protect them from being cut down. This was first started by Amrita Devi while protesting against a King's men to cut the tree. Chipko Movement started in April 1973 in Uttar Pradesh's Mandal village in the upper Alakananda valley. Soon it spread to other Himalayan districts of the state.Mr Sunderlal Bahuguna, a noted environmentalist who initiated the Chipko Movement, was born on January 9, 1927. The man who has been fighting for the preservation of forests in the Himalayas celebrates his 90th birthday today. The idea of chipko movement was of his wife and the action was taken by him. Bahuguna is also known for coining the Chipko slogan ecology is permanent Chipko, a Hindi word meaning "hugging", is used to describe the movement because local village women literally "hugged" trees, interposing their bodies between the trees and the loggers to prevent their being cut down. Dhoom Singh Negi,

Bachni Devi and many other village women, were the first to save trees by hugging them. They coined the slogan: 'What do the forests bear? Soil, water and pure air'. (i) The Chipko movement quickly spread across communities and media, and forced the government, to whom the forest belongs, to rethink their priorities in the use of forest produce. (ii) Due to the participation of local people, it led to the efficient management of forests. Success of the Chipko movement in the hills saved thousands of trees from being felled. The importance of chipko movement in conservation of forest helps to protect and manage the forest, this movement therefore has awaken people to the importance of conserving trees as it helps the ecosystem of a nation to function properly and also it aid the livelihood of people to live healthily and have a prosperous

Narmada Bachao Andolan, with its leading spokespersons Medha Patkar and Baba Amte, have received the Right Livelihood Award in 1991 The Narmada is the largest west-flowing river on the Indian peninsula…The Narmada winds its 1,312 km long course to the Arabian Sea through lovely forested hills, rich agricultural plains and narrow rocky gorges in a series of falls

V.D. Saklani, lawyer and founder of the Anti-Tehri Dam Struggle Committee, was quick to point out the consequences associated to the large project. Environmental activist Sunderlal Bahuguna led the Anti-Tehri Dam movement from 1980s till 2004.

Chilika Bachao Andolan is one of the most discussed environmental movements in India. The movement began as a grassroots movement and in the subsequent years it evolved into an organized mass movement. Although the movement has achieved the initial objective of preventing the entry of big business houses like the Tatas into the commercial aquaculture of prawns, thereby threatening the livelihood of the poor; yet the movement continues with greater environmental and ecological objectives. It has been a movement that has 106 attracted a wide academic interest, a movement that highlighted the importance of local communities in the protection and preservation of the natural environment.

One of the most protracted environmental movements in the recent years is the movement against the Tehri Dam. The 260.5 meter high Tehri Dam on the Bhagirathi in the Garhwal-Himalayas .The major objections include, seismic sensitivity of the region, submergence of forest areas along with Tehri town. Despite the support from other prominent leaders like Sunderlal Bahuguna, the movement has failed to gather enough popular support at national as well as international levels and the government is determined to complete the project.

River Ganges is the largest and the most sacred river of India with enormous spiritual, cultural, and physical influence. Countless tanneries, chemical plants, textile mills, distilleries, slaughterhouses, and hospitals contribute to the pollution of the river Ganges by dumping untreated toxic and non-biodegradable waste into it. Noted environmental activist, Prof. G. D. Agrawal sat for fast unto death on twice in 2008 and 2009 to protest the building of dams in the Upper course of Ganges. On both occasions, Dr. Agrawal was successful in stopping thermal damming construction in this sensitive and sacred region of India. Agrawal died on *11 October 2018*, after fasting since 22 June 2018, demanding the government act on its promises to clean and save the Ganga.Sankat Mochan Foundation, Varanasi, is a non-governmental organization devoted to cleaning the pollution of the Ganges and protecting the Ganges river in India. Sankat Mochan Foundation was founded in 1982 as a non-profit, non-political organization under the "Societies Act" of the Government of India by Late Prof V. B. Mishra. The vision of Sankat Mochan Foundation is to restore the Ganges by alleviating its fast deteriorating environmental conditions, promote education and health care programs for the less privileged and to maintain and encourage the age-old cultural traditions of Varanasi, in tune with its current environmental needs.

The most significant feature of environmental movements in India is that, there is involvement of local voluntary organizations or Non-Governmental Organizations (NGOs) in these movements.

0603228 GUPTA, AKHIL KUMAR (Department of History, Dr. Hari Singh Gaur University, Sagar, M.P.).

भारत में पर्यावरण संरक्षण आन्दोलन का विकास

आज विश्व पटल पर सबसे ज्यादा पर्यावरणीय मुद्दों पर चर्चा होती है। ऐसा इसलिए नहीं है कि नागरिक समाज में इस विषय पर चेतना का प्रसार अधिक है बल्कि विकास की अंध दौड़ में मानव अस्तित्व ही संकट में है। समय की जरूरत को ध्यान में रखते हुए मानवीय जीवन को बचाएं रखने के लिए पर्यावरण का संरक्षण बहुत जरूरी है। ब्रिटिशकालीन भारत में साम्राज्यवादी उद्देश्यों की पूर्ति करने के लिए प्राकृतिक संसाधनों का जिस गति से दोहन किया गया उसका असर हमें स्वतंत्रोत्तर भारत के पारिस्थितिकी विषमताओं तथा परिवर्तन में देखने को मिला। आजादी बाद एक नए भारत के पुनर्निर्माण के लिए यह आवश्यक था कि मूलभूत संरचनात्मक ढ़ाँचे का विकास किया जाए। विकास की इस गति ने उन देशज समुदायों के साथ–साथ प्रत्येक उस व्यक्ति पर असर डाला जो स्वच्छ वायु तथा जल के लिए प्राकृतिक अधिकार की मांग करता है। महात्मा गांधी ने इस बात पर जोर दिया कि हमारी जीवन शैली ऐसी होनी चाहिए कि उसमें संसाधनों का बहुत ज्यादा दोहन न हो। रवीन्द्रनाथ टैगोर ने कहा कि प्रकृति के साथ संसंगत तरीके से जीवन जीने के लिए यह जरूरी है कि ग्रामीण कुटीर उद्योगों (दस्तकारी) को अपनाए जाए।

स्वतंत्रता बाद भारत में विकास के नवस्थापित आयामों ने देशज समुदायों को सबसे ज्यादा प्रभावित किया क्योंकि सीधे तौर पर वह प्रकृति पर ही निर्भर थे। हिमालय के पश्चिमी भाग में गांव के लोगों ने जंगलों पर ठेकेदारों के अधिकारों पर सवाल उठाया क्योंकि यह जंगल ही उनके जीवन का आधार थे। झारखंड क्षेत्र में भी मुनाफा और जीविका के बीच टकराव हुआ, यहां आदिवासियों ने साल और सागौन के पेड़ को वरीयता दी। इसी प्रकार पश्चिमी घाट पर भी गोवा में जौरी, चालियार नदी के किनारे बसे मावूर और केरल में औद्योगिक प्रदूषण के खिलाफ बहुत ज्यादा आंदोलन हुए। 1970 के दशक से बड़े बाँधों की प्रासंगिकता और इनके कारण जंगली क्षेत्रों के पानी में डूब जाने का मसला भी प्रमुखता से उभर कर सामने आया। साइलेंट वैली केरल, तमिलनाडु में मोयर में विरोध के कारण बांध बनाने की योजना को छोड़ दिया गया। 1980 के दशक की शुरूआत में विकास का एक ऐसा मॉडल पेश करने की कोशिश की गई जिसमे इकोलॉजी और समानता दोनों को ही समान महत्व दिया गया। चिपको, नर्मदा बचाओ, भोपाल त्रासदी तथा जल, संसाधनों और जमीन से जुड़े मुद्दों ने समकालीन भारत में पर्यावरण संरक्षण के विषय पर लोगों का ध्यान आकर्षित कर यह बताने का सफल प्रयास किया कि प्रकृति के संरक्षण के बिना मनुष्य का जीवन सुरक्षित नहीं है। प्रकृति पर अपनी गतिविधियों के असर को कम करने के लिए हमें केवल भविष्य की चिन्ता नहीं करना होगा बल्कि अपने अतीत से भी सबक लेना चाहिए। विष्व के पारिस्थितिकीय इतिहास से सीख लेते हुए हम भारत के एक नए व बेहतर भविष्य का निर्माण कर सकते है। स्वस्थ्य मनुष्य के अस्तित्व के लिए बेहतर पर्यावरण संरक्षण की योजना बहुत जरूरी है क्योंकि हमारा आज ही कल का भविष्य तय करेगा।

04. ETHICS OF SCIENCE AND SOCIETY

0604229 JAGANNATHA, V; JAGANNATH, SHOBHA J; SAHANA, J SPANDANA AND SADHANA, J (Panya Sadana"173, 3rd A Main, D Block, 3rd Stage , Vijaya Nagar, Mysuru 570 030) **LIVING THROUGH DIGITAL ERA**

Individual and Community empowering by cost neutral informal education is a certain way out of modern society digital gauntlet's. These man made blunders of mountains are made on plain ground by technological prowess away from ethical dimensions of science. Over 2000 nuclear explosions and quadrupled climate change induced disasters during 1900 to 2000 are evidences of arrogance of few modern BHASMASURAS. Thus, living through synergetic tunnels of socio-cultural innovations through these mountains are necessary and are available.

A review of the scientific Philosophical perspectives major developments during 600 BC to 2000 AD reveal incremental struggle of evolving logical strength of quests which are nothing but urges for future. Further, sustained efforts in harnessing natural forces, Digital era as a tool for human evolution has been a reality. While a opportunistic entrepreneur mind set gets victimized with amassing wealth for wealth. An adventurer conscience sustains space explorations. This is as evident in the 21st Century.

A significant development in the evolution of human societies is emergence of United Nations. The first unique developments in empowering individual and communities are the promulgations of objectives of Environmental Education popularly cited as UNESCO/UNEP/IEEP/Tbilisi 1977. While UN charter facilitated evolution of a formal governance amongst member states for managing finite life supports on our only home the Earth. These tunnel effect options are available amongst the people science and popular community empowering movements all over the globe. In this paper few best practices of space and digital technology affecting community life style of developing nations are reported. An attempt is made to capture good digital technology practices of resource management, and environmental data bases. The unprecedented abuse of finite wealth in the form of drug trafficking, arms race channeling the very humane fabric is discussed. A specific vision agenda and time bound outreach activity plan for individuals and community level is felt as a historical necessity. Enormous deluge of information need to be assorted and communicated through formal and informal educational opportunities to indiduals and community. In this paper, three zero cost eco education models developed over three decades based on the objectives of UNESCO/UNEP/IEEP are reported. In the end, the truth full fact of Science being self-correcting, while technology does not possess internal control is reminded. Thus, " the art and science of Living through" the digital gauntlet's by individuals and community are sustainable.

0604230 MALLICK, PRIYADARSHINI; MISRA, JAYDEV AND DAS, PRITHVIJOY (Department of Microbiology, Asutosh College, Kolkata, West Bengal). **RIGHTS OF BABY MAKING – INTELLECTUAL PROPERTY OR ETHICAL COMPLICATIONS?**

Over centuries since God's injunction, children have been born by natural means. However, among the estimated millions of couples of child bearing age who live in this country, a significant percentage of them are involuntarily infertile. To these couples, in-vitro fertilization (IVF) offers new promises. This promise does not come without criticism. The fact that many infertile couples are willing to spend good amount of money and risk their mental and physical situation for IVF rather than adopt a child, suggests a strong emotional need dwelling in our society for biological offspring. Unlike in vitro fertilization, IVF requires the intervention of a medical team. This begins with taking the history of the couple, followed by physical and laboratory examinations that includes test for sperm count of the male partner and a pelvic examination, cervical culturing and staining of cervical secretions for the presence of Chlamydia for the female partner, etc. After these, fertility drugs are administered to the women to stimulate her ovarian follicles to produce as many healthy eggs as possible. Each harvested egg has 60 to 70 percent chance of being fertilized. Once cleavage occurs, the pre-embryos are transferred to the women's uterus. Sperm of poor quality reduces the chances for a couple to have sufficient embryos available for assisted fertilization. This problem has been addressed intra-cytoplasmic sperm injection when single captured sperm is injected directly into the egg.

Against these backgrounds, four ethical problems are involved with IVF:

1) The relationship of the physician and the infertile couple to the pre-embryo;
2) The relationship of the physician to the infertile couple and the affected offspring;
3) The relationship of the infertile couple to the expected offspring; and
4) The relationship of the physician and the infertile couple to the general community.

There are numerous problems concerning the implementation of IVF including whether there is a right to this technology, whether such access should be funded by health insurance, and whether access should be limited to women of a specified age group. The problems take on meaning and importance if IVF is perceived to be sanctioned ethically. This paper is an effort to demonstrate that whether the pre-embryo, the infertile couple or the community is partially wronged by the use of IVF since it poses adequate amount of evidences of violations of Bioethics and considerable amount of questions are left to be addressed by the basics of Intellectual Property Rights.

Keywords: in-vitro fertilization, in-vivo fertilization, infertile couple, pre-embryo, bioethics

0604231 SEN, NANDINI (……..). DIGITALISATION AND EVERYDAY LIFE: QUEST FOR A SUSTAINABLE FUTURE

Globally, technological changes will drive far reaching economic and social changes in the future. The pace of such technological changes will be much faster than ever before. The purpose of this paper is to deliberate on the quality, changes and content of human life and living in the coming decades which is increasingly dominated by the world digitalisation.

This paper dwells on digitalisation as an everyday phenomenon in the life of an ordinary citizen. It begins with a birds's eye view of such lived experiences and, identifies fears and insecurities arising thereof. Building a common human future within this eco-system calls for crafting a highly adaptive Rapid Learning System that forms empowered learners across time and space. Sustainability of such a society will depend on sustaining individual commitment and innovation and a discerning leadership to manoeuvre through the resulting conflicts and promote a culture of plurality.

05. GLOBAL WARMING AND CLIMATE CHANGE

0605232 GOYAL, R S (81, Engineers Enclave, GMS Road Dehradun 248 001, Uttarakhand).WHETHER THE CLIMATE CHANGE AND ENVIRONMENTAL CONDITIONS OF LIVING NEGATE THE IMPACT OF SOCIO-ECONOMIC DEVELOPMENT ON HEALTH OUTCOMES OF URBAN POOR?

It has been noted that adverse affects of climate are particularly large on those segments of populations where current burden of climate-sensitive diseases is high. One such category is urban poor, their health indicators like, morbidity (due to communicable as well non-communicable diseases) and child death rate are higher than other sections of population living in different environment -in non-poor localities. It is argued that in urban poor localities socio-economic and healthcare development programs may have limited impact on health outcomes. Why? Is it because living environment is quite degraded (inputs are rendered ineffective) or the interventions are not penetrating or accessed by all people to realize any measurable outcome?

This paper examines this phenomenon by taking India as a case. It compares health outcomes for urban poor and non-poor in contemporary communities against socio-economic and healthcare developments, over a period of one decade. It also seeks to answer why development interventions are relatively less effective in case of urban poor, whereas it should have been other way around because urban poor have more intense poverty conditions and even small inputs would have made a difference.

Analysis is based on data drawn from two large nationwide surveys (NFHS II and III) carried out in 1998-99 and 2005-06 segregated for urban poor (and non-poor) using wealth index (a composite index reflecting on quality of life and possession of household goods).

A multiple correlation analysis between socio-economic development and healthcare inputs and, health outcomes portrays a mixed pattern. Broadly, development inputs had a positive impact on neo-natal mortality level only. At micro level, access to flush toilet was positively associated with malnutrition and morbidity among children (health outcome indicators).

That environmental conditions of living negate the development efforts to improve the health outcomes for urban poor was very evident in results.

0605233 HAQUE, M A (Ministry of Environment, Forest & Climate Change, Govt. of India) PREPARING INDIAN AGRICULTURE FOR IMPENDING CLIMATE CHANGE

Climate Change is emerging as a major threat to Agriculture and Food Security, especially for a country like India where great deal of agricultural production depends on availability of natural water falling in the form of precipitation during monsoon and then remaining available in long term. However, Climate Change is affecting rainfall pattern, affecting water availability, causing more floods, leading to melting of glaciers and ice, sea level rise etc. Such changes bring innumerable threats, one of them is to agriculture. In India rain fed agriculture accounts for high percentage of agricultural production and it will be affected much more due to Climate Change. In India wheat contributes more than 35% of the total grain produced. Climate Change can reduce production by 6 to 23% by the year 2050 and by 10 to 40% by the end of the current century. Temperature rise will affect rice production as well. Eastern India is expected to be impacted maximum. With reduced sunlight and higher temperature, the number of grains per plant will reduce and the grains will be unhealthy. Rice plants become sterile and without grains if exposed to 35C or above for more than an hour during the flowering season. The International Rice Research Institute concluded that on the whole there will be about 20% reduction in rice yield for every 1C rise in temperature.

We need to enhance storage capacity for the precipitation water received during monsoon season, which extends to only about three months. During the rest of the year India receives very little rain. Parallel to that we need to make our Agriculture to become resilient to Climate Change or Global Warming. There are certain crops which

have been known to Indian farmers for centuries and they have the advantage that they are drought resistant, need less water to grow, and are less affected due to rise in ambient temperature. Even under adverse circumstances they can give sufficient production. We need to 'Reinvent the Wheel' in proverbial sense. We need to utilize those crops to the maximum extent to sustain our agricultural production, for food security and to make it Climate Change resilient.

This paper will discuss few of those crops, advantages associated with them with respect to their Drought and High Temperature resilience. In addition the paper will also discuss some less known Health Advantages with food obtained from those crops.

0605234 JAISWAL, ASHA AND KUMAR, ANIMESH (Department of Hindi, GB College, Navgachiya). मानवीय मूल्यों के संरक्षण में पत्रकारिता की महती भूमिका : एक समीक्षा

मानव–समाज की सांस्कृतिक, साहित्यिक, धार्मिक, आध्यात्मिक, राजनीतिक, आर्थिक, व्यापारिक, भौतिक, नैतिक, मूल्यगत उपलब्धियों के विवरण–विश्लेषण, मूल्यांकन और प्रस्तुतीकरण का माध्यम है पत्रकारिता। सूचना प्रदान करना, सत्य को उद्घाटित करना, जनता को शिक्षित करना, मूल्यों की प्रतिष्ठा करना ही इसका परम लक्ष्य है। यह जन–मानस को जागृत और शिक्षित करती है। तिलक के अनुसार–पत्रकारिता का उद्देश्य जनता को शिक्षित करना है। इसलिए उन्होंने पत्रकारिता को स्वार्थसिद्धि का साधन न मानकर, उसे आम जनता के लिए राष्ट्रीय हितों की पूर्ति के साधन के रूप में माना है। पत्रकारिता के उद्देश्यों के बारे में राष्ट्रपिता महात्मा गाँधी जी का विचार है कि "पत्रकारिता का पहला उद्देश्य जनता की इच्छाओं और विचारों को समझना तथा उन्हें व्यक्त करना है। दूसरा उद्देश्य जनता में वांछनीय भावनाओं को जागृत करना तथा तीसरा उद्देश्य सार्वजनिक दोषों को निर्भीकतापूर्वक प्रकट करना है।" ज्ञान और विचारों को समीक्षात्मक टिप्पणियों के साथ शब्द, ध्वनि तथा चित्रों के माध्यम से जन–जन तक पहुँचाना ही पत्रकारिता है।

मानवीय गुणों के विकास में पत्रकारिता का अनुपम योगदान है। यह वर्तमान संग की मार्ग–निर्देषिका और मानवीय अस्मिता का सशक्त सम्प्रेषण माध्यम है। आज यह शासन और जनता के बीच सेतु का कार्य भी सम्पन्न करता है। इसकी उपयोगिता और महत्ता सार्वदेशिक एवं शाश्वत है; अतः इसे लोकतंत्र का चतुर्थ स्तम्भ कहा जाता है। स्थूल रूप में पत्रकारिता का उद्देय खबरों, घटनाओं को एकत्रित करना, इनका विवेचन करना, उनका विवरण इकट्ठा करना और उन्हें समाचार–पत्र के माध्यम से लोगों तक प्रसारित करना है। यह समाज की कमियों, खामियों और गलतियों को उजागर करता है और लोगों तक पहुँचाता है। इससे गलत काम करने वालों में पत्रकारिता का भय फैलता है कि वे इस तरह के काम न करें। पत्रकारिता का उद्देष्य समाज कल्याण ही है, जो समाज की विकृतियों को उजागार करके उन्हें दूर करने का प्रयास करती है और सुधारों को सामने लाकर उन्हें विकसित करने का प्रयास करती है। वस्तुतः पत्रकारिता का मूल उद्देष्य अन्यायों और बेईमानी का उद्घाटन कर, दोषों, कमियों, खामियों को उजागर करना, सलाह मशविरा देना और असहाय की सहायता करना और लोगों का मार्गदर्शन करना।

वास्तव में पत्रकारिता जनता के समक्ष उपस्थित समस्याओं के निराकरण की प्रेरणा देती है और इस क्रम में अनेक विकल्प प्रस्तुत करके उनके चयन हेतु जनता को उचित वातावरण प्रदान करती है। आज पत्रकारिता का महत्व इसलिए बढ़ गया है क्योंकि वह जनता तक सुलभ है। पारिवारिक मूल्यों का मूल्यांकन–पुनर्मूल्यांकन का माध्यम भी पत्रकारिता है। विषम सामाजिक स्थितियों का सूक्ष्म निरूपण और प्रस्तुतीकरण पत्र–पत्रिकाओं में ही समय–समय पर होता है। बदलते परिवेश में मानव सम्बन्धों की जटिलताओं के कारणों, प्रतिक्रियाओं और परिणामों को विश्लेषित करने की दृष्टि से भी पत्रकारिता की महत्ता है। घटना–परिघटनाओं का लेखा–जोखा प्रस्तुत कर पत्रकारिता समाज का मार्गदर्शन करती है। पत्रकारिता ही जीवन को पूर्ण बनाने के कार्य को संपादित करती है। यह लोक–संस्कृति, मूल्य–शिक्षा का सफल माध्यम भी है। महादेवी वर्मा के अनुसार पत्रकारिता एक रचनाशील विधा है। इसके बगैर समाज को बदलना असंभव है। अतः पत्रकारों को अपने दायित्व और कर्तव्यों का निर्वाह निष्ठापूर्वक करना चाहिए क्योंकि उन्हीं के पैरों के छालों से इतिहास लिखा जायेगा।

0605235 KANNAN, S (Department of Environmental Studies, School of Energy, Environment and Natural Resources, Madurai Kamaraj University, Madurai 625 021,Tamil Nadu). GLOBAL WARMING AND MALARIA

Vectors are living organisms that can transmit infectious diseases between humans or from animals to humans. Many of these vectors are blood-sucking insects. They ingest disease-producing micro organisms during sucking of blood meal from an infected host (human or animal) and later inject them into a new host during feeding their next blood meal. Mosquitoes are best known disease causing vectors compared with certain other vectors such as ticks, flies, sand flies, fleas, bugs and freshwater snails. Common vector borne diseases in India are Malaria, Dengue, Chikungunya, Filariasis, Japanese Encephalitis which are caused mainly due to mosquito bite.

The distribution of vector borne diseases are greatly influenced by climate change. Although, arthropods are cold blooded which can regulate their internal temperature by changing their behaviour. But they cannot do physiologically and hence they critically depend on climate for their survival and development. The temporal and spatial change in temperature, precipitation and humidity which occur at different climate change scenarios which will definitely affect the biology and ecology of vectors and intermediate hosts. This consequently increases the risk of vector borne diseases. Most of the mosquito species are sensitive to temperature changes because their immature stages mostly occur in the aquatic environment. If water temperature rises, the larvae takes shorter time to mature and produce more offsprings which increase disease transmission.(e.g) The short term increase in temperature and rainfall in 1997-1998 EL Nino cause *Plasmodium falciparum* malaria epidemics and Rift valley fever in Kenya. It is estimated that the average global temperature will be risen by 1.0^0C – 3.5^0C increasing the likelihood of many vector borne diseases in new areas. In earlier, vector borne diseases are confined to distinct geographical areas such as tropical and sub-tropical regions but now their incidence spread to new areas of the world due to climate change, rapid unplanned urbanization, phenomenal increase in international travel and trade, deforestation and massive population movements.

Important determinants of vector borne disease transmission include:
(i) vector survival and reproduction,
(ii) the vector's biting rate, and
(iii) the pathogen's incubation rate within the vector organism.

Vectors, pathogens and hosts each survive and reproduce within a range of optimal climatic conditions: temperature and precipitation are the most important, while sea level elevation, wind, and daylight duration are also important.

Human exposure to waterborne infections occurs by contact with contaminated drinking water, recreational water, or food. This may result from human actions, such as improper disposal of sewage wastes, or be due to weather events. Rainfall can influence the transport and dissemination of infectious agents, while temperature affects their growth and survival.

Observed and predicted climate/infectious disease links

There are three categories of research into the linkages between climatic conditions and infectious disease transmission.

1 The first examines evidence from the recent past of associations between climate variability and infectious disease occurrence.
2. Second looks at early indicators of already-emerging infectious disease impacts of long-term climate change.
3. The third uses the above evidence to create predictive models to estimate the future burden of infectious disease under projected climate change scenarios.

In 2018, WHO will hold the Third Global Conference on Climate and Health. Taking an innovative, geographically dispersed approach, the Conference will be held in three locations, in the Pacific (Nadi, Fiji; 15-16 March), the Indian Ocean (St Louis, Mauritius; 21-22 March), and the Caribbean (Grenada; October 2018), and will be accompanied by a webinar organized in partnership with Health Canada (29March).

Together, the meetings will bring together Government representatives from over 40 of the most vulnerable countries and territories in the world, with WHO, other UN partners and technical experts to advance global action on climate change and health.

Objective of the conference

The objective of these three workshops is to develop, in consultation with Member States and other key stakeholders, a draft action plan for the SIDS Initiative with the following areas of action:

1. **Empowerment** - supporting health leadership in island countries to integrate health into national climate change planning and engage in international climate change negotiations;
2. **Evidence** - producing country profiles of climate change and health, describing vulnerabilities and adaptation options (e.g. morbidity and mortality attributed to unsafe water, unsafe sanitation and lack of hygiene, malnutrition, disasters);
3. **Implementation** - building climate-resilient health systems, including the strengthening of governance and policy, integration of climate early warning systems with health information systems, preventive and curative service delivery, and disaster-proof and smart health-care facilities; and
4. **Resources** - facilitating access to climate and health financing mechanisms such as the Green Climate Fund and the Global Environment Facility to support climate resilient health systems of island countries.

The Paris agreement on interconnection of Climate change and Public Health

The Paris Agreement, adopted on 12 December 2015, marks the beginning of a new era in the global response to climate change. The world now has a global climate agreement - that will have a major public health policy impact as countries take action. As stated in the agreement, "the right to health", will be central to the actions taken.

The Agreement not only sets ambitious aims to curb greenhouse gas emissions to keep global warming well below 2°C, it also commits countries to strengthen adaptation. This includes implementing plans that should protect human health from the worst impacts of climate change, such as air pollution, heat waves, floods and droughts, and the ongoing degradation of water resources and food security. It commits countries to finance clean and resilient futures in the most vulnerable countries.

Through monitoring and revision of national contributions every five years, the world will begin to see improvements not only in the environment, but also in health, including reductions in the more than 6.5 million deaths worldwide that are attributed to air pollution every year.

In 2017, Fiji became the first small island developing country to hold the Presidency of the Conference of Parties to the UN Framework Convention on Climate Change (COP-23), focusing the world's attention on those most vulnerable to climate risks, and particularly those living in island nations. WHO, in partnership with the Fijian Presidency and the UNFCCC Secretariat, jointly launched a special initiative on climate change and health in small island developing States, as one of the main outcomes of COP-23. WHO has therefore focused the Third Global Conference on Health and Climate specifically on developing an ambitious action plan to implement the initiative, to protect and promote the health of some of the most vulnerable populations in the world.

Antimalarial compounds:

Two of the current options for reducing the morbidity and mortality to malaria are chemoprophylaxis and chemotherapy. Recent studies reported that anti-malarial effect of a series of dicatecholate iron chelators were identified and demonstrated a potent antimalarial effect of FR160 on five different strains of *Plasmodium falciparum* in vitro. This drug was more effective at the late trophozoite and young schizont stages.

The production of Vaccine against these parasitic diseases might be the permanent solution for the Diseases especially Malaria. The challenges to the scientific communities are properly identifying the parasitic antigens, selection of adjuvants, molecular characterization of cell membranes of various stages in life cycle of parasite, Selecting the suitable host for vaccine production.

0605236 KUMAR, MURALI, (.....). A CHALLENGE OF WATER CRISIS IN INDIA

Water is very essential for the survival of living beings .Therefore, water is key for lives. 71% of earth's surface is covered by water bodies. 96.5% of water is present in seas and oceans.2.5% of total water is in fresh water form, which is useful for us in various purposes.

A water crisis can be understood through the true paradox "water, water everywhere but not a drop to drink." It is a situation when the supply of water is less than the demand because of non availability of water or mismanagement of water resources. Israel have only 25 cm rainfall per year but have no scarcity where India have got 114 cm rainfall per year but suffering from scarcity of water, due to still not ready to accept the seriousness of the water problem in the country and the failure of the government machinery to implement an efficient process for the management and utilization of potable as well as ground water. These challenges of water crisis induce due to global warming, mismanagement of water harvesting, faulty farming practices and so many. To cope this challenge effective measure should be taken.

Key words: water, crisis, challenges, effective measure

0605237 KUMARI, SMITA (Department of Sociology, T M Bhagalpur University, Bihar). महिला हिंसा के नियंत्रण में महिला पुलिस की भागीदारी

19वीं शताब्दी के दूसरे–तीसरे दशक में भारतीय महिला के इतिहास में नये युग का प्रारंभ हुआ। देष में सुधारवादी आन्दोलन हुए जिन कारण अंग्रेजी सरकार द्वारा महिलाओं को हिंसा से मुक्त करने तथा उनके अधिकारिता के लिए अनेक कानून बनाये गये। अंग्रेज सरकार द्वारा सती–प्रथा निषेध अधिनियम 1829, 1938 विशेष विवाह अधिनियम 1872, 1923 इत्यादि प्रमुख है। उपरोक्त विधानों के बावजूद भारतीय महिलाओं की स्थिति में विशेष सुधार नहीं हो सका। स्वतंत्रता के बाद भारत वर्ष में महिला सषक्तिकरण एवं उनके अधिकारों का संरक्षण करना एक महत्वपूर्ण चुनौती बन गई। भारत के संविधान में अनेक प्रावधान किए गए। भारतीय संविधान के अन्तर्गत महिला एवं पुरूषों को समानता का दर्जा दिया गया है। इन्हें राजकीय नौकरियों में पुरूषों के समान अधिकार हैं तथा पुरूषों के समान कार्य करने पर उन्हें समान वेतन दिया जाता है।

भारत सरकार ने संविधान के 73वाँ एवं 74वाँ संषोधन अधिनियम 1993 द्वारा पंचायती राज व्यवस्था एवं नगर निकाय में महिलाओं के लिए 33.00 प्रतिशत आरक्षण की व्यवस्था कर दी। आजादी के पश्चात् भारत वर्ष में महिलाओं की दषा में सुधार लाने के लिए अनेक कानून बनाए गए यथा– फैक्ट्री एक्ट 1948, हिन्दू विवाह अधिनियम 1955, विशेष विवाह अधिनियम 1954, हिन्दू उत्तराधिकारी अधिनियम 1956, हिन्दू नाबालिक तथा संरक्षण अधिनियम 1956, हिन्दू दत्तक ग्रहण और भरण–पोषण अधिनियम 1956, महिलाओं और कन्याओं का अनैतिक व्यापार अधिनियम 1956, दहेज निरोधक अधिनियम 1961 (संषोधन 1984, 1986)।

आज हमारे देश में लगभग 10 लाख महिलाएँ पंचायती राज व्यवस्था के अन्तर्गत चयनित प्रतिनिधि के रूप में कार्य कर रही है, जो पूर्व की तुलना में महिलाओं की विकास गाथा बयां करती है। अगर हम समग्र रूप से विश्लेषण करते हैं तो स्पष्ट होता है कि भारतीय महिला के संदर्भ में जो उपरोक्त विचार प्रतिपादित हुए उसे महिला का सार्वभौतिक संदर्भ नहीं मान जा सकता है। महिलाओं के विविध प्रगति और विकास के बावजूद पिछले छः दशकों में उन पर हो रहे अत्याचारों, शोषण, हिंसा इत्यादि का हम मूल्यांकन करें तो ऐसा प्रतीत होता है कि महिलाओं के लिए अधिकारिता या सशक्तिकरण संबंधी व्यवस्था सिर्फ सैद्धांतिक है। आज भारत वर्ष में रोज महिलाओं के विरूद्ध हिंसा की खबर आ रही है। शायद ही कोई ऐसा दिन बीतता है जिस दिन समाचार पत्र एवं विभिन्न चैनलों में महिलाओं के विरूद्ध हिंसा की घटना प्रकाश में नहीं आती है। मात्र 2014 में 3,37,922 महिलाओं के विरूद्ध अपराधिक घटनाएँ घटित हुई। 2013 में 3,09,546 का आँकड़ा था। अर्थात् सिर्फ एक वर्ष में 9.2 प्रतिशत की वृद्धि हुई। भारत की राजधानी दिल्ली में महिलाओं के विरूद्ध हिंसा का दर सर्वाधिक (169.1 प्रतिशत) है जबकि राष्ट्रीय स्तर पर अपराध महिला हिंसा का दर औसतन 56.3 रहा है। 2010 से 2013 की तुलना में 58.92 प्रतिशत अपराध की दर में वृद्धि रही है। 2013–14 में बलात्कार की घटनाओं में 25.07 प्रतिशत की वृद्धि हुई है। बलात्कार धारा 376 आई. पी. सी. के अन्तर्गत 2014 में 36735 के मुकदमें सामने आये। जिसका रेट एक वर्ष में 6.1 प्रतिषत देखा गया। पुलिस अभिरक्षा या पुलिस थानों में भी बलात्कार की घटनाएँ घटित हुई हैं। प्रस्तुत शोध आलेख में महिला हिंसा के संदर्भ में महिला पुलिस की भूमिका को रेखांकित करने का प्रयास किया गया है।

0605238 PRASAD, RAJKUMAR AND KUMAR, DINESH (Department of Political Science, G B College, Navgachiya, Bhagalpur) भारतीय लोकतंत्र और मानवाधिकार आयोग

भारतीय संस्कृति और सभ्यता संपूर्ण विश्व में न केवल सबसे प्राचीन है बल्कि इसमें विभिन्न विचारधाराओं, मतों और पंथों का अनोखा समन्वय भी है। अनेकता में एकता हमारे राष्ट्र की अमूल्य धरोहर है जिसका आधार सत्य, अहिंसा और परस्पर साझेदारी है। हमारी संस्कृति में केवल मानव मात्र से ही नहीं अपितु संपूर्ण जीवन के साथ–साथ प्रकृति से भी संवाद स्थापित करने की बात बार–बार दोहरायी जाती गई है। हमारी हर सुबह का आगाज "सर्वे भवन्तु सुखिनः" के आदर्श वाक्य के साथ शुरू होता है। आदर्ष समाज की परिकल्पना सदियों से हमारी सांस्कृतिक विरासत रही है तथा वह हमारी स्मृतियों में संजोयी हुई है। इसी क्रम में मानव अधिकारों का सम्पूर्ण वैचारिक दर्षन मानवीय सभ्यता और संस्कृति से गहरे रूप से जुड़ा हुआ है। सभ्यता के विकास के साथ मनुष्य को अपने अधिकारों का बोध होने लगा। व्यक्ति से परिवार और परिवार से समाज एवं समाज से राष्ट्र तक मनुष्य के जन्मजात एवं प्राकृतिक अधिकारों के साथ मनुष्य के अस्मिता तथा मानवीय प्रतिष्ठा का समग्र भाव भी प्रकट हुआ । यह एक ऐसी सार्वभौमिक अवधारणा थी, जिसमें वृहत्तर परिप्रेक्ष्य में मानव अधिकारों के वैष्विक संदर्भ को एक नयी ऊँचाई मिली। किसी भी राष्ट्र में केवल स्वतंत्रता ही मायने नहीं रखती अपितु उसमें निरंतर लोकतांत्रिक जड़ों का कायम रहना अत्यन्त महत्वपूर्ण है। हमारे पूर्वजों ने ऐसे राष्ट्र की संकल्पना की जिसमें न भय हो, न भूख हो, न कोई शोषण हो। इस संकल्पना को साकार करने के लिए भारतीय लोकतंत्र में सक्रिय संस्थाओं में से एक प्रभावी संस्था के रूप में मानवाधिकार आयोग की स्थापना हुई। आज 21वीं सदी में भी भारत में सामाजिक भेदभाव, छुआछूत, धार्मिक अंध–विष्वास, सामाजिक कुरीतियाँ तथा प्रतिष्ठा के लिए हत्या, महिला सषक्तिकरण आदि कुछ ऐसे ज्वलंत मुद्दे हैं जो मानवा अधिकारों के लिए चुनौती बने हुए हैं। जब तक हम इन मुद्दों पर विजय नहीं प्राप्त कर सकेगें तब तक सही अर्थों में हमारे राष्ट्र का संपूर्ण विकास असंभव है।

किसी भी राष्ट्र की लोकतांत्रिक एवं नैतिक व्यवस्था के मापने के मुख्य आधार गरिमामय जीवन, स्वतंत्रता तथा समानता होते हैं। इनसे वंचित रहकर मानव अधिकारों की पूर्ण प्राप्ति असंभव है। आजादी के 63 वर्षों बाद भी हम सामाजिक अंधविष्वासों, विषमताओं तथा अज्ञानताओं के चलते लोकतांत्रिक व्यवस्था में सबकी समुचित भागीदारी सुनिष्चित नहीं कर पा रहे हैं। जिसके फलस्वरूप मानव अधिकारों के हनन से संबंधित घटनाएं बदस्तूर जारी हैं जो मानवता को कलंकित करने के साथ–साथ लोकतंत्र को भी शर्मसार करती है। मानवाधिकार आयोग अपनी स्थापना काल से ही मानव अधिकारों के संरक्षण एवं संवर्धन के लिए न केवल प्रतिबद्ध है अपितु अनेक नीतिगत एवं संवेदनषील मामलों में सतर्क हस्क्षेप करने के लिए बाध्य है। इस आयोग ने समय–समय पर अपने सतर्क हस्तक्षेप से अपनी उपस्थिति निरंतर कायम रखी है। इस कारण इसे एक सजग प्रहरी की भूमिका में देखा जाता है, जिसकी उपेक्षा भारतीय लोकतांत्रिक व्यवस्था का कोई भी अंग नहीं कर सकता। प्रस्तुत शोध आलेख में लोकतंत्र के सुनहरे भविष्य के लिए मानवाधिकार आयोग की महती भूमिका को रेखांकित करने का प्रयास किया गया है।

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आमतौर पर किसी भी क्षेत्र में पाये जाने वाले मौसम को वहाँ की जलवायु कहा जाता है। जलवायु का सीधा–सादा अर्थ है कि किसी प्रदेश में सर्दी–गर्मी कितनी पड़ती है यानी तापमान कितना घटता–बढ़ता है। विश्व स्तरीय मानदण्डों के अनुसार पृथ्वी पर ऑक्सीजन–कार्बन–डाई–ऑक्साइड के संतुलन को बनाये रखने के लिए एक तिहाई भूमि पर जंगल होने चाहिए। लेकिन इसके विपरीत आजकल दुनिया में 20–21 और भारत में केवल 12–13 प्रतिशत भूमि पर जंगल रह गये हैं। देष में राजस्थान का वनों के मामले में हालत काफी दयनीय है। यहाँ केवल 8–9 प्रतिषत भूमि पर ही जंगल बचा है। जब वृक्ष ही नहीं होगें तो वन्यजीव कहाँ बचेगें? आज यह सामान्य पर्यवेक्षण की बात है कि पक्षी बहुत कम दिखने में आते है और रंग–बिरंगी तितलियाँ तक दुर्लभ होती जा रही है। ईंधन के लिए, फर्नीचर के लिए, भारत और कुछ अन्य देशों में वृक्षों की कटाई से व्यापक पैमाने पर प्रत्यक्ष–अप्रत्यक्षक रूप से पर्यावरण की जितनी हानि हो रही है, उसका पूरा अनुमान लगाना तो कठिन है, किन्तु यह स्पष्ट है कि उससे ग्लोबल वार्मिंग में वृद्धि हो रही है, भू–जल का संरक्षण नहीं हो पा रहा है, मृदा अपरदन के साथ–साथ जैव विविधता का विनाष बड़ी तेजी से हो रहा है।

क्षोभमण्डल के ऊपरी भाग में हमारा सामना एक नई गैस ओजोन से होता है। मुख्य रूप से यह ऑक्सीजन के तीन परमाणुओं की बनी होती है। ओजोन के अणु सूत्र (O_3)से दर्शाया जाता है। हम जानते हैं कि हमारी प्राणवायु सामान्य ऑक्सीजन के अणु (O_2)से दर्शाया जाता है। ओजोन की परत क्षोभमण्डल की ऊपरी सीमा यानी 13–14 किमी. से आरंभ होकर समताप मण्डल में 35–40 किमी. की ऊँचाई तक पाई जाती है। इसकी ऊपरी चौड़ी पट्टी और निचली सिकुड़ी पट्टी के गुण/प्रभाव अलग–अलग पाये जाते हैं। ओजोन की निचली 3–4 किमी. मोटी पट्टी इन्फ्रारेड किरणों यानी ताप को अंतरिक्ष में जाने से रोकती हैं जबकि ओजोन की शेष स्ट्रेटोस्फीयरिक पट्टी सौर ऊर्जा यानी प्रकाष–किरणों की एक घटक अत्यंत शक्तिषाली अल्ट्रा–वायलेट(पराबैंगनी) किरणों को पृथ्वी तक आने से रोकती है। ओजोन की निचली पट्टी जहाँ प्रत्यक्ष रूप से ग्लोबल वार्मिंग में योगदान देती है, वहाँ ऊपरी पट्टी पराबैंगनी किरणों को रोक पृथ्वी के तापमान को कुछ सीमा तक बढ़ने से रोकती हैं। स्टॉकहोम सम्मेलन के बाद ही वैज्ञानिक वायुमंडल की गहन खोजबीन और जाँच में संलग्न हो गये। अमरीका के वैज्ञानिक डॉ. मेरियो ने 1972 में अंटार्कटिका के ऊपर वायुमंडल में ओजोन की परत के पतला होने की आशंका जताई। उन्होंने 1976 में उस आशंका को सही बताते हुए ओजोन की पतली परत को अंटार्कटिका के ऊपर केवल फुटबॉल के मैदान के बराबर बताया। ओजोन की पतली परत को 'ओजोन छिद्र' का नाम दिया।

विश्व विनाश को टालने के लिए तत्काल आवश्यकता है कार्बन–डाई–ऑक्साइड के उत्सर्जन की मात्रा में बड़ी कमी लाई जाए तथा सीएफजीज के वैकल्पिक यौगिक काम में लिए जाए। वैज्ञानिकों के अनुसार 2006 में 32 अरब टन CO_2 का उत्पादन हुआ। इसमें अमरीका का ही 25 प्रतिषत योगदान था। इसे एक चौथाई तक कैसे लाया जाए? दुनियाभर के सभी छोटे–बड़े राष्ट्र मिलकर ही कोई सर्वसम्मत रास्ता तलाश कर सकते हैं। यह सब कहना आसान है, इसे 6.5 अरब की जनसंख्या वाले विष्व में क्रियान्वित करना हिमालय जैसा काम है। हो गया तो सृष्टि बचेगी वरना महाविनाश तो है ही।

0605240 SHARMA, SHANKAR (Banashankari Krupa, 3rd Cross Right Side, 80 Ft Road, Vijaynagar 1st Stage, Sagara, Karnataka 577 401) **A SYSTEMIC APPROACH TO MINIMISE THE IMPACTS OF CLIMATE CHANGE**

Climate Change, as a global phenomenon, has come to be known as one of the most critical issues facing the humanity today, if not the most critical issue. Many individuals, academic and research institutions, including the global institutions such as IPCCC, WHO, UNEP etc., have tried to address this issue from different perspectives.

One such recent analysis has come to the conclusion that:

"Instead of the roughly 1,100 megawatts of carbon-free energy per day likely needed (to be added) to prevent temperatures from rising more than 2 ˚C, as the 2003 *Science* paper by Caldeira and his colleagues found, we are adding around 151 megawatts (of carbon free energy capacity per day). That's only enough to power roughly 125,000 homes. At that rate, substantially transforming the energy system would take, not the next three decades, but nearly the next four centuries."

Most of such analysis on Climate Change (especially those emanating from industrialised world) can be said to be guilty of focusing only on one issue i.e energy. They all seem to focus only on different technologies to meet the insatiable demand for energy. A holistic and systemic approach to the phenomenon of Climate Change should reveal that the scenario is not as simple as these articles seem to make out.

The phenomenon of Climate Change has many other components to worry about as well, in addition to fossil fuel based energy systems. It is not just the transformation of energy scenario alone, which is required. We need an entirely different paradigm to the way we view the nature around us.

Even if we assume that the political willingness across the world will allow the possibility of moving over to 100% renewable energy (RE) based scenario by 2040/50, it may not suffice. The enormous number of solar PV modules, wind turbines, batteries, bio-energy units, geo-thermal units, hydropower units, computers, control systems, communication systems, protection systems, energy meters, associated transmission and distribution systems etc. required for such a scenario with a business as usual approach up to 2040/50 will be so much overwhelming that we may end up being the losers anyway. Because, the total energy required by 2040/50 at the global level would have reached such high levels, if we continue with the energy demand growth rate as it is now (which may mean a CAGR of 3 to 5% between now and 2050).

In this context, the projected energy scenario in the case of India can be a good example for discussion. The national energy policy draft (by NITI Aayog, India) has projected that India's (i) energy related Emissions per capita may increase from 1.2 tons of Carbon Dioxide Equivalent/capita in 2012 to 2.7-3.5 tons of Carbon Dioxide Equivalent/capita in 2040; (ii) Per capita electricity consumption may go up from 887 kWh in 2012 to 2,911-2,924 kWh in 2040; (iii) CAGR (Compound Annual Growth Rate) of electricity supply may be 5.5% between 2012-2040. Most countries from the developing world are likely to have similar growth trajectory, because of which the total energy demand at the global level can be massive by 2040/50.

Even if the global energy demand growth rate between now and 2050 is assumed to grow only @ 1% CAGR, the total energy demand would have increased by about 100% as compared to that of the demand today. Even to meet this much energy demand the global economy has to manufacture enormous number of appliances/gadgets/machineries (to generate and distribute commercial forms of energy such as solar power, wind energy, bioenergy, hydel power etc.). Such a vast economic activity alone at the global scale will require the mining

and processing of large quantities of the ores of iron, copper, aluminium and many kinds of rare earth minerals, which in turn will require large amounts of energy, most of which may have to come from conventional technology energy sources such as coal power technology. Hence by 2050, the total CO_2 emissions (or the total GHG emissions) could go much beyond 450 PPM as against the desired level of 350 PPM. And the CO_2, which would have been accumulating in the atmosphere during this period, will last for hundreds of years. The ability of various natural elements to control the temperature rise would have been severely curtailed. Many of the natural process, such as glacier melting and ocean acidification, would have become irreversible. The forests and vegetation cover will have to come down considerably, and the pollution/contamination may exceed all limits.

It is well known that a MW equivalent of installed RE capacity through solar and wind power will generate less than half of annual energy as compared to that of the same MW capacity of a conventional technology power plant, but will require more land area. Hence a 100% RE dependent scenario will also need diversion of vastly more forest and agricultural land than otherwise. This fact cannot be ignored either.

Hence, in order to visualise a 100% RE scenario as a major step in addressing the Climate Change threat, the global community will also need very many other enabling scenarios.

On a closer examination, all these issues can be intricately linked to the high GDP growth rate paradigm practiced by the governments around the world. Can we even consider moving away from such an obsession and move over to a sustainable and inclusive growth paradigm?

Time taken for the size of economy to get multiplied at constant CAGR

CAGR Growth Percentage	**Increase by 100%**	**Increase by 200%**	**Increase by 300%**	**Increase by 400%**
@ 4%	19 Years	29 Years	36 Years	40 Years
@ 6%	13 Years	20 Years	25 Years	29 Years
@ 8%	10 Years	15 Years	19 Years	22 Years
@ 10%	8 Years	13 Years	16 Years	18 Years

A sustained high GDP growth rate will mean the manufacture of products and provision of services at an unprecedented pace leading to: setting up of more factories/ manufacturing facilities; consumption of large quantities of raw materials such as iron, steel, cement, chemicals etc.; increasing an unsustainable demand for natural resources such as land, water, minerals, timber etc.; acute pressure on the Government to divert agricultural /forest lands; huge demand for various forms of energy (petroleum products, coal, electricity etc.); accelerated urban migration; clamour for more of airports, airlines, hotels, shopping malls, private vehicles, express highways etc. Vast increase in each of these activities, while increasing the total greenhouse gas (GHG, responsible for global warming) emissions, will also add up to reduce the overall ability of natural carbon sinks such as forests to absorb GHG emissions. There will also be increased pollution of land, air and water along with huge issues of managing the solid, liquid and gaseous wastes. The corollary of all these issues is that the overall health of the humanity will go down drastically.

The multiplication of the size of global economy by 2040/50 would basically mean the multiplication of the demand for materials and energy; increase by several factors the production of wastes, contamination/pollution of air, water and soil; and corresponding increase in number of un-natural deaths, illnesses, accidents etc.

Whereas the nuclear power technology is being wrongly advocated by vested interests as a credible solution for the Climate Change, the associated radiation issues can only worsen the situation. For countries like Bangladesh and many in African continent, which have so far a low energy carbon foot print, the power generation capacity addition through coal and nuclear power plants can bring massive social, environmental and health problems.

Hence, the transformation of energy systems to renewable energy based system alone should not be our focus. The real issues must be: (a) how much minimum energy demand can we manage with in order to eradicate the poverty at the global levels; (b) how best to distribute this much energy in the most equitable way possible; (iii) how to produce this much of energy without adding to total GHG emissions from the energy sector; (d) and how to minimise the pollution/contamination/depletion of our natural resources in this process.

Even, this extraordinary approach may not be good enough. In a business as usual scenario, by 2050 the forest/vegetation wealth may get degraded to a point of no return; the pollution and contamination of the air, water and soil may become unbearable because of the human activities such as transportation, manufacturing, entertainment, military operations, construction etc. Many other human activities, which were not needed by our ancestors or till recently, would have come to be deemed as essential by 2050. For example the huge demand for electronic, computer and communication devises. All these activities, which will need lot of energy, materials, water etc., and which will also produce waste/contaminants, will continue to drag us down the path of ecological disaster, even if 100% RE scenario is feasible by 2050.

The phenomenon of Global Warming can be basically associated with the vastly accelerated depletion/degradation of various elements of the nature; which is also known as the transgression of Planetary Boundaries. So, in order to address this phenomenon, various activities of the humankind contributing to the accelerated depletion of the nature have to be thoroughly reviewed to ensure they become sustainable.

Hence, can we say that the humanity has a critical imperative to undertake urgently effective measures to minimise the consumption of water, materials (including even the forest based materials such as wood) and energy to a very low level starting from this moment? Only such an approach seems to be the lasting solution. This requires a paradigm shift in our lifestyle. Can we muster enough conviction and determination to move towards a vastly simpler lifestyle where we will be happy to share the locally available natural resources much more equitably than it is now; can this be as effective as our ancestors did?

Can we minimise the air travel, travel for pleasure etc.; can we minimise the movement of people and materials between provinces/regions/countries, and even within the countries; can we minimise the production of military wares, machines and ammunitions; can we reverse the trend of forest diversion and embark on massive afforestation to reverse the growing presence of CO_2 in the atmosphere; can we stop diverting the agricultural lands, and embark on more of agroforestry; can we minimise the pollution/ contamination/ interference in the rivers and fresh water bodies as well as oceans; can we move over to a sustainable scenario of food production and consumption etc.?

If large economies like China, India, Brazil, and other developing countries like Bangladesh, Pakistan, Indonesia, Philippines etc. adopt policies to grow their economies at high CAGR rates, can the global warming be satisfactorily addressed by transforming to 100% RE scenario alone?

How many of our on-going/projected problems due to Climate Change are likely to be addressed satisfactorily by 100% RE scenario alone?

How many of our political leaders and bureaucrats can be expected to have even a semblance of thinking on these lines?

What are our chances to avert the ecological disasters associated with the Climate Change without such paradigm shift to our lifestyle?

As a recent posting in The Guardian has said: “one reason we are failing to do what is necessary (for addressing the Climate Change) is because nature is still seen as “nice to have”, rather than essential in sustaining our health, wealth and security. Many companies, economists and governments regard environmental destruction as a regrettable but inevitable consequence of economic growth – the “price of progress”. If we don’t change this mind-

set, then there will be little prospect for the revolution in ideas that is needed to avoid a mass extinction event and disastrous climatic changes."

As far back as 1974, the Cocoyoc Declaration in Mexico, had unequivocally stated the criticality to limit our needs within the nature's limits. Organized by UNEP and the United Nations Commission on Trade and Development (UNCTAD), this symposium identified the economic and social factors which lead to environmental deterioration. ''The combined destructive impacts of a poor majority struggling to stay alive and an affluent minority consuming most of the world's resources are undermining the very means by which all people can survive and flourish'' .

The Club of Rome, which is a global think tank, had raised considerable public attention in this regard way back in 1972 with its report 'The Limits to Growth'. It had predicted that economic growth could not continue indefinitely because of the limited availability of natural resources, particularly oil.

Another report "Prosperity without growth? - The transition to a sustainable economy" by the Sustainable Development Commission (SDC), which was the UK Government's independent adviser on sustainable development have come to similar conclusions. The fact that high GDP growth rate cannot be pursued indefinitely and hence cannot be sustainable is increasingly being acknowledged at the global level.

The World Environment day every year requires every one of us to undertake serious introspection on these lines, instead of satisfying ourselves by just planting few tree samples here and there, while the natural elements such as forests and rivers are continued to be devastated everywhere.

06. HISTORY AND PHILOSOPHY OF SCIENCE

07. INFORMATION TECHNOLOGY, MASS MEDIA AND CULTURE

0607241 ARORA, SIDHANT AND RATRA, JAYATI (Amity Law School, Delhi). POLITICS, ELECTIONS AND SOCIAL MEDIA INFLUENCE

The recent impact created by the 'netizens' of India for raising awareness and gathering help for the Kerala Floods, has shown us the effective reach of various social media networks over the interweb. This, however, was not limited to commanding social influence. It impacted the political scenario as well, and possibly shook the results for upcoming elections for a few constituencies, to begin with. Beginning the trend to use social media for election campaigning, Barack Obama was one of the first leaders to be able to have a favourable impact on his elections through social media influencing. This has been then followed eminently by other leaders throughout, primarily Narendra Modi, Donald Trump, and Emmanuel Macron.

There is no denying the fact that there have been incidents of breach of privacy of users, with allegations of their data and personal details being shared for monetary benefits by the 'internet conglomerates'. This, as categorized and identified, is not different from the alleged practices of the political campaigners during elections. The interweb throughout, is being used to target, inculpate, and reveal the hypocrisy of one's political opponents with counter-arguments and statements about the use of fake and paid publications as one's sources by the accused. While these acts remain prevalent, social networks has been, are being extensively used, to promote and share the work being done by local, regional, as well as national leaders throughout the nation.

The proposed paper here shall attempt to understand the ways in which the psychology of voters, and citizens as whole, is affected and impacted through social media - especially with increased role of artificial intelligence, search engine optimization (SEO), and prediction algorithms - by the political campaigners and vouchers of politicians as well as the political parties.

0607242 ARORA, SIDHANT AND SHARMA, JYOTI (Amity Law School, Delhi). WOMEN, MEDIA AND SOCIETY: RECASTING COMMUNICATION POLICY

The inception of mass media brought about significant changes within the societies throughout the world. While those changes were purely positive or negative is a separate debate altogether, the contributions cannot be denied or ignored. Mass Movements for women empowerment were also feasible only for the accessibility and reach of the information. The backward cultures and societies were able to develop themselves in the domain of women empowerment when enlightened with the prevalent practices of the developed and advanced societies. Indian society and its women empowerment was brought about primarily with activism of women with access to the media and a reach to the prime population of the country.

While these contributions remain significant, mass media has also been responsible to objectify and degrade women – primarily when it comes to the entertainment media. While arguments exist that the media portrays what is prevalent in the society, the situation get complicated in countries like India where the mass media has a possible reach and influence on over 1 crore people. Considering the human psychology, such portrait of women creates an impression of justification for morally and lawfully wrong actions by the general populace. While with education, and activism such portrayal has been reduced, the trend of worshiping certain actors and their works makes it still hard for people to protest on such acts.

This paper, while appreciating and informing on the role of media in context to upliftment of women in the society, shall also highlight certain contexts as how it impacts the image and status of a women negatively. Along with that, it shall also discuss the recent forms of activism that have been adopted to counter such practices of the media and shall analyse their impact and success.

0607243 BABU, ASWATHI PV (Centre for the study of Indian Diaspora, University of Hyderabad, Hyderabad). IMPORTANCE OF VIRTUAL MEDIA IN REFASHIONING THE HINDU CULTURE

The research paper is an attempt to understand the significant role played by virtual medias in understanding the revival of religious traditions and cultures that one observes with the passage of time especially among the second and third generations for whom the concept of transnationalism and diaspora hardly persist. In the globalized world, digitalization has acquired its own place in building up a space with societal impacts. It has made things much easier for people to attain progressive development in various fields. Diaspora is one such phenomena where the digital world has paved ways for the diasporic people to be in touch with culture and traditions which one follows and an area to be used by the young generation especially third to modify things and refashion it. Today diaspora has changed its perspective in understanding and considering the term diaspora itself, that is, it has moved away from the so called traditional myth and belief about classical diaspora and its connection with modern diaspora. There are many unseen elements present in diaspora which makes and add more meaning to the understanding. One among them is religion. And it is observed that the loss of religious culture and traditions are more vanishing in the homeland than in diasporic land where they recreate and refashion it. It is during such circumstances where people make use of virtual connections with the sacred homeland and use the digital darshan to create an ambience filled with cultural festivities. Hence will look on how technologies helped in the enormous progress in the area of religion along with the limitations and constraints which diasporic people experienced.

0607244 BASTIAN, LESLIN (Centre for Media and Entertainment Studies, MICA, Ahmedabad 380058, India). **GROWING DIGITAL GAP AND INFORMATION DIVIDE AMONG POOR AND RICH: A CASE OF SOUTH ASIA**

The paper aims to analyze the findings of a national social media study conducted in 24 cities spread across five major regions of India that covers all major linguistic regions of the country. From each city a random sample of about 150 adults of both sex and age group were interviewed between April-September 2017 totaling to 2663 adult respondents. The paper attempts to test the null hypothesis that other things been equal, the digital media will not create gulf of information gap between media rich and media poor. Thereby information will not add information asymmetry.

The other goal is to study how digital media introduction in democratic India has provided information equity and access among all citizens. Such an effort is believed to help create information equity with equality to reduce information asymmetry among the citizens otherwise living in a society inflicted by social hierarchy and unequal access to information.

This paper is based on the theoretical premise of the "theory of asymmetric information" developed in the 1970s and 1980s as a plausible explanation in economic context to explain an imbalance of information between buyers and sellers that might have led to inefficient outcomes in certain markets(Growing Digital Gap and Information Divide among Poor and Rich: A Case of South Asia). In countries like India growing several authors have argued that inequality of information has led to poor becoming pauper while rich continued to accommodate wealth (Agrawal 2015). Further an in-depth analysis will be attempted to assess the extent to which digital media revolution, in a very short span of time, in the form of smart phones, satellite television and social media have increased the digital divide among the multilingual, multi-religious and asymmetrical composite civilization of India.

Key words: information asymmetry, digital divide, information equity, poor becoming pauper

0607245 CHATTAPADHYAY, RICHA (Department of Mass Communication and Journalism, Tezpur University, Assam, India). **RETHINKING INDIGENOUS MEDIA IN DIGITAL AGE: A STUDY ON RITUALISTIC AND THEATRICAL PERFORMANCE OF BHAONA IN MAJULI ISLAND OF ASSAM, INDIA**

Bhaona, the ritualistic and theatrical art form of Assam was conceived and propagated by medieval saint and social reformer - Mahapurush Srimanta Sankaradeva in the early 16th century to deliver the messages of ongoing Vaishnava bhakti movement. Since then the dramatic presentations of Bhaona being performed in the "Sattras"

(Vaishnavite monasteries) flourished as a cultural renaissance of Assam. The present qualitative study endeavors to gauge the relevance of Bhaona performances as an indigenous art form practiced in Majuli Island of Assam, in the contemporary cultural community which mediates digitally.

The constructivists perceive culture as a part of communication process and assert humans to be the product of their own discourse. Reality is therefore considered to be a social product which comes into existence through construction, adaptation and maintenance of symbols amongst the adherents of any distinct cultural ideology over a particular period of time. Cultural performances are embedded with conventional symbolic acts which provide "inter-subjective frames of reference" pertinent to distinct cultural spaces within which objects are socially defined. Thus, every indigenous medium manifests socio-politico-cultural, environmental and economic ethos of the society which yielded it.

Owing to passage of time, the ubiquity of mass media being a "Magic Multiplier", and the proliferation of Information and Communication Technologies (ICTs), precipitate changes of varying degrees in different spheres encompassing human lives. Discourses on globalization, digital revolution, and technological determinism document the epochal alterations in socialization patterns, social structures, identity assertion and global economy as a whole. The "network society" in "global village" has not only curtailed physical distances by smudging of geographical boundaries but also enkindled cultural hegemony in varying dimensions.

Despite stern resistances to changes by cultural groups, there are instances of "sophisticated negotiations" based on communal belief systems to accommodate technophiles and re-align in rationalized communicative spaces. Moreover, mass media and ICTs play crucial role in preservation and promotion of cultures through creative engagement of indigenous peoples in equitable partnerships with organizations (both governmental and non-governmental) to document, mediate and reify their cultural expressions, and also patent them through Intellectual Property Rights.

The present ethnographic study based on observational and interview data collected from the pertinent cultural group residing in Majuli Island, assess the potential of Bhaona for (re)enkindling believability, cultural identity and social solidarity amongst its contemporary performers and audiences; it also illustrates the perceived changes taking place in re-contextualization of Bhaona as a communicative medium in a globalized technology dependent world. The study documents the interaction of mass media and ICTs with Bhaona and addresses the meaning making process in Digital Age.

Keywords: Indigenous Media, Cultural Ideology, Mass Media, ICTs, Global Village, Network Society, Digital Age

0607246 DAS, AYANTIKA (Jawaharlal Nehru University). EMPOWERMENT OF WOMEN THROUGH SOCIAL MEDIA: PROBING THE #METOO MOVEMENT

The last decade has witnessed several upsurges through the medium of social media. It has successfully given rise to several debates and has been lauded as a catalyst for social change. It has also been eulogized as the voice of the unheard. The trajectory of social movements through social media can be traced back to Arab Spring that brought about significant changes in the geo-political scenario. Seemingly, women globally have found their long-denied space in social media, which they are effectively using to make noise and create solidarity. Alyssa Milano, a Hollywood actress triggered the global #MeToo Movement on social media and this became a breakthrough phenomenon for the feminist movement across the world. The movement not only paved way for survivors to come forward and express their narratives of abuse and harassment, but also opened the dialogue on the horrific realities of existing power structures in every wake of life. Hollywood that was an epitome of misogyny and patriarchy was for the very first time challenged by its own women who had faced years of abuse at the hands of its very powerful men. The movement gave unflinching strength to women in every sector who could come out and share their experiences of abuse, thereby creating ripples across. It categorically also became a focal point for extending solidarity to millions of survivors.

Women have always been advised to not speak out in public about their ordeals of abuse and harassment. It is also very difficult to speak up when the structures of power have the privilege to dismantle their lives. Social media emerged as the medium that gave voice to these women who were otherwise vulnerable to the existing power dimensions. Though the movement can be largely seen as a starting point of a process to achieve a wider social change but it introduced some significant changes in the society's perspective towards survivors of sexual assault. Harvey Weinstein, a serial sexual predator was arrested and this can be rightfully considered as a pivotal turning point for the #MeToo Movement. The incarceration of Bill Cosby who has been accused of sexual harassment by more than sixty women can also be counted as the success of the #MeToo Movement. Apart from these arrests the movement has been able to give confidence to women to talk about their abuse, challenge men in position of power and strengthen them to seek assistance, both legal and social. The question however is, has social media really empowered women in a way that they could finally break the societal shackles and challenge the existing power structures? Is it possible for social media to play the role of a medium that can free women? This paper would try to investigate the role of social media in the #Me Too Movement by tracing the complete trajectory of the movement and if it has been able to actually create the space for women. This paper would also examine the claim that social media has only provided symbolic empowerment to women.

0607247 JAMSHEER, PM (Department of English, Govt Arts and Science College Tholanur, Kerala). **TEACHING AND STUDYING LITERATURE IN THE ELECTRONIC TIMES: PERSPECTIVES ON CYBER LITERATURE IN THE INDIAN CONTEXT**

The advent of technology in to the still expanding spheres of information and communication has necessitated Cultural Revolution and social progress in the lives of mankind. Thus the sophistications brought about by the contemporary electronic era could open up new vistas in literature teaching and studying. The paper examines the novel trends in the teaching and the studying of literature during the electronic times. The preservation, editing and making literary texts available with the help of E tools ,the new dimensions that are applied in the literature class rooms and the part played by the technological resources with the student community at large are some of the pertinent areas being probed in detail. The term *cyber literature* is pluralistic both in implication and application. But the intended meaning here is those literary texts either in prose or poetry that are available in the domains of internet. Globally India's higher education system is the third largest after the US and China. Language and literature studies play a pivotal part in the contemporary academic milieu. Numerous sturdy and substantial changes have taken place in the Indian cyber space over the past couple of years with respect to literature studies both in English and other vernacular languages of the country. The study attempts to throw light on the up-to-the-minute developments in the context of studying and teaching literature as a discipline in the present times.

KEY WORDS: Cyber Literature, E tools, Electronic era.

0607248 KUMARI, ARCHANA (Department of Mass Communication and New Media, Central University of Jammu, Bagla, Dist. Samba, Jammu – 181143, J & K). **A STUDY OF THE ROLE OF SOCIAL MEDIA IN DEVELOPING COMMUNITY GROUPS WITH SPECIAL REFERENCE TO FACEBOOK**

In the age of technology and new media where the usage of social media is increasing day-by-day, more avenues are also emerging where social media can play a constructive role. Social Media sites are providing people a platform to share their thoughts and express their feelings, so people are spending more time on them. Not only this, social media is also helping people to make their community groups online. People belonging to one region, one institution, and one state even if located at different corners of the world, are making online groups for various reasons such as news and information of that particular region or state or institution etc.

In order to study the reasons for existence of online communities, there is a need to study these virtual community groups thoroughly. So Facebook has been chosen for this purpose where the content of such groups have been studied. This study also provides a comparative analysis of the online communities existing on social site i.e. Facebook which is an 'open to all' site. This analysis will focus on whether these groups help to bring the communities together or not. If yes How? And If No Why?

Three online community groups of Jammu and Kashmir have been chosen for this study viz. United Kashmir, Ladakh in the Media and Gaddi Community Jammu. These three groups have been chosen to study because these are representing the three regions of Jammu and Kashmir i.e Jammu, Kashmir and Ladakh.

Keywords: Social media sites, virtual community, Facebook

0607249 MADDUMAGE, G D AND SAMARASINGHE, I A K C (Department of Sabaragamuwa Dance, Information Technology Unit, University of the Visual & Performing Arts, Sri Lanka). THE INFLUENCE OF BHARAT MUNI'S NATYA SHASTRA IN SRI LANKAN RITUALS - SABARAGAMUWA PAHAN MADU

From ancient times, rituals which have been held by the Sinhalese in Sri Lanka, such as bali, thovil and madu, can be characterized under three regional dance traditions; namely, Up-country, Low-country and Sabaragamu. Although the practices adopted with regard to conducting these rituals differ from region to region and community to community, they are conducted as a clinical intervention or therapy. All these rituals include traditional drama or dramatic presentation. According to the literature a ritual "is a sequence of activities involving gestures, words, and objects, performed in a sequestered place, and performed according to set sequence. The aim of this research was to investigate the influence of Bharat Muni in Pahan madu curative rituals, i.e. Shanthikarma. The methodology involved in this research was qualitative. Data was gathered using primary and secondary evidence. Finally, based on the research, the following conclusions were yielded. It was identified that in the Sri Lankan Sabaragamu dance tradition the Pahan Madu curative ritual categorization which are similar to Nrutha, Nruthya, and Naatya as demonstrated in the Natya Shasthra written by the Indian theatrologist and musicologist Bharatha Muni during the first century. The Sabaragamuwa Pahan Madu performance arena preparations follow the same prerequisites for the theatre mentioned by Bharatha Muni in the Natya Shasthra. The four main parts of abhinaya presented in Natya Shasthra are also depicted by the actors performing in the Pahan Madu ritual. Even though the Pahan Madu ritual demonstrates influences of Bharathamuni's Natya Shasthra, some of its characteristics have been replaced due to the effects of Buddhist culture.

Keywords: - Bharatha Muni, Rituals, Sabaragamu Pahan Madu, Sri Lanka

0607250 MAHANTA, MANASWINEE (Tezpur University). COMMUNITY DOCUMENTARY: A MOVE TOWARDS DIGITAL INCLUSION

The literature on community media initiatives in the global context (including the community video projects) and result of such media exposures into digital inclusion is critically reviewed. Further, theoretical arguments on digital divide from gender perspective are discussed. This research work sees the Community video works as Cinėma Pur and put forward some theoretical discussions to define the term documentary-not based on aesthetic parameters rather from the basic idea of visual documentation with an attempt to institutionalize any kind of community visual documentation as documentary work and provide a theoretical reference to such practice as Community Documentary and thus nullifies the popular alternative expression Community Video. The effects of such Community Documentaries and their making procedures on the women of the communities are further elaborated. Researcher looks at the potential of these documentary making procedures taken up for, of and by the community women, with and without technical supports from outside agencies, as a step forward to bridge the digital divide and a move that ensures access and skill of Community Women to Use Information and Communication Technologies(ICT) associated to the making process of community documentaries and are therefore able to participate in and be benefited from growing knowledge and information society. In order to be included one have to overcome three kinds of digital inequalities; better known as digital divides: 1.Economic divide or infrastructural inequality 2.Usability divide or inequality in (digital) literacy 3.Empowerment divide or participation inequality. All these three aspects are stressed while examining whether community documentaries can serve as a type of digital inclusion. Theoretical base of the model is being scrutinized by three case studies taken up in the Indian state of Gujrat and Andhra Pradesh: 1.'Gender Sensitive Governance through ICT' by MahilaSwarajManch, Shihore-a project base for 'Making Women's Voice and Votes Count' –a multi-site project funded by UN Women, 2. 'EkPoltunBheek Nu' by the community women of Narmadapura, Baroda and 3.'When Women Unites' by the

community women of Nellore. Researcher concludes that such media exposure can enhance digital empowerment by ensuring better access and skill to use Information Communication interfaces and hence can work as a mode of digital inclusion. Researcher further highlights some other aspects of social inclusion of community women including political or economic empowerment, hold up by the discussed mode of inclusion.

0607251 MOHIUDDIN, MOHAMMAD AND NANDY, RAJIB (Department of Sociology, University of Chittagong, Chittagong- 4331). THE CULTURE OF ESCAPISM IN CONTEMPORARY BANGLADESH: A SEMIOTIC ANALYSIS OF 'SUBODH' SERIES GRAFFITI'

The article will scope to analyze the semiotic 'Sudodh' series graffiti that was drawn on the wall of capital city Dhaka of Bangladesh. Subodh is one kind of Graffiti where a youth wants to shirk from the society. It seems that time is not under his control or he is not accustomed to the facts that are happening around him. He doesn't feel comfort with the situation that is now normalcy in the country. Country's societal, economic and political practices are not riding in righteous way. So, he was fleeing from these awkward conditions but marking his pulling away on the wall to wall of Dhaka city. In theses graffiti, we have noticed that Subodh sometimes was fleeing with the sun which one is captive into the box, once in a way, he was trying to flee but become prisoned, or he was presenting a symbolic man leaned to frustration. In these perspectives, by analyzing the socio-economic and political trends of Bangladesh, we want to realize why Subodh was fleeing, and who is helping him to scape, and where he wants to flee etc. In the world, to spread out any political or societal message, graffiti is much more popular media. This street art is considered as 'alternative' in lieu of the common art. Graffiti arts that have become popular in Bangladesh, are symbolizing the current socio-economic and political atmosphere of Bangladesh, through which we want to measure the existing situation of Bangladesh. We will try to focus how Subodh series are illustrating and presenting itself in the phases of state oppression, interference to the freedom speech, extra judicial killings, disappearance, controlling oppositions and what the inner meanings of these art works are. This article also focuses on how the speechless walls are getting started to talk by Subodh's artistic presentation on societal, economic and political anomalies of Bangladesh. So, it's our endeavor to present the creator of graffiti as 'Guerrilla artists' those who raised their voice against any amoral activities and wanted to draw attention of the citizens. This article will not only consider these graffiti as sole art work, but also as the reality that are happening in our society. We will consider 'Subodh' the Wall Graffiti as crises of the society which are being exercised by using governmental power structure.

Key Words: Graffiti, Bangladesh, Dhaka, Subodh, Escapism, Semiotic Analysis

0607252 PARIDA, AVAY KUMAR (A. N. Sinha Institute of Social Studies, Patna, 800001). AWARENESS OF SEXUAL AND REPRODUCTIVE HEALTH MATTERS AMONG YOUTH: ROLE OF MASS MEDIA

The Youths aged between15 to 24 years, are most vulnerable group in health matters due to psychological & physiological changes and issues like lack of awareness, adolescent pregnancy, sexually transmitted infections and rapid rising of HIV/AIDS during transition from adolescence to adulthood. With technological development, sexual and reproductive health information have been displayed through different sources of modern technology such as; television, newspaper, magazines, internet and social media. Consequently, due to the exposure, youths in modern days are expected to be more aware about sexual and health matters as compared to the elder group. Media on one hand provides useful information and on the other, it misguides the younger generation. On account of vulnerability, youths remain a subject of study. The question arises as to how they utilize the modern day technology as a guide to healthy life style and whether mass media is able to provide sufficient and necessary information to the younger generation? The hypothesis of this study is 'the greater the exposure to technology, the greater the awareness about sexual and reproductive health matters among youths'. The main objective of this paper is to find out the relationship between the extent of exposure to mass media and awareness about sexual and reproductive health matters among young population in India. This paper was based on secondary sources of data. The main source of data was based on the study "Youth India Study, 2006". The empirical analysis of the data was done through statistical techniques such as; Cross tabulation, Chi Square test and Correlation. The finding suggests that around 80% youths are exposed to TV, 62% are exposed to Newspaper and Magazine, but only around 6% have

access to internet. It is found that a very few percentage of youths are aware of sexual health, pregnancy and family planning methods. The knowledge about sexual and reproductive health matters is higher among the urban and educated youths than their counterpart. Thus it may be concluded that there is strong and significant correlation between exposure to mass media and knowledge about sexual and reproductive health matters.

Key words: Youth, Sexual health, Reproductive health, Mass media, Technology

0607253 SHAH, KOMAL (EMRC, Gujarat University, Ahmedabad 380009). NEW MEDIA AND TRANSFORMATIONS IN INDIAN SOCIETY

In the recent years, there has been continuous discussion and debates among Media professional's and Social Scientists about significant role of New Media in knitting the fabric of the Indian society that might lead to Social transformation beyond recognition. In fact, the new media might lead to transform the Indian society from an 'oral society' to a 'digital information society'. New Media platforms like Facebook, Twitter, WhatsApp, Instagram and YouTube might have provided an electronic platform to raise their voices. It seems, supported by sporadic studies, that individuals have started among other things to use digital media to share photographs, search old friends, to be in touch with colleagues at the office and also express their views in multiple directions. In sociological realm, there are indications that underprivileged men and women who suffered from the social exploitation for centuries by the privileged men and women have begun to voice their oppression on social media. The aim of the paper is to analyze and discuss possible changes being brought about at the regional and national level due to use of digital media platforms by the oppressed and exploited. The paper will elaborate on the current trends in use of digital media for bringing about social equality in Indian Society. The major question raised in the paper, is to at what extend digital media has brought about any change that might have benefited the oppressed and ushered in a new hope?

The paper is based on the content analysis of one month data from Facebook. The month selected for the content analysis is June, 2018 on the topic specifically reported on Whatsapp about child lifters which gradually led to 'lynching' of innocents in various parts of the country. The analysis is based on over two dozen 'lynching's' during this period across India. The analysis leads to believe that Facebook has provided a platform for expressing hidden or under the surface views not expressed so far for public discussion and opinion formation that might be an antecedent to other serious sociological consequences.

Keywords: Digital Media, Facebook, WhatsApp, Indian Society

0607254 SHARMA, KANGKANA (Department of Political Science, Dhing College, Nagaon, Assam). CONSTRUCTION OF POWER THROUGH MEDIA IN INDIA: A CRITICAL ANALYSIS

A very influential understanding on the concept of power has been provided by Michel Foucault where it is dispersed across various layers and structures and is not be found in any static locus. Power according to Foucault is not possessed by a dominant agent, but it is distributed through complex social networks. Thereby here power comes from multiple sources (e.g. schools, asylums etc.) in contrast to the Marxist-Leninist conception of power as emanating from one source i.e. capital. One of the primary effects of such notion of power is that "certain bodies, certain gestures, certain discourses come to be identified and constituted as individuals." Taking Foucault's understanding in mind one can throw light on the role played by media in modern times in terms of advocacy and agenda setting and thereby normalizing people to accept the dominant culture (and lifestyle) and marginalizing those who don't adhere to the socially set norms.

Antonio Gramsci's writing also had a decisive influence on the study of media. Unlike Marx who focused on economic domination, Gramsci emphasised on the ideological influence and such scenario can be seen with media industries imposing their idea (or of the dominant class) and such practice through media images often go unnoticed. He argued that a social group or class exercised dominance in part by force, but more importantly by consent, by obtaining the consent of the majority. The media thus had a central role in developing public compliance.

The present paper while taking into cognizance of the theoretical aspects, looks into how Indian media has been playing an instrumental role in influencing how people think, what they think; thereby governing their minds. Media in India, too, has the power of 'making news' and this paper will delve into it by understanding the power dynamics of Indian media vis-à-vis the state.

08. LABOUR IN ORGANIZED AND UNORGANIZED SECTORS

0608255 ABHIJEET AND CHAUDHARY, VIKRAM (Centre for Inner Assian Studies, Jawaharlal Nehru University, New Delhi). LABOUR MIGRATION FROM INDIA TO SAUDI ARABIA- AN ECONOMIC PERSPECTIVE

The large-scale migration of labour force from South Asian countries, especially India, to GCC countries dates back to early 20th century, when the exploration of oil began in the region. After the oil crisis of 1970's the demand for skilled and semi-skilled workforce increased tremendously. Migrants have become the dominant labour force not only in private sectors but occupy high paying public-sector jobs as well as government bureaucracy and they have been beneficial to both the origin as well as host countries. A major economic benefit comes in the form of remittances. As a leading remittance receiving countries, India received a sum of US$69 billion in form of remittance in 2015. Among the GCC countries Saudi Arabia has been one of the most favoured destinations for the Indian labour. The number of Indians in Saudi-Arabia which was only 34,500 in 1975, rose to 1,200,000 in 1999.

The paper which will be divided into three parts will start with inquiring about the changing nature of labour market of Saudi Arabia and further look into the migration pattern of Indian labourers and lastly the remittances and its impact on India.

Keywords: Migration, Labour, Remittances, India, Saudi Arabia.

0608256 ABHISHEK (Centre for European Studies, School of International Studies, Jawaharlal Nehru University, New Delhi –67). IDENTITY IN GERMAN LABOUR MARKET

Germany has been a country much friendly towards the migrants than other European countries. For this the historical experiences of the German people can be an explanation. The paper looks into the issue of identity in the German labour market. The paper has been divided into three parts, the first part of the paper give an account of the migrant population in Germany that includes the numbers, history and the educational attainments. The second part of the paper is about discrimination; it talks about the labour market outcome of those with migrant background against those without migrant background, briefly explains the concepts of labour market discrimination and identifies some of the signs of discrimination. Then it takes example of the Turks to elaborate how those with migrant background faces discrimination right at the entry point.

0608257 AZAD, MAMTA (Centre for European Studies, Jawaharlal Nehru University, New Delhi 110067). LABOUR MIGRATION IN NORDIC COUNTRIES

Since the European Union have more members in 2004 and 2007 due to Central and Eastern Europe becoming part of EU. This has caused more inflow of labour from central and Eastern Europe to rest of Europe.The Nordic countries have a large number of inflow of labors. A large number of labour migration has changed the Nordic labour market. This paper examines the reason why these labour have migrated to Nordic countries and what are the challenges they are causing to the Nordic labour market.

0608258 CHITTIBABU, KALI (Centre for Informal Sector and Labour Studies, School of Social Sciences-1, Jawaharlal Nehru University, New Delhi). REGIONAL AND CASTE DISCRIMINATION AGAINST DALIT WORKERS IN THE INDIAN LABOUR MARKET: A STUDY OF THREE URBAN CENTERS OF GUJARAT, COCHIN AND HYDERABAD

My paper examines the incidences of regional and the caste discrimination against the lower caste workers in the Indian labour market. I have mapped the literature explained the caste system and how caste system works in the Indian labour market. This paper examines the structure and ways of Regional and caste discrimination in the Indian labour market. I have studied the workforce engaged in the various sectors in the construction sector, cleanliness etc. from communities' rural regions of UP, Bihar and Andhra Pradesh to urban centers of Ahmedabad, Hyderabad Cochin. My study is a comparative analysis between communities and regions. I have studied the caste

discrimination faced by the lower caste workers through interaction with them in the *cooli c*amps across Indian labour markets in Urban centers of India. Caste discrimination prevents people of a particular section of society to engage in choice based jobs owing to affiliation to a particular caste. The lower caste workers in our country constitute a major chunk of population. The workers belonging to lower caste are discriminated only for having association to a particular caste. Lower caste people or workers face discrimination in getting education as well as in getting jobs in private sector as well as public sectors. I broadly did the comparative analysis between the people of SC community, OBC community and others as well by grounding them in the context of urban inequalities. Finally, I critically would like to examine the gap in terms of category in various sectors like construction and services etc. in these communities. And our labour can go to other countries for work but can't go to other states because of regional and caste discriminations.

The incidences of caste discrimination are increasing in the rural areas as well as urban areas in our country. My paper identifies how, where and at what extent caste discrimination affect the life of a lower caste worker from rural labour market1 to urban labour market. The caste discrimination exists due to various factors like lack of skills or the classification of jobs according to the available skills in labour market. The poor SCs, STs, women, Muslims and OBCs are discriminated while accessing the jobs in the mainstream sectors owing to lack of skills in urban areas specially. The acquisition of skills in urban areas is beyond the reach of the lower caste people because they don't have enough monetary fund to acquire skills. High incidences of poverty is a prominent factor which prevents development of human capital in lower castes. Highly unequal distribution of resources like land etc. influence the monthly earning of the families. The unfair distribution of land during the early phase of 1960s did lead economic disparities. The total population of lower caste people in India is around 170 million which constitutes 17 per cent of total population. The 17 percent is not a small number. It clearly shows one out of every six Indians belong to lower caste community. Despite having a majority community, they face caste discrimination and violence owing to their caste identity. The caste discrimination prevents them from their basic human rights like good education, equal job opportunity, decent working conditions and equal wages.

0608259 GAUTAM, AMIT (Centre for the Study of Social Systems, Jawaharlal Nehru University, New Delhi). **CASTE DISCRIMINATION AGAINST WORKERS IN INFORMAL SECTOR**

In contemporary time, India is the fastest growing economy in the world. One of the stepping stone for this was laid on 24 July 1991 by introducing economic reforms through Liberalization, Privatization and Globalization of Indian economy. Even though Indian economy is strengthening, we have grave inequality in our country. India has third highest number of billionaires in the world whereas unfortunately it has one of the lowest poverty rates among countries with largest population of poor. Considering the fact that one-sixth of Indian population are Dalits, this group comprises the large groups among poors. One of the foremost reason for this group to be poor is the presence of Caste in Indian Society. This paper looks at the correlation between economic inequality and social inequality, and looks at how caste has hampered the upward mobility of workers in informal labour sector who migrates and work in other places. This paper also reflects on the question, that even though economic reforms in 1991 opened plethora of possibilities for workers in informal sector but it has not reduced the experiences of caste has much drastically rather forms and manifestations of caste discrimination has changed in contemporary time.

Keywords: Caste, Inequality, Dalits, mobility.

0608260 JAYASHREE, E (……)**LABOUR IN ORGANISED AND UNORGANISED SECTORS**

"The Service of India means the service of the millions who suffer .It means the ending of poverty and ignorance and disease and inequality of opportunity. The ambition of the greatest man of our generation has been to wipe out every tear from every eye….."

Pt. JAWAHARLAL NEHRU

The existing social security legislation in India covers only the industrial and organized working class of only certain contingencies. Of the total employment in the country more than 94 % workers are in the unorganized

sectors these workers do not get adequate Social Security. The Central and State Governments is implementing some welfare schemes. Despite all these efforts, there is a huge deficit in the coverage of the unorganized sector workers such as agricultural workers, construction workers, bedi workers, handlooms workers, leather workers etc., in the matter of labour protection and Social Security measures. All these years, the Government expressed its difficulty or inability to cover all the workers in the country because of administrative difficulties and lack of finances. Neglecting rural workers and workers in unorganized sector in providing social security benefits is a clear discrimination and against the concept of social justice and principle of equality. Further neglect of these workers can be regarded as creating or encouraging more inequalities that is against the provisions of Indian Constitution which painted to build up a Socialistic Pattern of Society. Most of the workers in unorganized sector are casual, daily-wage, piece rate and seasonal. Time has come to help in various contingencies such as sickness, disablement, medical care and old age. Taking into consideration and the actual situation appropriate programmes of Social Security suitable to the needs and requirements of the people .These measures should be implemented in the stages and in a phased manner with a vigorous will and considerable speed.

0608261 KABDE, PALLAVI (Department of Public Administration, Dr B R Ambedkar Open University, Jubilee Hills, Hyderabad). GENDER AND UNORGANISED SECTOR: A STUDY ON WOMEN CONSTRUCTION WORKERS OF GREATER HYDERABAD

In the developing countries, Informal sector contributes to the national economy largely. India is not an exception. India's urban population constitutes about 37.7% of the overall population with a decadal increase of 9.1% as compared to 27.81% in 2001. The growth of population in urban areas is higher than in rural areas. There are many reasons for this phenomenon. In search of employment, livelihood and better living conditions, people end up in the urban areas.

These people are absorbed in the various jobs of unorganized sector due to the lack of education and proper skills. Construction sector is one such area where large numbers of migrants are engaged .It is the second largest employer in the country following agriculture, employing around 30 million of workers and majority of them are women. Lack of skill and education, little knowledge of legal rights, long working hours, lack of basic facilities at the work place, make the lives of women workers more vulnerable.

In Telangana State, a large segment of the workforce is unorganized in nature. Hyderabad being the capital of Telangana state and the most happening city of India has attracted huge poor population from not only the backward districts of Telangana state like Mahbubnagar, Nizamabad and Nalgonda but also the states like Bihar, Orissa and Maharashtra. According to an estimate, there are nearly two lakh construction workers engaged in the construction activity in and around Hyderabad. Since three decades construction sector has grown enormously with the flourishing of real estate business which includes construction of several IT firms and various residential ventures. The Government is also undertaking several projects such as Outer ring roads, inner ring roads, metro construction and many such activities which include huge labour.

With these activities, though Hyderabad has marked a niche on the globe, nothing much has been changed in the lives of these workers especially women. The present paper is an attempt to study the socio and economic aspects of women construction workers of Greater Hyderabad. It is an empirical study to assess the living and working conditions of women workers, knowledge about their rights, their issues and challenges faced at the work place. The paper attempts to assess the Government interventions for the welfare of the workers, women in particular and offer the possible solutions.

0608262 KUMAR, SANDEEP M (Department of Social Work, Osmania University, Hyderabad). A STUDY ON SOCIO ECONOMIC STATUS OF THE STREET VENDORS IN THE UNORGANIZED SECTOR AT NALGONDA TOWN

In current scenario worldwide vending is an important source of employment for a large number of people, especially urban poor. Due to its unique feature i.e. low skill and small inputs most of the poor preferring it as employment. In our country street vending falls in unorganized sector category. Since ages in our society street

vending has been considered a good employment for the poor. Now street vendors are inseparable from our market, society and culture. The estimated total number of street vendors in our country is around 10 million.

In our society street vendors have poor social protection and their working conditions on the streets expose them to a variety of safety and health issues. More often, Vendors are regarded as public nuisance. They are accused of depriving pedestrians of their space, causing traffic jams and having links with anti-social activities. Most of the street venders are leading their life in low level of socio economic conditions. More often the street vendors are experiencing harassments from the local goons, police and from the concerned authorities. The current study was conducted in Nalgonda Town of Telangana State, India to examine the socio economic conditions of the local street vendors.

This paper is based on empirical data and a review of secondary data on the problem and observations from a field study among urban street vendors. The required data was collected from street vendors from different areas of Nalgonda Town. An attempt was made to draw implications for Social Work practice and Research.

After making a study of 40 respondents from various urban places of Telangana State, the researcher draw the following inferences. Among the respondents women are less than men and also their earning are less than men. Most of the vendors are experiencing harassment from local goons, police and concerned authorities, but they are not reporting against them due to helplessness. Majority of the respondents reported health complications like urinary infections, kidney problems etc due to non availability of public toilets. Most of the respondents are not aware of their rights and exclusive services meant for them. Genuine effort of social workers, government authority and community concern, support and participation are more needed to overcome this problem.

Key Words: Nalgonda Town, Socio Economic Status, Street Vendors, Unorganized Sector.

0608263 KUMAR, ABHINAV (Vidya Bhawan Society, Udaipur). TRENDS IN PRIVATE SECTOR EMPLOYMENT: LOOKING THROUGH THE LENS OF CASTE AND GENDER

Gender and Caste are two of the most significant fault lines in modern Indian society. These are also two of the most important lenses through which all social, political and economic phenomenon in India are examined. Private sector employment is one of the things which have not been examined in detail through the lens of caste and gender. Most discourses related to caste and private sector employment revolve around the issue of reservation and other important issues like access to jobs and wage discrimination are relatively neglected areas of concern. Even among the scheduled castes, the situation of Dalit women in private sector employment is rarely discussed. This paper would use the wage and salary data collected in the IHDS survey which has happened in 2004 and 2011 to understand the trend in SC employment in the private sector. The paper would pay special attention to the issue of SC women in private sector employment.

The issue of caste and private sector employment would be examined from three angles: 1) Wage discrimination against scheduled castes 2) Under-representation of scheduled castes in private sector and 3) nature of jobs available to Dalits and woman. The paper concludes that scheduled castes in general and women in particular are under-represented in private sector, receive lower wage rate, are employed for lesser number of days in a year and are mostly employed in non-permanent jobs. As private sector employs more and more people issues like caste and gender discrimination must be examined in detail for equal socio-economic rights.

09. NATION, STATES AND EMERGING CHALLENGES

0609264 BRAHMA, VELENTINA AND AFIFI, NABIL AHMAD (Centre for Studies in Science Policy, School of Social Sciences, Jawaharlal Nehru University, New Delhi). BLOCKCHAIN TECHNOLOGY: AN ADVANCED DIGITAL PROSPECT FOR NATIONAL REGISTER OF CITIZENS

The first National Register of Citizens or NRC was done during the 1951 census after Sir Vallabhai Patel passed the Immigration Act in 1950. NRC was the basis of the Prevention of Infiltration plan in Assam formulated to identify and deport infiltrators from neighboring countries. The updation of NRC began in 2015 in Assam, and on 31st July 2018, the Assam government released the first draft of NRC. Other states of India such as Tripura are also considering to conduct a process of NRC. The updating process of NRC faced many technical challenges apart from the socio-political challenges that have caused much inconvenience to the common people in Assam. Blockchain technology has many interesting features and many state governments such as that of Andhra Pradesh are applying this technology in many different fields such as land registry, pharmaceuticals, and life sciences. This paper discusses those technical challenges and the possible solutions to those challenges of NRC through digital approach with the use of Blockchain technology.

Keywords: NRC, Blockchain, technology, Assam, Infiltration

0609265 SHANOJ, U (Department of History, RGM Govt. Arts and Science College Attapady, Palakkad Kerala). NATIONALISM IN INDIA THROUGH THE AGES: CURRENT PERSPECTIVES

What is Nationalism? The definition it means the desire of a group of people who share the same race, culture, language, etc. to form an independent country. India is a country there as secular outlook and people from different culture, language, tradition etc. the diversity in our country created a great cultural milieu so far as it protected out ethnicity in one character, that is nationalism. Indian nationalism developed as a concept during the Indian independence movement fought against the colonial ideologies during British Raj. Indian nationalism is an instance of territorial nationalism, inclusive of all its people, despite their diverse ethnic and religious backgrounds. After independence nationalism stronghold in others way ,It continues to strongly influence the politics of India and reflects an opposition to the sectarian strands of Hindu nationalism and Muslim nationalism In British India the intellectual group of freedom fighters created a weapon against the colonialism and they unified Indians through national consciousness towards the freedom from English peoples .Now the nationalism is continues as Hindu ideology to protect their political propaganda with from other communities the minorities should exempted from the nationalism they are all excluding from Hindu-rashta passively it is an another form of communalism. The changed political scenario and a new definition to politics have made this question a relevant one in the present time. The list of questions goes on with terminologies like secularism, Pseudo-secularism, Hindu-Nationalist, Muslim-Nationalist, Hindu-rashtra etc. India's secular credentials have been etched in constitution's 42nd amendment in 1976. And this secularism guarantees the Patriotic fervour and Nationalism to every Indian. So, in spite of giving a new definition to these terminologies the focus should be to safeguard the spirit of Nationalism. The recent incidents of Incendiary remarks by communal group and irreverence towards minority community have engendered a controversy which is quite against the spirit of Nationalism. On the other hand, Nationalism is a belief, creed or political ideology that involves an individual identifying with, or becoming attached to, one's nation. Nationalism bolsters the spirit of "India first" whereas Communalism sabotages this concept. India is a secular country with so many religions. So, India is not immune to darkest impulses of communal forces of any religion, nationalism is not only a patriotic feeling which lives in the nation and respect our national anthem and national flag but also we respect all the religion, and the people from all walks of life. the recent incident shows the people of minorities were killed by the name of cows and dalits were suffering in the name of caste etc. intolerance towards these group were excluded from our nation state where is the spirit of nationalism?. To protect the minority is not a political agenda of national leaders but the protect the safe guard of hindu rashtra, protect the holy cow protect the temples, spent millions of rupees to build idols of popular hindu leaders and protect the corporates whoever manipulate Indian over 70 years after independence .Rabindra Tagore was criticize the "nationalism a recurrent threat to humanity because with its propensity for the material and the rational, it trampled over the human spirit and human emotion. It upsets man's

moral balance obscuring his human side under the shadow of soul less organization". These communal forces with their religious conglomeration do not unite people in the name of their religion but create a divide between Indians. They are compromising with the unity and integrity of India.

10. NATURAL RESOURCES, BIO-DIVERSITY AND GEOGRAPHIC INFORMATION SYSTEM

0610266 DUBEY, N K (Department of Botany, Banaras Hindu University, Varanasi-221005).

BIOPROSPECTION OF TRADITIONALLY USED MEDICINAL PLANTS

India is a mega- biodiversity rich country and has varied climatic zones comprising approximately 17000-18000 species of flowering plants of which 6000-7000 are estimated to have medicinal usage in folk practices. In India, around 25,000 effective plant-based formulations are used in traditional and folk medicine and the country enjoys an important position in the global pharmaceuticals sector. From ancient times, people are known to use the traditional medicinal plant *Materia medica* and their bioactive compounds for health care purposes. Basically, the medical formulations are developed from different plant parts or their synthetic analogs together with their folklore systems. According to World Health Organization report, more than 80 per cent of world's population depend on plant based medicines for their health care needs . The traditionally used medicinal plants have a large range of therapeutic properties, inhibiting growth of pathogens or kill them without causing toxicity to the host cells Due to immense use of allopathic and synthetic antimicrobial drugs, microbes have developed resistance to different antibiotics Herbal extracts and preparation from medicinal plants had come across its journey from the very beginning of the 20^{th} century. Recently, scientists are focusing to develop modern medicines based on the purified active ingredients through modern chemical and biological technologies. Traditionally used medicinal plants are still recognised as common practice for cure of different diseases. Their disease curing ability is attributed to presence of different phytochemicals including alkaloids, flavonoids, and terpenoids. Traditional knowledge offers the source of new drugs developments from plants. Due to recent developments in gene technologies, many biotechnologically rich but biodiversity poor countries are involved in the act of biopiracy by illegally patenting the traditional knowledge of other countries. Hence, there is urgent need of bioprospection of traditionally used medicinal plants in order to have sovereign right on biodiversity.

11. PATENT LAWS AND INTELLECTUAL PROPERTY RIGHTS

0611267 LAKSHMI, V VIJAY (Dr B R Ambedkar College of Law, Andhra University, Visakhapatnam).

ENFORCEMENT OF IPRS- SPECIAL REFERENCE TO PATENT RIGHTS

A 'Property' whether Tangible or Intangible bestows its owner with certain privileges and rights. But mere conferring a right is not sufficient. These rights are required to be legally recognized and protected. the protection includes the enforcement of rights whenever the owner is deprived off from peaceful enjoyment of his rights. A right is as said, 'an interest recognized and protected by law'. The well-known Latin proverb, "*ubi jus ibi remedium*" (where there is a right there should be a remedy) signifies this fact. Law provides certain recognized remedies through which the violations can either be prevented or compensated.

The rules apply in all cases with certain exceptions and limitations, which purely depends upon the nature of property. In case of Intellectual Property, the concept and origin of which does not have an antiquity, the very recognition of 'Intellect' as a property itself is a remarkable incidence in the history and evolution of 'property'.

'Intellect' is first recognized as a 'property' and the rights that are granted in this regard are called 'Intellectual Property Rights'(IPRs). The subject matter of IPRs is creations that are originated by human brain. These include writings, music, arts, inventions etc. the scepter is ever expanding ass new creations are evolved in the course of time.

Inventions, which play a very vital role in the economic growth of any nation, are the products of ideas, which ultimately are materialized or are manifested in various forms. It may be a new product or a new process and belongs to all fields of technology. The legal regime that protects the Inventions are called as 'Patents'.

Patent laws do not protect each and every invention. Depending upon the socio-economic status, each country has its own policy. IPRs are protected at both national and international level.

Patent protection is statutory and rights are specified under various provisions of Patent Act, 1970. However, the ways/modes of enforcing the rights of patent owner is not enlisted. Nonetheless, Judiciary has played a very commendable role in recognized various circumstances that makes an act a violation of patent right. Digitization and explosion in communication has facilitated not only the patent filing and patent grant system but it has also enabled to access statutory and judicial regimes of various countries and rules of International Organization, treaties, Conventions dealing with patent enforcement, at an alarming speed and convenience. An attempt would be made during the deliberation in the ensuing Congress where the issues related to enforcement of Patent rights at national and international level would be discussed.

12. PEASANTS, LIVELIHOOD AND LAND USE

0612268 BHOWMICK, CHITRITA (Department of Economics, Victoria Institution College, Kolkata)
RURAL LIVELIHOOD DYNAMICS IN WEST BENGAL: SOME QUANTITATIVE AND QUALITATIVE ASPECTS

The analysis of the quantitative significance of non-farm sector in the emerging economy, in the process of development is important. However, the presence of significant percentage of poor in the rural areas raises question about the nature and conditions of work in which workers are participating and earning from their present job. Increasing casualization of work force, presence of underemployment, decrease in the growth rate of real wages of casual workers, gender bias in wage payments are depressing features of rural labour market. However, the emergence and growth of the non-farm sectors and its impact on poverty vary across places. It is important to identify regionally differentiated process so that appropriate policy support may be provided.

The present study is proposed to be based on secondary data. With secondary data we would analyse the quantitative significance as well as qualitative aspects of employment with an emphasis on West Bengal . In this context, we would use data of NSSO 73rd round (July 2015- June 2016) to estimate various operational and economic characteristics of the unincorporated non-farm enterprises in manufacturing, trade and other services (excluding construction) in rural areas and construct Employment Quality Index.

Present study makes an attempt to construct Employment Quality Index by using information on the operational characteristics of the unincorporated non-agricultural enterprises such as their a) type of ownership, nature of operation, type of enterprise, b) their status of registration, c) problem faced in operation, d) government assistance received, e) employment particulars, f) use of ICT etc and their economic characteristics measured in terms of g) operating expenses and receipts, h) Gross Value Added, i) compensation to workers, j) owned and hired fixed assets, k) indebtedness status in terms of outstanding loans, etc. Specific information was also collected to have some estimates related to l) skill development, m) Swachh Bharat Abhiyan.

Such analysis would help us to analyze both quantitative and qualitative aspects of employment. It would also help us to find whether there is any need to give some extraneous assistance to improve the quality of work and earnings to realize the dream of inclusive growth.

0612269 JYOTI (770, first floor, sector 69, near Grecian hospital, SAS Nagar, Mohali Punjab-160062).
LAND USE EFFECTED PEASANT CLASS: A STUDY OF WESTERN UTTAR PRADESH

Land use has been changing due to process of development in India. Government and industrialists need land for infrastructural as well as commercial use. With this, Land use has been frequently changed for developing Real estate. Technology has broken all the barriers for investors to invest in this field, one side Indian laws regarding acquire land and other side exemption in taxes; made all task easy for buyers. Though earn livelihood for peasants has become harsh due to losing their land in different states in India. Western Uttar Pradesh peasants recently bear all pain due to this process and everywhere situation more or less same in the other states. Transformation of land agriculture to commercial use is common now a day. This is very complex issue carry multiple problems facing due to land use or acquisition land. Even situation is showing crises of food in upcoming time. Peasant forcefully or willingly sale their land for the commercial purpose or other infrastructural changes but later on its effecting their livelihood and habilitate. Sixty five percent of the Indian population lives in rural areas and their occupation based on agriculture. They hold small size of land and Most of the places agricultural activities based on traditional equipments. After losing land peasant suffered most because they have no other skills to do work rather than fields, so this unskilled labor directly or indirectly effected. Some of them moved to cities and they work as labour in harsh conditions Most of the peasants start work nearby or within a village on daily wages. Hypothesis of this study is peasants losing their land and occupation rather than benefiting from compensation. Compensation doesn't help them much. It happened just because purpose has been changed of land. Instead of acquisition land; Investors and government should lease land which can give permanent income to peasant and help to stop displacement. For some

necessary land use they should use barren land instead of cultivating land. In this paper, Analysis of this whole situation will be done.

Objective of the study is analyzing the change in land use and its effects on peasant class.

Primary as well as secondary data sources used throughout the paper, primary data taken from PhD field work; it will be including peasant conditions after land acquisition, effect on their occupation and displacement (sampled) for paper. For secondary sources books, articles, reports, newspapers, online excess data will be use.

Methodology which would be following throughout the paper writing will be empirical. This study further critical examine land use phenomenon in India.

Key words: land use, livelihood, peasants, stakeholders, land market, political parties, and Industries.

0612270 KUMAR, MUKESH (ANSISS, Patna) बिहार के मछुआरों का आजीविका जोखिम

बिहार एक कृषि प्रधान राज्य है, जहाँ भौगोलिक भिन्नता के साथ साथ साँस्कृतिक विभिन्नता भी पाई जाती है। यहाँ के 88.7% आबादी ग्रामीण क्षेत्रों में निवास करती है तथा अधिकांश लोग आज भी उत्पादन के प्राथमिक स्रोत पर आश्रित हैं। इन प्राथमिक उत्पाद स्रोतों में मत्स्यपालन भी एक है, जिसमें यहाँ की लगभग 50 लाख आबादी संलग्न है। मत्स्यपालन कार्य मुख्यतः मछुआरा समुदाय द्वारा किया जाता है, यह जाति मल्लाह, बिन्द, केवट, तियर, खरवार, गोंड, धेवर, मांझी इत्यादि उपजाति में विभाजित हैं। इन जातियों का मुख्य पेशा मत्स्यपालन, मखाना खेती एवं नाव चलाना आदि है, ये आज भी जीविकोपार्जन हेतु पूर्णतः प्राकृतिक संसाधनों पर आश्रित हैं। मत्स्यपालन जलस्रोतों पर आधारित आजीविका है, जो प्राकृतिक संसाधन हैं, कभी अत्यधिक वर्षा (बाढ़) तो कभी अल्प वर्षा (सुखाड़) के कारण मछुआरों की आजीविका प्रभावित होती है। मछुआरे न तो तकनीकी कुशल होते हैं और न ही इतने सक्षम कि आजीविका के अन्य वैकल्पिक स्रोतों पर आश्रित हो सके। मछली पकड़ते समय उनका जीवन भी जोखिम भरा होता है। वर्तमान समय में उपर्युक्त सभी मछुआरों की आजीविका जोखिम को उत्पन्न करता है। यह जोखिम मछुआरे की सामाजिक और आर्थिक स्थिति को तो प्रभावित करता ही है साथ ही आजीविका के समस्त साधनों को भी प्रभावित करता ळें

प्रस्तुत अध्ययन में इन्ही सब तथ्यों का अवलोकन करने का प्रयास किया गया है ताकि मछुआरों के आजीविका जोखिम की समस्या का समाधान कर सामाजिक एवं आर्थिक स्थिति को सुदृढ़ किया जा सके। मछुआरों के आजीविका सम्बन्धी अन्य वैकल्पिक स्रोतों की जानकारी प्राप्त करना प्राकृतिक संसाधनों पर उनकी निर्भरता को कम करना तथा सरकार द्वारा इसके कल्याण सम्बन्धी योजनाओं का समालोचना एवं मूल्यांकन प्रस्तुत शोध प्रपत्र का उद्देश्य है।

0612271 KUMARI, ARCHANA (Central University of Rajasthan). PROSPECTS OF LIVELIHOOD THROUGH LIVESTOCK ECONOMY IN DIGITAL ERA

Livestock is an important source of animal protein for farm families through the consumption of milk, dairy products, eggs and meat. In addition to their use as source of food, it is also used as draught power in agriculture and transport and their dung is used to help enrich soil fertility. Therefore, sales of livestock and livestock products make up a considerable proportion of the rural farmers income (Sharma Paul Vijay).

The livestock sector continues to make an important contribution to the Indian economy and the agricultural sector in particular. Although the share of livestock as a proportion of agricultural GDP has increased a little from about 23 per cent in the early 1990s to 25.5 per cent (at 1993 – 94 prices) during 2001 -02 the livestock sector has grown at a rate of over 3.7 per cent and during 2016 –17 4.17 per cent, i.e., higher than that of agriculture as a whole. Furthermore, as overall consumption was of livestock products is low and as household income improve, the livestock sector would continue to see sustained growth over the comeing years.

Despite the importance of livestock in the Indian economy, especially for the livelihood of resource – poor farmers and landless labourers, government policy towards this sector has suffered from the lack of a clear and strong thrust and focus. There is need to providing such services at the farmers ' door and link with cost recovery for economic viability of the programme as the large share of budgets is spent on the wages and administrative costs. There are major problem shortage of feeds and fodder for livestock feeding is a major constraint for India' livestock sector growth.

However these technologies have been adopted at a limited scale, therefore, there is need to identify constraints in the adoption of these technonologies and modify them accordingly. The quality control measures for animal feed are not very effective so there has always been an issues of poor quality of feeds. There is also need to increase investment in the livestock sector.

Livestock sector is not likely to benefit from the trade liberalisation because the major barriers to trade in livestock products are not only related to tariffs and other border measure that restrict trade and /or subsidies but also protectionist use of sanitary and phytosanitary measure, animal welfare – related issues and other non – tariff barriers. Despite growing concern that certain sanitary and phytosanitary measure may impede the flow of livestock product trade, many developing countries are not well positioned to address this issue. Developing countries are unable to effectively participate in the international standard – setting process and, therefore, face difficulties when requested to meet SPS measure in foreign markets based on international standards. They face serious problems on scientific research, testing, conformity assessment and equivalency and also lack complete information on the number of measures that affect their exports.

This paper is an attempt to look into the question of technology and other dimension to comprehend whether there is need to have long term appropriate breeding policy. There is need to re – orient the government policy for delivery of livestock services and involve major stakeholders.

0612272 PERIYASAMY, P; SHALU, K S; SANJEEV, SUSANNA AND GAYATHRI, V R (Department of Economics, Kristu Jayanti College, Bangalore – 77). LAND USE AND CROPPING PATTERN AND ITS IMPACT ON LIVELIHOOD IN KARNATAKA: AN ECONOMIC ANALYSIS

Indian agriculture is a land based activity and as such land and water is major factors of production. Land is also primary part of the ecosystem. The method in which land is used can have insightful crash on the economy. In the present context, agricultural economist and agriculture scientist fingers have been pointed out that Indian agriculture distress seems to be lacking and it is going through an inactive growth rate and apparently long phase of farmers' livelihood. Therefore the present research paper aims to analyse land use dynamics, understanding the crop diversification, and considerable importance to famers' livelihood in Karnataka. The study is based on the secondary data on land use pattern for nine fold classification were collected for the period from 1990-91 to 2017-18 for all the districts of Karnataka. In order to examine the influence of various factors present land use status, changing of cultivation, production and livelihood conditions by appropriate statistical tools has been applied. Results of this study would be highlight the impact and challenges of land use, crop inflection and lacking of farms practices and suggest suitable implication have been presented.

Keywords: Land Use and Crop Pattern, Understanding Agriculture Distress, Impact and Challenges of Farm Practices, Policy Implications.

13. PEOPLES (DALITS, TRIBES, WOMEN, PEASANTS, ETC) STRUGGLES AND MOVEMENTS FOR EQUITABLE DEMOCRATIC SOCIETY

0613273 DAS, SUMANA (Department of Political Science, Abhedananda Mahavidyalaya, Sainthia, Birbhum). **POLITICAL MOBILIZATION OF MATUA MOVEMENT IN WEST-BENGAL**

In the post-independence era although caste has played a very minimal role but Bengal had experienced tremendous Dalit movements in the first four decades of the 20th century. Various social movement that related to the question of Dalit identity was started in the 1870s and two communities respectively Rajbansis of North Bengal and Namasudras of East Bengal were at the forefront of this autonomous dalit movement. In the context of partition of Bengal, Matua community (Basically Matua is a sect of Hindu folk religion belong to namasudra community. They were largely influenced by Bhakti Movement of 15th century) faced the challenge of identity crisis and took various unique and significant trends under diffrent leadership of this movement. Significant fact of Matua movement is that during 1947 partition Matuas' were closely associated with muslim community specifically Muslim League(ML) but the bitter experience of 1950s horrible communial violence forced the Matua community to move to West Bengal and settled down at Thakurnagar at North 24 parganas that emerged as a new cultural and spiritual hub for a Namasudra renaissance and as an organizational strength Matua Mahasangha(MM) also played a very significant and active role in this context. So, Partition, Displacement and Migration of Matua community created the problem of Refugees, their identity crisis and the issue of citizenship during Post- partition Bengal. In this problematic context left front government in West Bengal played a crucial role towards Matua community, that helped to increased their vote bank. Presently, Matuas became a crucial part of electoral game between different political parties in Bengal. This movement has led for social security, justice and political benefits. From 1870s to till date, inspite the Matuas demand for identity assurance has not fulfilled but main stream political parties are using matua community to build their vote banks.

KEY WORDS:- Matua, Rajbansi, Namasudra, Thakurnagar, Matua- Mahasangha, Partition, Refugees, Identity Crisis.

0613274 GOYAL, R S (81, Engineers Enclave, GMS Road, Dehradun 248 001, Uttarakhand). **WHETHER POLITICO- ECONOMIC INCLUSION WILL HELP DALITS IN INDIA TO OVERCOME THEIR SOCIAL POVERTY?**

In India, caste has historically been one of the main determinants for stratification of people in different socio-economic hierarchical groups. It is a closed system, where-in a person's social status is obligated to which caste s/he is born into. Consideration of purity and pollution determine the interaction between different castes for marriage, eating and drinking. For years, these taboos were sole basis of (unequal) access of different castes (with scheduled castes (dalits) at bottom) to wealth, income, power and prestige. In recent times however, lower castes by virtue of development/growth support, protection and political space provided by the Indian constitution have emerged as a socio-economic power to reckon with.

Against these developments this paper attempt to analyse, how a society historically nurtured on hierarchical caste stratification is adapting to rising of lower castes, of changing roles and occupations and, providing them social space demanded by them? This phenomenon is examined by taking Haryana (a north Indian state) as a case.

Socio-economic development indicators of Haryana reflect a progressive scenario. Jats, a high caste, constitute the single largest (24 %) caste group in the state. Scheduled Castes with 20% population are the next largest group. Jats are socio-economically superior and it rests on their ownership and control of the major portion of land. It allowed them to provide employment and control the livelihood of poor (largely dalit castes). Jats have also been at the pinnacle of practically every formal and informal institution in Haryana.

Reservation in educational institutions and jobs, access to subsidies and low interest loans for a host of opportunities and, politics of nurturing has enabled scheduled castes amass significant improvement in their socio-

economic status. Data from 2011 census and National Family Health Survey (2005-6) further indicate that for almost all the major indicators of development viz.; population growth rate, prevalence of anaemia among children, infant mortality, schooling of children, per capita consumption etc. the gap between scheduled and other castes has narrowed significantly. Scheduled castes have fared better (than higher castes) in the sphere of sex ratio and women involvement in family decision making.

In spite of these developments, scheduled castes' attempts to seek social space are confronted by Jats. The tussle to maintain the status quo is manifested in several ways including convergence on caste lines and, exclusion and exploitation of lower castes (demonstrated by several case studies). Scheduled Caste women have been targeted most.

Emergence of Scheduled Castes as a power is a reality. They are also getting organized. Socio-economic gaps between them and the higher castes are narrowing and may diminish all together in coming years. Due to lack of land ownership, Scheduled Castes may not be able to match the economic power of Jats, they are rapidly gaining strengthen in political and governance areas. Against this backdrop, trend of caste specific exclusion and exploitation is likely to become counter-productive. Even with the polarization of high castes on caste lines, social space to lower castes cannot be denied for long.

0613275 YADAV, RAM CHET (Central University of Gujarat, Gandhinagar, Sector-29, Gujarat). **M K GANDHI AND MASS MOBILIZATION IN CHAMPARAN SATYAGRAHA**

The nature of the Champaran Satyagraha was to transform the agrarian social structure and the objectives were to more reformist and restorative. In fact, the struggle abolished the tinkathiya system, in which the sharahbeshi and tawan taxes were reduced and the money was returned to the peasants. Historically, the advent of Gandhi in Champaran was in April 1917 and he suspended his inquiry of causes by the statement recording of indigo raiyats in June 1917 after the appointment of the Champaran Agrarian Enquiry Committee. The committee was appointed by the government barely two months after his arrival. In these two months, Champaran peasants participated with huge demonstrate strength of the mass mobilization which was unprecedented and unwarranted to Gandhi. Essentially, Champaran peasants were prolonging struggle against the unjust exploitation of indigo cultivation system. After all failed in the headway, they forced Gandhi to come and support their movement in which Rajkumar Shukla was the mainly. Hence, the paper quest about the reason behind of mass mobilisation of people against the forcible cultivation of indigo rather than foodstuffs by the British Government. Meanwhile, Champaran Satyagraha has been examined the contributions of Gandhi for the mobilization of peasants. To examining the paper, an autobiography of Gandhi and his Collected Works have been sought, albeit, many other literatures have also been resorted to analysing the paper. Methodologically paper connotes the exploratory in nature and the historical method has used to systematic analysis and interpretation of the topic. Finally, the paper finds out the mobilisation of masses were the result of self-consciousness of peasants against the exploitation in which Gandhi's intervention has enhanced more and he led the movement.

Keywords: Mass mobilization, Champaran Satyagraha, M.K. Gandhi, Peasant Movement, Freedom Struggle

14. PEOPLES HEALTH AND QUALITY OF LIFE

0614276 AHIRWAR, RAJEEV AND MONDAL, P R (Department of Anthropology, University of Delhi, New Delhi). THE PREVALENCE OF CARDIOVASCULAR RISK FACTORS IN INDIA: A SYSTEMATIC REVIEW

Non-communicable diseases (NCDs), primarily cardiovascular disease (CVD), diabetes, cancers etc are responsible for 63% of all deaths worldwide (i.e. 36 million global deaths). Among various chronic non communicable diseases, CVD shows the largest share in India. The fourth highest CVDs prevalence rate reported in India. In last three decades, the frequency rate of CVDs is alarmingly increased. Obesity, hypertension and dyslipidemia are the main causing factors for cardiovascular disease.

Approx 2.8 million people die each year globally due to obesity. In India, Urban population and states with high socio-economic status were found to be having higher prevalence of obesity like Delhi. Hypertension is responsible for 57% of all stroke deaths and 24% of all deaths are due to coronary heart disease (CHD) in India. The overall prevalence of hypertension in India was 29.8% (i.e. North India-14.5%, East India-31.7%, West India-18.1% and South India-21.1%). Dyslipidemia is an important risk factor and that is responsible for cardiovascular disease and amost leading cause of morbidity and mortality. In India, recent studies have reported that high cholesterol is present in 25-30% of urban and 15-20% rural populations. The aim of the present study is to report the prevalence of cardiovascular risk factors i.e. obesity, hypertension and dyslipidemia in India and to spread awareness about it.

Keywords: Obesity, high blood pressure, dyslipidemia, cardiovascular disease (CVD)

0614277 ANAND, RAVI KANT (Center for Russian and Central Asian Studies, School of International Studies, Jawaharlal Nehru University, New Delhi). HEALTHCARE REFORMS: A CASE STUDY OF KAZAKHSTAN- 1991 TO 2015

To reform health care sector is always a complex task, which is featured by conflicting ideas or interests and limited evidence. If we see the health care sector of Kazakhstan, it can be seen that with their disintegration from USSR due to shortage of fund, unavailability of proper management authority, this sector has suffered a lot. So, these reforms were mainly focuses or started with aim to enhance the efficiency of health care services. Although Reforms were begin to bring change or improve the health care sector by the Government of Kazakhstan. Eventually, the pace of improvement of the health care sector was very slow till 2001. With the involvement of international organizations in healthcare sector led the amelioration of health care services in Kazakhstan. Under health reforms, so many committees were formed, laws were passed and a number of international conventions such as the Convention on the Rights of the Child, the International Covenant on Economics, Social and Cultural Rights and the World Health Organization Framework Convention on Tobacco Control were proposed Kazakhstan. Although there were many obstacle come in the path as shortage of fund was one of the major problem, limited allocation of funds in health budget, dependency on out-of-pocket payments, lack of awareness about child diseases and sign of malnutrition, use of contraceptives etc. But with time and external cooperation the health care sector were much improved. In recent years, there has been large involvement of international organizations in the field of privatization of health sector especially in primary health care, dental care, diagnosis and ambulatory care, consultations, health infrastructure, health financing, pharmaceuticals, health education, medical tools and equipments. International donors and agencies are continuously accelerating their services for the improvement of Kazakhstan's health sector. Funds coming from international donors are largely used for the better treatment of patients. In Kazakhstan about 55% medicines were imported from CIS countries while about 45% of the medicines were imported from other countries. This clearly shows the overdependence state of the country on imported pharmaceuticals products and makes this country the natural export destination. Although, Kazakhstan show a very potential for growth in production of medical equipment still the market majorly depends on import of about 95% share of total market volume. There is about 14.5% growth in the import of medical equipment in 2001-2003. In 2002, approximately US$ 85 million total volume of expected import of medical equipment, furniture and items for medical use. Overall after the disintegration of Kazakhstan from Soviet Union there is profound changes in the health care system.

The main reason to take this topic is that Kazakhstan has got independence after the disintegration of Soviet Union in 1991. Before the independence all the powers were under Soviet Union but just after independence, Kazakhstan had nothing in their hands. Lack of funds has drastically impacted the health sector. The study will be based on primary and secondary sources.

Keywords: budget, committees, disintegration, donors, pharmaceuticals `

0614278 BOYI, VIZIENDIRA; SADHU, RAHUL AND PRADEEP, CH (Department of Women Development and Child Welfare, Government of Telangana, II Floor, Swarna Jayanthi Complex, Beside Maithri Vanam Complex, Ameerpet, Hyderabad – 500038). SHAPING THE FUTURE OF NUTRITION PROGRAM THROUGH DIGITAL TECHNOLOGY

Supplementary Nutrition Program (SNP) under ICDS is one of the largest and flagship programs in India. It is Arogya Lakshmi (AL) Scheme in Telangana, through which hot cooked meal as spotfeeding to pregnant and lactating mothers (4 lakhs) and ensures micronutrients administration, growth monitoring and counselling is provided at Anganwadi Centre (AWC) with 83% of state government contribution, children <6 years (18 lakhs) are provided nutritious food, spending more than allocation as well. State Government has been allocating around 700 crores per annum for the nutrition program. Manual registers were in place before digitalizing the data, with fake registrations number of beneficiaries were shown higher than actual, food commodities supply chain management was a mess which led to leakages and misuse of funds.

Role of Digital Technology started with Aadhaar authenticated name based tracking system, namely Nutrition and Health Tracking System (NHTS) facilitated to weed out non-existing beneficiaries and track nutritional improvement of actual beneficiaries and removed fake registrations of 1.5 lakh pregnant and lactating mothers and 4 lakh children through NHTS. Digital Technology usage is increased in the department by adding other digital applications namely Commodities Supply Chain Management (CSCM) which is a biometric authenticated digital application through which feeding gaps have been reduced drastically and actual beneficiaries are provided with necessary supplementary nutrition. Together with NHTS and CSCM and its allied applications, department could save 160 crores per annum. Budget & Expenditure Monitoring System is brought in for the monitoring of all releases and expenditures in a transparent manner. Other web applications like Anganwadi Information System to maintain all basic information related to all AWCs, Geo-tagging of AWCs through which all 35700 AWCs are geo tagged with basic details, Employee Management System to maintain details of department employees and Anganwadi functionaries, it is functioning to disburse honorariums directly to the accounts of Anganwadi functionaries and also facilitates the transfers of employees systematically, m-Anganwadi is to track the visits of field level officers to AWCs and daily activities, it is linked to geotagging data, attendance monitoring system is to monitor the attendance of the department staff daily which is biometric and linked to geotagging data and Rapid Reporting System (online MPR) is used to submit monthly progress report online to Government of India every month.

Data related to beneficiaries, programs, nutritional status, supplies, monitoring, attendance, details about each AWC and each employee on finger tips using dashboards. Senior officers from headquarters are able to monitor and extend necessary support to field level officers in time. Digital Technology is shaping the future of nutrition program in the department and real time monitoring of nutrition program through common application software will be a reality soon in the state.

Key words: Arogya Lakshmi, NHTS, geotagging, biometric, nutrition and digital technology

0614279 GIRI, AJAY KUMAR (Department of Geography, Dr. GSPG College, Lalpur, Varanasi). IMPACT OF HUMAN POVERTY ON PULMONARY TUBERCULOSIS DISEASE IN MAU DISTRICT: A STUDY IN GEOGRAPHY OF HEALTH

Pulmonary tuberculosis (PTB) is a common and in many cases lethal infectious disease caused by a bacteria i.e. Mycobacterium tuberculosis. This disease is found in humans as well as in animals (bovine type) and

which infect the lungs, as well as other body organs. It is contagious and spreads through droplets in the air when an infected person coughs, talks or sneezes. Tuberculosis (TB) is also known as 'disease of human poverty'. Tuberculosis and human poverty are part of a bi-directional relation, for either human poverty may be related to poor health conditions or these poor conditions may induce poverty, reducing opportunities of work and subsistence, thus forming a vicious circle that only tends to worsen. The severity and negative impact of the disease varies at an inverse rate to the HDI (Human Development Index), and its non uniform distribution is influenced by factors like territorial extension, disordered population growth and the concentration of people in the poorer areas of the cities, which have been dragging along for years. The relationship between human poverty and TB is well documented regarding risks related to indicators of socio-economic status, such as overcrowding, poverty and unemployment, but no effective solution has been found, although many investments are being made. However, such measures focus on treatment instead of prevention. Prevention is not inexistent; there are actions for prevention and control of TB, strategies like DOTS that are innovative and effective. Poverty informs of nutritional deficiency, cultural deprivation, unawareness manifested into severness of TB in developing countries.

Research claims that poverty has a profound impact on control of TB and the success of TB programmes as poverty related barriers delay or prevents poor TB patients from accessing TB services. Historically, TB has been associated with poverty. According to the Revised National Tuberculosis Control Programme's 2007 report, the usual victims of tuberculosis are migrant labourers, slum dwellers, residents of backward areas, and tribal groups. It is therefore no surprise that so many weavers are infected with tuberculosis; working in closed spaces filled with dust and thrums (from their looms and cloth) for a prolonged period has great risk of infection. Moreover, the cure for tuberculosis requires the consistent intake of a large number of drugs, which is difficult to manage for many patients.

The present research is based on primary survey which conducted during Nov, 2015 to July, 2015 on the TB units and DMCs and DOTs centres in Mau district. Total 285 respondents (TB patients) have given interview under RNTCP. Interview for collection of primary data has run by well structured questionnaire which is divided into five categories such as background information, information about Tuberculosis, information about TB control programme, perception of patients about tuberculosis and Daily dietary chart of TB patients. During primary survey 169 male and 116 female TB patients faced interview at different TB centres of Mau District. 150 respondents were Muslims and 135 respondents Hindus. Different size of respondents have conducted interview with availability of patients at TB centres of study area that is mansion above. Out of total 21 TB-DMCs, 11 centres have randomly selected as sample random sampling with all four TB units for the purpose of primary survey from geographical area of Mau district. Total 285 respondents have given interview without any hesitations and interviewer has not to pay any money/charge to respondent for his research. Out of 15 survey sites, 07 are situated in urban centres and 08 in rural area of the district.

0614280 IMDAD, NIKHAT AND TAYYAB, ABU (Department of Sociology, University of Lucknow, Lucknow). **STUDY OF MATERNAL HEALTH OF WOMEN LIVING IN SLUM AREAS OF MALLAHITOLA WARD OF LUCKNOW CITY: WITH SPECIAL REFERENCE TO NUHM PROGRAMME**

Maternal health is associated with physical and mental wellness of women during pregnancy and delivery. Maternal health becomes essential in countries where maternal mortality rate is high. In developing nations like India maternal mortality rate is comparatively high in rural areas than urban areas, thus it becomes essential to provide maternal and child health services in rural areas to improve this situation. Government launched the National Health Mission in 2013 subsuming the National Rural Health Mission scheme on 12 April 2005 to provide accessible, affordable, accountable, affective and reliable primary health care and bridging the gap in rural healthcare through creation of ASHA. National Urban Health Mission was launched in June 2013 for urban areas. Thereafter NRHM and NUHM became two submissions under overarching NHM. Present paper attempt to understand the situation of maternal health of women living in slum areas of Mallahitola ward of Lucknow city. In this study exploratory research design has been used to explore the data. To analyse the situation 50 females has been selected using convenience sampling. Undoubtedly health practices are increasing but their proper utilization is

not up to the satisfactory level due to lots of reason like faulty system, lack of accountability among service providers, illiteracy and lack of awareness among females living in slums of study area.

Key Words: Maternal Health, National Rural Health Mission, National Urban Health Mission, ASHA, Maternal Mortality Rate.

0614281 JANGIR, HEMRAJ P (Indian Institute of Dalit Studies, New Delhi). DISCRIMINATION IN ACCESS TO HEALTH AND EDUCATION: NARRATIVES FROM *NAT* CHILDREN IN RAJASTHAN

Children can be considered as the future hopes of society; they are like buds which need to be properly nurtured so they can fully bloom. It is universally recognized that children are the most important assets of any society or nation and investment in their education and health are best investment. Irrespective of various plans and policies, still huge numbers of children are not able to enter in school and are malnourished. Children with stigma are most vulnerable in education and health. The present empirical study is mainly focuses on children of *Nat* community. The *Nat* community in Rajasthan is De-notified tribe whose primary occupation is sex work. Children from this community are considered as most deprived because of their low level of education and poor health. They are the victim to caste based discrimination, stigma attached to their mother's occupation, and the stigma of nomadic tribes or criminality. The present paper is an attempt to understand these various stigmas attached with *Nat* children and how it affects to their education and health. The finding of the paper shows that the level of education and health among the *Nat* children is very low in comparison with other community's children. Because of their social status *Nat* children are denying in accessing education and health services in the village. The lack of education and awareness hamper their livelihood. A large number of children are involved as child labour that is prohibited in our country. Although girl children of the community have an option to get married but findings of the study shows that very less number of girls gets married. Study results have shown very limited accessibility of health services by the *Nat* community. There is a need to create a conducive environment for the people of *Nat* community to enjoy their right to education and health as equal citizens.

Key Words: Education and Health, Stigma, Vulnerability, Sex Work, and Children

0614282 KAMLE, SUBINITA AND KAMLE, MUKUL (Department of Geography, Patna University, Patna). STATUS OF HEALTH CARE FACILITIES IN WEST BENGAL: A DISTRICT LEVEL ANALYSIS

Improved and accessible health care facilities are the integral components of a truly developed society; not only because it is indispensable for human happiness and well being but as, it also greatly influences the economic prosperity of a region. However, in reality health care infrastructures are not uniformly available and/or accessible across space and time. This uneven distribution of health care facilities is the result of various socio-economic determinants as well as politico-administrative factors such as, income, education, urbanization, governmental health policies, health budgets, state investments in health services, hiring health workers etc. The present paper concerns with the task of discerning the status of availability of health care facilities in different districts of West Bengal. The paper seeks to analyze the provisions of health care Infrastructures, facilities and its consequential health outcomes across the districts of West Bengal. The study examines district level variations in the availability, accessibility and adequacy of different components of health care facilities such as, no. of medical institutions (Hospitals, Primary Healthcare Centers, and Private Nursing Homes), no. of registered doctors, no. of beds, bed population ratio, doctor population ratio etc. in West Bengal. The study also investigates the socio-cultural determinants affecting the health care facilities and examines the interlinkages between them. To scientifically ascertain the levels of health care facilities in the districts of West Bengal, a composite, *Health care index* has been calculated with the help of dimension index formula. The study utilizes the district level secondary data collected from different reliable sources like, the census of India (2011), District statistical handbook 2013-2014 and NFHS-4 (National Family Health Survey, 2015-16). The study indicates that, the statuses of health care facilities are better in the districts surrounding large urban centers mostly in the south eastern part of West Bengal; as it moves away from this core the quality of health care facility starts to decline in the districts located in the north and western direction.

The findings suggest that the status of health care facility is positively correlated with reproductive health conditions of women. The paper also reveals that the status of health care facility positively varies with population size, urbanization and Gross Domestic Product (GDP) per capita of the concerned districts; which strengthens the dictum that economic prosperity, well being and socio- economic realities of a region is greatly influenced by the heath and health care availability.

Key Words: Healthcare facilities, Health infrastructures, Bed population ratio, Doctor population ratio, Gross Domestic Product (GDP)

0614283 KATARIA, S K (Department of Public Administration, UCSSH, Mohanlal Sukhadia University, Udaipur, Rajasthan). HEALTH ISSUES AND CHALLENGES IN DIGITALIZED INDIA

Good health is considered as the wealth of an individual and a nation as well, since the ages. Medical, health, hygiene and sanitation including family welfare services are the minimum requirements of a civilized society by the modern administrative state. WHO defines health as- "a state of complete physical, mental and social well-being not merely an absence of disease or infirmity." In recent decades, this definition has been amplified by including the ability to lead a 'socially and economically productive life.'

The present millennium is popularly known for the worldwide revolution in the scientific field of information and communication technology (ICT) which has ultimately become the part of everybody's daily life and computers, cell phones and internet based services, facilities and gadgets have made the paradigm shifts in almost every sphere of human life, economy , environment, society and governance etc. The 'digital era' is characterized by technology which increases the speed and breadth of knowledge turnover within the economy and society. This is also known as 'computer age', 'digital age', 'new media age' and 'information age' which is mainly the digits based analogue programming on computers.

The current fast -paced stressful life style, unscientific over- consciousness, fast food's habits of urban people with polluted environment have increased the number of patients with various types of allergies, cancer, diabetes, hypertension, road accidents, insomnia, under -nutrition, obesity, anaemia, drug addiction, seasonal viral and other infectious diseases and low level of immunity etc. Dryness in eyes due to long sitting on computers, infection in ear due to over use of head phones, stress, depression, intolerance and tension due to social media and other similar gadgets have increases many health problems.

Similarly, it is has been well established that there is no co-relation between education and common sense because the deaths by taking radical treatment for weight loss, selfies, talking on cell phone while driving, walking on railway line with earphone on head, accepting challenges of kiki, momo or playing blue whale game etc prove the stupidity of modern generation of globalized India. Thousands of youth have lost their lives. Actually, the Indian society is an emotional rather than a rational society and we deeply follow and believe our traditions without applying a small bit of the brain. The **collective suicide of 11 people** in Buradi, Delhi on June 30, 2018 night is an example of mental illness and unscientific thinking of highly educated metro people of all age groups who were following the instruction of a baba to get salvation. Almost 90 % urban population is in the grip of babadom. Time has come to take serious steps to prevent the genext from the health related threats, and for that joint efforts of government and society are needed.

0614284 KRISHNASWAMY, NISHITHA (Department of Communication & Journalism Mansagangothri, University of Mysore, Mysore). HEALTH COMMUNICATION AMONG SEX WORKERS: AN EVALUATION OF EFFECTIVENESS OF HEALTH COMMUNICATION STRATEGIES IN DIGITAL ERA

This is a digital era with digitisation entering all forms of our life. People's health is not an exception, and thus also wielding an influence on the quality of life of the people. Health communication and promotion being two very important factors of health and well being, have made their inroads into the digital era in the form of digitised health promotion practices. This study thus aims at analysing and evaluating the adoption and effectiveness of

digitised health promotion. These digitised health promotion techniques are used by individuals and people on their own, provided by the state for those unable to access digital healthcare facilities, and by private or corporate entites. The study also explores the various types of digitised technologies available for health promotion. The study being targeted at the sex workers, has investigated the usage of digitised health promotion and also their digital behaviour (in order to establish their inclusion in the digital era). The respondents have been randomly selected, and their number restricted to facilitate qualitative assessment of the intended focus of the study. The objective of the study has been to explore the attitude of the respondents towards digitisation, their participation in the digital world through the use of digitised health promotion, its utility in improving their quality of life, and to propose new recommendations, if any for increasing and improving the existing scenario of the digitised healthcare. The study has been conducted for a period of 12 weeks, and each respondent has been interviewed to gather their relevant data.

Key words: Digital Era, Digitisation of Healthcare, Health Communication, Health Promotion, Sex Workers

0614285 KUMARI, JAYA (A N Sinha Institute of Social Studies, Patna-800001). TREND AND PATTERN OF PUBLIC HEALTH EXPENDITURE IN BIHAR

Public expenditure on health is essential for inclusive healthcare service. This makes poor people accessible to health care services and that improves health status. Government intervention in the health reduces the presence of lack of information in health sector. Public spending on medical and public health, family welfare and nutrition is below than the requirement to fulfil the needs. Further, the difference between the actual spending and the required amount is larger in the relatively low income states and this results in marked interstate inequality. The low levels of spending have had negative impact on the creation of preventive health infrastructure. The low level of public spending and its unequal distribution have been a major cause of the deprivation of healthcare service to the poor. India spends only 0.9 to 1.3% as a percentage of GDP of public budget and it is almost constant since the last one and half decades, i.e. 2001-02 to 2015-16. The study is based on Bihar, since majority of people are poor; therefore the people are not in position to bear the cost of private healthcare services. Therefore the paper attempts to estimate the extent of variation in public health expenditure and its compositional proportion of expenditure on different departments of health. In order to accomplish the objective this study secondary data was used. The data was drawn from RBI: State Budget analysis from 2001 onwards and from department of accountant general Auditor General Office, Patna. In this study, simple statistical tools like average and percentage was used. The per capita expenditure on health during the period of 2001-02 to 2015-16 had declined in all major states of India. In the case of Bihar, finding reveals there is decline in revenue expenditure but the capital expenditure increases in terms of budget allocation. But this trend is not uniform across the districts of Bihar.

Key words: Public expenditure, Health, Sustainable development, Budget allocation, Inclusive.

0614286 MISHRA, RUDRA NARAYAN (Gujarat Institute of Development Research, Ahmedabad). DOES INTENSITY AND SEVERITY IN PREVALENCE OF CHILD UNDERNUTRITION VARIES BY ETHNIC GROUPS: A CASE OF TWO SELECTED INDIAN STATES

Prevalence of undernutrition continues to be a public health issue in India. Despite several interventions and marked decline over the years in prevalence of undernutrition both in terms of anthropometric and clinical indicators the levels are still at unacceptable level compared to global standard. Still one third of our children in preschool of age and reproductive age women face various forms of undernutrition as per NFHS-4 rounds. The prevalence of undernutrition in various measures are at unacceptable level even for the relatively better off groups like households belonging to non-marginal sections, living in urban areas and developed regions in a given state, households where both partners are highly educated and number of children are less.

In this paper an attempt is made to compare two states in India which are Gujarat and Odisha. While Gujarat is 3rd interms of GDP in 2018-19, Odisha is 16th among 21 major states having population of 1 crore or more. For past one decade Gujarat has a double digit growth in the economy. In contrast Odisha is growing at 7 percent per annum after 2014-15. Poverty as per 2013 figures is 16.63% for Gujarat while Odisha it is double that of Gujarat at 32.59%. Only Bihar, Jharkhand and Chattishgarh have more poor than Odisha. While Gujarat is driven by

cash crops, manufacturing and service sector led growth in Odisha it is mainly subsistence agriculture and extraction of natural resources which fuels economic growth. However there is one deprivation where Odisha and Gujarat are comparable; i.e. prevalence of undernutrition across various population groups. For example the prevalence of overall stunting among pre-school children is 38.7% for Gujarat and 38.5% in Odisha in 2015-16.

Measurement of deprivation in any normative indicator involves two components. First component is the distance from the norm i.e. nutrition gap or intensity. Second component is the severity of the deprivation. Way back in 1984 Foster, Greer, and Thorbecke proposed a class of decomposible poverty measures which addresses the above two components in their measurement of income inequality. The decomposition method was known after them as FGT approach. In the present study FGT was used compare the prevalence of intensity and severity in nutritional outcome for children below 60 months of age. We compared 5 best districts in Odisha in terms of GDP and 5 Best districts in Gujarat for head count ration, intensity and severity in nutritional outcome for pre-school children, women and men. Similar exercise was carried out for bottom 5 districts in both the states. The indicators were stunting and underweight for pre-school children, and anaemia.

The result shows the prevalence of intensity and severity in nutritional outcome are very similar, both, with in respective states and across states in selected nutritional indicators. Interestingly the intensity and severity of prevalence in stunting (height-for-age) in the most developed district in Odisha (Khordha) is comparable to the most developed district in Gujarat (Ahmedabad).

The results confirm the economic growth in a sub-region or at state level may not translate into better nutritional outcome for the people living there. The outcome based measurement of nutritional outcome influenced by both consumption of nutritionally balanced food, access to better hygiene and sanitation and primary health care. So it raises question of why the state like Gujarat which has much better economic growth than Odisha and have better material prosperity, in some way failed to improve nutritional status of its population. One possibility could be the planners are yet to put their best effort to address the issue in Gujarat. Odisha on the other hand can learn from Gujarat experience that without effective public delivery system to improve nutritional outcome the economic prosperity in recent times may not transform into better nutritional outcome for the state's population. At the same time the data also shows in both states obesity is increasing compared to last round (2005-06). So both will soon face double burden of Malnutrition.

0614287 NAIK, PRIYANKA U AND NAGVEKAR, VINDA V (Department of Economics, Government College, Sanquelim-Goa). **USE OF DIGITAL TECHNOLOGY FOR IMPROVING HEALTH STATUS IN GOA**

Health care measures implemented by a state has been accepted as one of the key instruments for realising improved quality of life. , The states pattern of diseases has often been broadly perceived as a grimmer reflection of its development process itself. Goa is consider as one of the best performing states in the matter of health and medical care as evident from its better health infrastructure. Goa, with higher Per Capital Income and better standard of living, is one of the best states of India in terms of socio-economic and general health indicators. It is one of the states in India having low overall mortality rate and the lowest infant mortality rate. However, there is need for furthering the efforts to improve the health status of people of the state.

In Goa, Malaria, TB, Typhoid, Monkey fever, Dengue, Chikungunya are the diseases found along with major type of non-communicable disease like, Stroke, Cancer, and Diabetes. Digital technology has the potential to transform healthcare services and increase its quality and efficiency. The health applications like Mobile health or mHealth, can also facilitate people to manage a disease or health condition faced by them and sensors and apps which measure vital digs like heart rate, blood glucose levels. However, there are legal issues and personal concerns about health apps, like data protection and cybersecurity which needs to be addressed to create a sense of Trust and security.

In this background, the present paper intends to review the scope of use of digital technology in creating awareness and improving the health care services in a small state like Goa. The study makes use of secondary sources of data and simple statistical tools for its analysis.

Key Words: Digital technology; Diseases; Health status; Goa.

0614288 NATHAN, S SHANMUGA (Department of Media Sciences, Anna University, Chennai). A STUDY ON THE POTENTIAL OF OBESITY RELATED MOBILE APPS USING PRECEDE-PROCEED MODEL

Due to the adaption of mobile and internet in this technologically well-developed society, much information in the field of health, wellness and fitness is now more accessible to the public. Mobile health apps play a vital role for people of all age groups to know about common diseases and their symptoms, medicine uses and side effects, diet plans and calculate BMI to keep them fit, etc. Obesity is considered as a growing threat to our society, especially for kids. Mobile apps related to obesity are available in many numbers. For better understanding of these mobile apps and using them in an effective way, the potentials of obesity related apps has to be investigated for the influencing behavioral change. There are previous visible studies which concentrated on studying health &fitness apps in general & rarely they focus on a particular health issue related apps. The aim of the study is to investigate the potentials of obesity related apps. The study involved a content analysis method to analyze the contents of top 35 obesity related mobile apps to disclose the potential of available contents. The Precede-Proceed Model (PPM) was used as a framework to analysis the selected obesity related apps. The three factors of PPM model: pre-disposing factor, enabling factor and reinforcing factor were used to analyze the apps. The analysis of the results of the content analysis indicate that in overall only 9% of the apps taken for the study satisfied the maximum variables of PPM to bring change in the health behavior of the app users. Finally, some suggestions regarding on what basis the users can adapt an obesity related mhealth app were also provided.

Keywords: Health communication - mHealth - Health mobile apps – Obesity – Precede-Proceed Model.

0614289 SHIVANGI (Department of History, Babasaheb Bhimrao Ambedkar University, Lucknow). CHANGING THE LANDSCAPE OF HEALTHCARE: ADVANCING DIGITAL TECHNOLOGY IN INDIA

Even in the 21st century, Indian healthcare system faces many challenges such as accessibility, affordability and quality healthcare services. The need of the hour is to address these issues by implementing innovative and disruptive digital healthcare solutions. The innovative technologies can give boost to the stumbling healthcare system of the country. With the increasing accessibility of smart phones, people now control their health and fitness thereby enabling them to contact their doctors 24*7. Due to lack of doctors (1:1000) in the country, medical technology and digital advancement can play a key role in advancing facilities and enable doctors to keep track of health status of their patients and accelerate quick communication during any emergency. Hospitals and private firms are developing devices and applications which enable to monitor patients residing at home and thus revolutionizing digital medical advancement in the population. The paper thus explores the development of new technology in digital healthcare industry, its level of use and ease for doctor connectivity to patient and its long term impact in improving the health status of our country. The paper's methodology is qualitative and to fulfill the objectives, various sources such as articles, newspapers, government reports etc. will be carried out. The obstacle in this road to "health for all" is lack of regulatory body in healthcare sector.

Keywords:-Digital Healthcare, Technology, Government policy, Medical professionals, IoMT.

0614290 SINGH, MANI RAM (State Takmeel ut Tim College and Hospital, Abdul Aziz Road, Chaupatiya, Lucknow 226 003). डिजिटल युग में मानव का स्वास्थ्य

आज के आधुनिक दौर में डिजिटल टेक्नालाजी से प्रत्यक्ष या अप्रत्यक्ष रूप से हम सभी प्रभावित है अर्थात् आधुनिक टेक्नालाजी हमारी मूलभूत आवश्यकता बनती चली जा रही है और जब आवश्यक चीजों को हम जरूरत से ज्यादा इस्तेमाल करते हैं तो

हमारे लिए नुकसानदायक होती है। आधुनिक पीढ़ी विकासशील यात्रा की साक्षी है। दूरसंचार, चिकित्सा विज्ञान इत्यादि के क्षेत्र में जो क्रान्ति हम देख रहे हैं, आने वाला वक्त ही बताएगा कि यह क्रान्ति हमारे विकास में कितनी सार्थक है। एक तरफ 21वी सदी को सूचना और संचार का युग कहा जा रहा है तथापि दूसरी तरफ 21वीं सदी में मनुष्य अनेकानेक व्यस्तताओं, द्वन्दों, मानसिक तनावों से भी जूझ रहा है, आखिर क्यों ? किसी भी देश/प्रदेश की उन्नति उस देश/प्रदेश की युवा पीढ़ी पर निर्भर करती है। हमारा देष/प्रदेष सम्पूर्ण विष्व में युवाओं की बहुलता का देश/प्रदेश है। आंकड़ों के अनुसार देश की जनसंख्या का 50 प्रतिशत हिस्सा 25 वर्ष से कम आयु के युवाओं का है, वहीं 65 प्रतिशत जनसंख्या की आयु 35 वर्ष से कम है। इसलिए डिजिटल टेक्नालाजी के उपयोग की उपयोगिता हमारे लिए और भी बढ़ जाती है क्योंकि ये ही वह समूह है जो डिजिटल टेक्नालाजी का अधिक उपयोग कर रहा है। भारतीय प्रौद्योगिक संस्थान (IIT) की संगे बुनियाद देश के तत्कालीन प्रथम शिक्षा मन्त्री मौलाना अब्दुल कलाम आजाद के कर कमलों द्वारा 18 अगस्त, 1951 को भारत में तकनीकी शिक्षा को बढ़ावा देन के उद्देश्य से खड़गपुर, पश्चिमी बंगाल में की गई। तत्पश्चात् देश में अनेक IIT's (बाम्बे, मद्रास, कानपुर और दिल्ली 1950–1960 के दरमियान) स्थापित हुए। निःसन्देह भारत के विकास के क्षेत्र में जो हम देख रहे हैं इनका बड़ा योगदान रहा है। इसी क्रम में आजादी के बाद ISRO की स्थापना के फलस्वरूप भारत ने 18 मई, 1974 को पोखरन में अपनी परमाणु शक्ति का आगाज किया।

विश्व स्तर पर देखें तो आधुनिक दौर में साइन्स एण्ड टेक्नालाजी के क्षेत्र में भारत का योगदान बहुत कम है। जबकि अमेरिका, चीन, जापान जैसे देशों का योगदान इस क्षेत्र में बहुत आगे है, यह हमारे लिए विचार–विमर्श का विषय हो सकता है।

चिकित्सा विज्ञान ने भी अभूतपूर्व तरक्की की है। प्राचीन काल से ही चिकित्सा विज्ञान में डिजिटल टेक्नालाजी के क्षेत्र में भारत की अग्रणी भूमिका रही है। कालान्तर में हकीम व वैद्य लोग नब्ज टटोल कर ही मर्ज का पता लगा लेते थे। परन्तु अफसोस है कि अब यह हुनर हकीम/वैद्यों के हाथ से निकलता जा रहा है।

बचपन में गणित के मुश्किल सवालों का हल जो बगैर पेपर व कलम के ही हो जाता था, आज के बचपन में कम देखने को मिलता है, कारण हमारा बचपन भी भौतिक चीजों पर निर्भर होता चला जा रहा है। पिछले एक दशक से हमारे द्वारा डिजिटल टेक्नालाजी का उपयोग जितना बढ़ा है इसके परिणाम अगले दो दशकों में शोध के माध्यम से हमारे सामने आएंगे। हमारे चारों ओर का परिवेष रेडिएशन के माध्यम से दूषित होता चला जा रहा है, गर्भवती महिलाओं के गर्भ में पल रहे शिशु पर रेडिएशन के दुष्प्रभाव देखने को मिल रहे हैं। हिरोशिमा व नागासाकी तथा भोपाल गैस त्रासदी के दुष्प्रभाव को अभी हम भुला नहीं पाए हैं। अतः प्रतीत होता है कि स्मार्टफोन का अत्यधिक उपयोग किसी भी तरह से मानव के मानसिक व शारीरिक स्वास्थ्य के लिए हितकर नहीं है।

यह निर्णय युवा पीढ़ी को लेना है कि उसे किस हद तक डिजिटल टेक्नालाजी/स्मार्टफोन का उपयोग करना है।

0614291 SRIVASTVA, KUMARI SUSHMA (Division of Economic, A. N. Sinha Institute of Social Studies, Patna). LINKAGE BETWEEN POVERTY, MALNUTRITION AND CHILD COGNITIVE DEVELOPMENT: CONCEPTUAL ISSUES

The concept of poverty is difficult to define in simplistic terms because it is multidimensional phenomenon with ideological and political, social, economic, environmental and biological (health) components. The term of poverty includes the different conditions of life that are associated with uncertainty whether essential basic needs will be met. Children in poor families are high risk of under nutrition, which has long term negative consequences on their physical growth and cognitive development. Sever under nutrition can lead to the child's death. Cognition and cognitive processes are described as higher mental functions and include perception, discovery, recognition, imaging, judgment, memorizing, thinking and speech. The review has clearly shown that such factors as household economic status, mothers education, mothers nutritional knowledge, employment status of mother, employment status of father, age of child, birth order, and birth interval of child, maternal nutritional status, have a significant influence on child nutritional and cognitive status. The objectives of this study are firstly to highlight the nutritional situation of preschool children in Patna town (Bihar) to show that it is an outcome of the linkage between poverty and malnutrition and secondly to explain how the different dimensions of poverty are both causes and consequences of malnutrition that explain the intergenerational, vicious cycle between poverty and malnutrition and their impact on child cognitive development.

Keywords: Malnutrition, Poverty, Cognitive development

0614292 TIWARI, SWARNIMA AND BHAGAT, DEEPAK (Department of Management North- Eastern Hill University, Tura Campus, Meghalaya). OCCUPATIONAL STRESS AMONG HEALTH CARE

PROFESSIONALS IN WEST GARO HILLS DISTRICT OF MEGHALAYA: SCOPE FOR DIGITALIZATION

The West Garo hills district of Meghalaya is suffering from a severe shortage of man power coupled with poor infrastructure and lack of technology. The problem was exacerbated by the region's remoteness and a difficult regulatory climate that discourages private sector participation in the sector. All these circumstances make the situation a stressful situation for health care professionals practising in the district. The purpose of this study was to identify the extent and the factors influencing occupational stress among the health care personnel's in the West Garo hills district of Meghalaya and also to highlight the scope for digitalization in the health care sector in the district. The study included 97 doctors and 189 nurses employed in both government and private hospitals, community health centres in the district. The occupational stress of the health care professionals was measured using "Occupational Stress Index (OSI)" and "Oldenburg Burnout Inventory (OLBI)". Data was analysed using multiple regression and ANOVA. The study concluded that doctors are a heavily burdened occupational group and the total OSI was significant higher among males as compared to female's health care professionals. Three aspects: under load, strictness and conflict were dominant in showing higher exposures among the health care professionals. The most consistent and significant stressors were long working hours, lack of autonomous workplace, and lack of proper technology. This study would also highlight the scope for digitalization in reducing stress related to occupation among the health care professionals by easing communication between doctor and patient, rapidly sharing information for enhanced synthesis and investigation of patient's data and storing medical reports for longer periods of time for easier and faster retrieving as needed. This indicates less paperwork and saved time for healthcare professionals which would ultimately reduce stress among health care professionals.

Key words: Health care professionals, Occupational Stress, digitalization.

0614293 TIWARI, SWARNIMA AND BHAGAT, DEEPAK (Department of Management North- Eastern Hill University, Tura Campus, Meghalaya). SUPPORTING THE EMOTIONAL INTELLIGENCE OF HEALTHCARE PROFESSIONALS THROUGH DIGITIZATION

For long emotions in medicine has been given very little attention. Healthcare professionals often undergo tremendous stress which leads to emotional instability which eventually effect work performances and patient care. A series of recent studies indicates EI is essential in the medical field as it has been reported to be a predictor of the interpersonal and communication skills essential for improving doctor-patient relationships. The impact of emotional intelligence in medicine has been recently highlighted. Persons with high EI are known to better recognize potential stressors and can cope up with stress using emotions. However, it has been argued that the importance of emotional intelligence in healthcare has been underestimated. The purpose of this study was to measure and analyse the emotional intelligence of healthcare professionals and also to explore any additional factors related to emotional intelligence and further to highlight the potential of emotional intelligence in medicine in the digital era. The study included 97 doctors and 189 nurses employed in both government and private hospitals, community health centres in the district. The Emotional Intelligence of the healthcare professionals was measured using Emotional Quotient Test. Developed by Dr Dalip Singh & Dr Nk Chadha. Data was analysed using ANNOVA, t-test, Simple Linear Regression, Multiple Regression. The study concluded that factors like occupational groups, age, and gender of the healthcare professionals are significant factor influencing emotional intelligence and Doctors have higher EQ as compared to nurses and emotional intelligence is found to be higher in older age group as compared to younger age group of health care professionals.

Keywords: Emotional Intelligence, Emotions, Medicine, Healthcare professionals, Digital era.

0614294 YADAV, SADHANA (Juhari Devi Girls P. G. College, Canal Road, Kanpur). ROLE OF COGNITIVE FACTORS IN SELF-MANAGEMENT AMONG PEOPLE WITH TYPE 2 DIABETES

Cognitive factors seem to have important role in promotion of health and well-being. Certain cognitive factors and behavioral style resist to illnesses and help in maintenance of better health. Cognitive and psychosocial

factors also have a vital role in disease management. The present study attempted to examine the role of cognitive factors in self-management among people with type 2 diabetes. The study was conducted on a sample of 100 people with type 2 diabetes with the age range of 40 to 60 years purposely drawn from Department of Endocrinology and Metabolism, Sir Sundarlal hospital, BHU, Varanasi (UP). Results are thoroughly discussed and implications of the study are mentioned.

Key Words- Diabetes, type 2 diabetes, cognitive factors, psychosocial factors, self-management

15. POLITICAL ECONOMY OF INDIA

0615295 JHA, BINOD KUMAR (P.G. Department of Political science, A. N. S. College, Barh, Patna). CAPITALIST PRODUCTION IN DIGITAL ERA

New developments in the field of information and communication technologies have led to debates. In the present century, these debates have taken a new form to suggest that digitalization has created a different model of capitalism based on free and immaterial labour, where computers and related technologies are not neutral agents of change; rather they are used by capital as part and parcel of exploitative labour practices and capital accumulation. On the face of its immaterial appearance, digital labour is often seen as a phenomenon of abstract work, but its neither immaterial nor free, because it is not the content of labour itself, but rather its relationship with capital that gives it weight and value, labour remains heavily bound by an employment relationship and a labour process, whether work is performed in cyberspace or other more grounded locations. Digital labour is also identified with a dominant capital accumulation model of contemporary corporate internet platforms, based on the exploitation of user's unpaid labour, who engage in the creation of content and its use, and in these activities create value that is at the heart of profit generation.

All these have spurred a lively theoretical debate in political economy, seeking to understand the implications of 'immaterial labour' for the labour theory of value, poses theoretical challenges pertaining to the conceptualization of capitalist production in digital space. In particular, scholars have been puzzled by the question of how the notion of 'abstract labour time' applies to immaterial labour, how the free use of website is compatible with commodity production, role of 'users' in production process, and whether digital firms can be seen as simply a rent seeker disengaged from value production. In this paper, we have tried to answer all these by using Marx's circuit of capital model, which allows a clear understanding of commodity production and labour processes. In contrast to accounts that posit digital profits as 'returns to innovation', our analysis reveals how surplus value exploitation and the law of uneven development and unequal exchange, plays itself out in the whole process allowing the many benefits of advancement in digital technology to remain confined within a selected few that is physically located in few advanced capitalist economies .As a result, the immense potential of digital revolution will remain untapped as long as capitalist relation of production predominate the physical and consequently the virtual world.

0615296 MAHESHWARI, VARSHA (Division of Economics and Agricultural Economics at A. N. Sinha Institute of Social Studies, Patna). LABOUR-PROCESS AND TECHNOLOGICAL TRANSFORMATION: A CRITICAL ANALYSIS

Every economy develops and undergoes numerous changes in context of its nature, structure and social relations. En route to varied literature, the course of progress has depicted alterations in social and production relations, which modifies the structure of work and organization in the production process. This progression is rooted into three key instruments and their symbiotic relationship: "Man (M), Nature (N), and Industry/ productive activity (I)." There, symbiotic relationship between the three takes us to the Marx's theory of alienation as explained in Marx's Manuscripts of 1844. This paper encompasses the critique of technological revolution which at one hand empowers, equips labour and on the other hand supplants labour in the process via political economy framework. Various thinkers have elaborated two juxtapositions on 'technological unemployment.' The main purpose of the paper is to study employment/ job opportunities in digital age and investigate how labour is 'alienated' from their fellow worker in the present information age. Narratives as a qualitative tool have been used to analyze the impact of automation/technology in various jobs. In the first section, a brief illustration has been done on account of labour process and production process to understand the changing ownership of 'means of production' which further changes 'production relations.' In the second section, an exploratory account of how 'machines supplants labour' from first industrial revolution to the fourth industrial revolution, emphasizing on the concepts of 'division of labour' leading to deskilling and control via 'industrial activity', technology/ automation which undermines bargaining power of the labour and changes the work and organization in the process. Furthermore, the paper probes into the idea of 'technology as new labour' via narratives from different labour like- bankers, IT professionals, travel agents, accountants, construction workers and academicians affected by technology/ automation. The paper

unfolds the process of revolutionizing technology that have created 'unreflective labour' similar to machines. The continuous monotonous work in the production-line/ factory has reduced the 'creative dignity' of the labour. Thus, this has altered the 'essence' of 'man as species-being.'

Keywords: Alienation, Technology, Labour, Labour-process

0615297 PANDA, R K (Economics, Utkal University & NKC Centre for Development Studies, ICSSR Institute, Odisha, Bhubaneswar). **POLITICAL ECONOMY PERSPECTIVE OF DIRECTED CREDIT IN INDIA**

Directed credit synonymously known as Priority Sector credit was adopted by the Reserve Bank of India as a policy initiative way back in 1972. Its primary objective was to provide credit facility to the productive but neglected sectors of the economy - the agriculture, small-scale industries and other weaker sections of the society. Over time, the quantum of credit available towards priority sector no doubt has gone up phenomenally, yet significant changes have taken place in the RBI's policy towards priority sector lending and this has attracted debate among academicians and social thinkers. In the post- Narasimham Committee Report (1998) on financial sector reforms, in 1998-99, the RBI has made a series of changes in the scope and coverage of priority sector lending and a number of sub-sectors hitherto outside the scope of the priority sector have been included in its fold. More so, on the basis of recommendation of the M.V Nair Committee (2012) appointed to examine the existing classification of priority sector and make suggestions, the RBI has issued fresh guidelines on priority sector lending on February 20, 2012. In the 2012 guidelines, the RBI while accepting some of the recommendations of Nair Committee, has infused a few innovative features like inclusion of certain services, routing bank loans through PACSs, FSSs and LAMPSs and treating them as directed credit under the priority sector status in view of non-availability of banking facilities in remote areas (cited by Chakrabarty, 2012). However, in the context of frequent enlarging and reshuffling the scope and coverage of priority sector, it is alleged that there has been much dilution in priority sector lending norm resulting in 'Other Priority Sector'(includes SHGs, Housing, Education, Self-employed Exports etc) advances have dominated at the cost of agriculture and small scale industries – the real weak and disadvantaged sectors and sections (EPW, Research Foundation 2007-08, Rao 2014). Added to this, there is argument that priority sector lending, as it is observed, suffers from inequity in the credit distribution across states and sectors/sections. In view of the fact that the present government policy lays emphasis on financial inclusion and most recent Prime Minister Jan Dhan Yojana (PMJDY) which aims at providing banking network to hitherto unbanked areas and people, it is very much pertinent to assess how far the priority sector lending is fulfilling its primary objective of allocational efficiency- i.e. how far resources are being distributed (allotted) to the most deserving and productive sections - the small and marginal farmers who constitute the major component of priority sector. On this backdrop, the present study is conducted to examine the trends in the growth of priority sector credit with a focus on agriculture and whether the commercial banks' credit allocation under priority sector has been equitable across regions, sectors and sections in the country.

Secondary data compiled from diverse sources such as Government of India and RBI publications, are used for analysis in the study. The study relates to the post-reform period, from 1991-92 to 2014-15. Along with tabular analysis, the statistical tools like compound growth rate ($Y= a+b^t$) has been worked out to estimate the growth trends in credit to priority sector as a whole and its sub-sector, agriculture. With a view to ascertain how far the priority sector credit distribution are equitable/inequitable, credit allocation of commercial banks across regions, sectors and farm categories is worked out.

The findings of the study reveal that quantum of credit advanced by the commercial banks towards priority sector and within it to agriculture have increased sizeably during the post-liberalization period (from 1991-92 to 2014-15). However, the annual growth rate (CAGR) of credit to priority sector and to agriculture during the study period remains lower than the growth rate in the credit advanced by the commercial banks as a whole. The share of agricultural credit to total credit and to priority sector credit is found to be low and fluctuating. There is wide disparity in commercial banks' credit allocation to priority sector across states and within state across sub-sectors. The small farmers receive less credit from banks even though their share in the value of food grains output is larger over the medium and large farmers.

The findings of the study suggest that the priority sector lending suffers from inconsistency over time due to frequent enlargement of the scope and coverage of the sector. Added to this there is found to be apathy among the banks to provide credit to deserving sectors and sections. The original intention for which the priority sector was created is found vitiated.

16. POPULATION, POVERTY AND MIGRATION

0616298 DAS, MIRANDA (…….……) WOMEN AND MIGRATION: RE-CONFIGURING THE IDEA OF PUBLIC AND PRIVATE SPACE

Migration is understood in terms of a person's movement from one place to another. Initially, the migration literature focused on the migrants, but gradually those who did not migrate were also brought within the purview of migration literature. In the latter type of literature, the impact, in terms of decision-making, incoming-generating work and physical movement, that a male's migration leaves on women and children has been explored. Nevertheless, such literature is mostly impact analysis in nature and it conveniently categorises such women as left behind.

This literature, doubtless, contributes to migration studies by foregrounding the concerns of the non-migrant women, and by recognising that such women are ineluctable part of the complex process of migration. Based on it, this paper will attempt to theorise how the demarcation of private and public space undergoes a change in the context of migration. It is pertinent to note that feminists have always challenged the dichotomy between the private space, which is family, home and community, and the public space, which is work, politics and law, by arguing that women are confined within the private space, thereby excluding them from laws and policies that operate within the public space.

On the basis of empirical evidence collected from a village in Bihar, this paper will attempt to show how the very idea of private and public space changes in the context of migration. Because these migrant men's women are uneducated, poor and receive intermittent remittances, these women in this village are precipitated into the unorganised labour market. Despite their deplorable situation, the laws in general and the migration law in particular do not take the concerns of these women within their scope. This happens due to the fact that the laws relating to migration focus primarily on the concerns and experiences of the migrant in the destination location. It may therefore be argued that the host location is equivalent to the private space and the destination location is the public space in the context of migration.

Even if these women step out of their private space of home and participate in the public space of work, the laws and policies fail to accommodate them as the boundary of private space is extended by turning the entire host location into the private space of these women.

0616299 KUMAR, DHANANJAY AND LOBO, LANCY (Centre for Culture and Development (CCD), Vadodara Gujarat). THE SOCIAL STRUCTURE OF GAMITS OF SOUTH GUJARAT

Unlike the social structure of caste societies, progress in social structure of tribal societies in India has been slowed both by real difficulties in analysing complex phenomena and poor communication between competing schools of thought. Further, it has also been slackened down by neglecting the particular approach in place of putting more energy and focus on applied/practical part of it. By and large Indian sociologist and anthropologists have studied the culture of the tribes but not their social structure. The present study may prove significant in filling the lacunae in the studies on tribals thereby highlighting their Samaj, rather than their Sanskriti.

The role of household, family and kinship networks is vital towards the understanding of a tribal society. But, their structural pattern, underlying rules of society and the processes operating it are not clearly known. Formulating ethnographically-based insights on social structure should make it possible to explore their implication more thoroughly and to test them more systematically in the context of tribal India. It may also facilitate comparison between theoretical and empirical results on different region of tribes obtained by sociologists and social anthropologist with potential benefits for subject as a whole. It is in the above background, the present research problem is taken up to investigate objectivity the social structure of the tribal Gujarat.

This is a study of the social structure of Gamit tribe of Tapi district of south Gujarat, in western India. By social structure we mean the nature of their household, family, lineage, clan, and marriage rules and socio-

geographic space within which they give their daughters in marriage and bring their daughter-in-laws to their village. In other words, we would like to construct their samaj (societal structure) and the basis on which it is operating. The main objectives of this study are to give insights into the internal social organization of the tribe, such as household, family, lineage, clan, kinship networks and marriage rules. This research will take a household census, draw genealogical charts of household, family, lineage, clan and kinship networks. It will trace the spread of kinship network both consanguinal and affinal. It will constructs the patterns of kinship and affinity that stretch across clan, lineage, household and family and link up individuals and groups in different neighbouring villages in an extensive network of mutual rights and obligations.

This is the first empirical study planned by Centre for Culture and Development (CCD) in the series of studies of 30 tribes of Gujarat by taking a village which has a majority of people belonging to a specific tribe. When our studies on most of tribes are done we would like to tease out the underlying principles, rules, norms, values and structures on which the tribal society is based on as well as the changes creeping therein.

Key words: Gamit, Family and household, Marriage network, Clan and Lineage, Kinship and Social Structure

0616300 KUMARI, MADHULIKA (Department of Humanities and Social Sciences, Indian Institute of Technology Guwahati, Guwahati, Assam). MIGRATION, POVERTY AND PUBLIC POLICY: A STUDY OF AGRICULTURAL RURAL SETTING OF BIHAR

Migration is the critical population issue of present time. Rural poverty and degrading agricultural resources have been one of the major causes of migration. People often migrate from rural to urban areas in search of food, income or employment due to the lack of agricultural opportunities. Migration affects country of origin, transit and destination. The decision of rural people to migrate can be manifolds such as economic, social, political, cultural and so on. But the most dominant cause of migration is economic. It tries to examine the poverty dimension of migration on agriculture and rural development through government policies and programmes. Agriculture and rural development can contribute in addressing the challenges of migrants in a rural setting. The present paper tries to examine the linkages between migration, poverty and agriculture in rural setting of Bihar. For this purpose agriculture and rural development policies and programmes have been analyzed critically. In order to manage migration problems, effective government policies and programmes must be developed and implemented. Agriculture and rural development policies play a key role in creating an effective environment to harness the development potential of migrants and thus helps in the reduction of poverty.

Keywords: Migration, Poverty, Agriculture, Policy and Bihar.

0616301 KUMARI, RANI (A. N. Sinha Institute of Social Studies (ANSISS), Patna, Bihar, India). PATTERN AND IMPACTS OF BIHARIS OVERSEAS MIGRATION IN DIGITAL ERA

One of the most important issues that has affected our world in recent decades is globalization, in the form of free trade and open borders for people, capital, and ideas. Digital networks are facilitating overseas migration, whereas candidates are learning about job openings across broader regions and even globally, enabling users to find international career opportunities. Digitalisation of passport application system also promoted the overseas migration as it has made the process simple, quicker and middle men free.

The migration trend has experienced a relative shift from prosperous states such as Kerala and Karnataka to poorer states like Uttar Pradesh and Bihar due to high demand for jobs. This situation encouraged low-skilled and less educated workers in poorer states to migrate abroad in hopes of earning greater income.

Bihar is the second state in terms of migrant labourers going to other countries, especially to the Gulf region. Remittances received through migration have provided an important cushion against food insecurity for many households in Bihar. As social media use becomes more ingrained into daily life around the world, expatriates

have a way to stay in closer touch with family and friends in their homeland, reducing the social and emotional hardship of moving to a new country.

This paper tries to understand the pattern and impact of overseas migration in Siwan district of Bihar on the basis of primary and secondary data obtained from various sources. Siwan district is the highest recipient of remittances in Bihar.

0616302 KUMARI, BHAWNA (……) STUDY OF MIGRATION IN QATAR IN 21st CENTURY

India is country which is highest rank in youth population. Every year's large number of Indians head towards GCC for the seeking of job opportunities. When we talk about the migration to Qatar there are 650,000 Indian people who migrated to Qatar according dec2016 report. Qatar is a country which is second highest in GDP per capita is providing better job opportunities for expatriates. The point of note is that people who are working In GCC use to send their money to native country which help to improve the education and health system in related area. For example in Kerala 36% of GDP comes from outside that's y without any construction development Kerala education and life expectancy is in very good condition as comparison to other state. The objective of this paper is to describe the relations of India and Qatar. This paper divided in three parts. 1st part talks about the Indian migrants in Qatar. 2nd part talks about the impact of Indian migration in Qatar economy. 3rd part talks about the remittance impact of native country. A descriptive and analytical research design along with a mixed method Approach will be adopted to study the impact of various economic, political and sociological factors on the process of Indian migration with special emphasis on employment, education, health. Secondary data will be collected through content analysis of various reports and documents available in public domain.

0616303 MAZUMDER, SINORITA (Centre For The Study Of Indian Diaspora, University Of Hyderabad, Hyderabad). FOOD BLOGS ACROSS BORDERS:- A STUDY OF BLOGS BY WOMEN

The proposed paper intends to explore the gendered subjectivities in the Diasporic spaces by analyzing and studying some of the food blogs by women in the Diaspora.

I propose to explore the life and the gendered spaces of the women migrants and their contributions in articulating their identity in the Diaspora. While the diaspora reminisces about the homeland, the home-cooked food, the bloggers create a culinary setup to help the diaspora cross the cultural and geographical borders.

I have tried to study three blogs by eminent bloggers, namely, An Artsy Appetite by Sumana Doss Burman, Guilt Free by Pritha Chakrabarty and Cook with Manali by Manali Singh.

The essential rationale of this paper is to look into the process of building linkages with the homeland through the re-creation of culture through food and in turn, digitally, forming a network across borders.

Keywords:- South Asian diaspora, women, Indian food, food blogs, transnational

0616304 RAHMAN, ANISUR (UGC- Human Resource Development Centre, Jamia Millia Islamia, New Delhi). INDIAN GULF MIGRANTS, REMITTANCES AND DEVELOPMENT IN INDIA: SOME REFLECTIONS

There are about 8.5 million Indian migrants in the Gulf Countries. They constitute about one-third of the total expatriate population and more than 16 percent of the total Gulf population. The largest number of Indians lives in Saudi Arabia and the UAE. There is considerable number of Indian presence in other Gulf countries as well. In the 1980s and 1990s, Keralites constituted the major group followed by Tamil Nadu. But now the latest data shows that the Uttar Pradesh has acquired the first position among Indian immigrant in this region. The skill composition of the Indian workforce was earlier dominated by unskilled and semi-skilled workers, but now the composition of highly skilled workforce rose considerably. Currently, the Gulf migrants are the major source of remittances and

foreign exchange to India. India received US$71 billion in 2015 from abroad. Out of this remittance, the share of the Gulf is almost half. Thus Gulf NRIs is not only earning a great amount of foreign exchange but also helping to reduce the situation of unemployment at the place of migrating areas. Apart from Gulf remittances there are various incentives and schemes are in place for investment in India by the Non-Resident Indians (NRIs). Moreover, they are also allowed to bring gold while returning to the country. These all are the contributing factors responsible for enhancing the benefit for India. Thus, the net benefit of NRIs presence in the Gulf is positive for India. There is a net gain of labour migration due to the inflow of Gulf remittances. They play the vital role in the life of migrants and their family members in particular and in the development process of the country in general. The main aim of this paper is to examine the emerging trends of migration from India to the Gulf and its effects on migrants' households in India. An attempt will be made to examine the annual trends of Indian labour outflow as well as the volume of Indian migrants present in this region during the last three decades. How has it affected the Indian economy and society as well as the Gulf would be dealt with in this paper briefly? The working and living conditions of migrant workers in the Gulf countries has also been examined. However, the overall effects of the Gulf migration have been the focus of attention in this paper? As the Gulf migration plays an important role in benefiting India as well as the Gulf in many ways. As we know that the Gulf region has been one of the most important destinations for a large number of Indian workers especially semiskilled and unskilled and there are over 6 million Indians working in the Gulf. This population mobility has had positive impact on India's employment, balance of payments, commodity export, business profits and government earnings. The inflow of the Gulf remittances is playing a major role in this direction. This migration has also provided a cheap labour to the Gulf countries as well. So we can say that both India and the Gulf countries are benefitted enormously due to the mobility of labour from India. All these issues would be discussed in this paper.

17. RURAL TECHNOLOGY, SOCIAL ORGANISATIONS AND RURAL DEVELOPMENT

0617305 KUMAR, K RAJESH (Department of Politics & Public Administration, Besant Theosophical College, Madanapalle). AN ANALYSIS ON RURAL DEVELOPMENT STRATEGIES AND CHALLENGES A STUDY ON GOVERNMENT POLICIES IN INDIA

The basic objectives of Rural Development Programmes have been alleviation of poverty and unemployment through creation of basic social and economic infrastructure, provision of training to rural unemployed youth and providing employment to marginal Farmers/Labourers to discourage seasonal and permanent migration to urban areas.

However, in India, technology developers for rural areas have been catering to needs improvement, rather than creating demand. There is no industry linkage machinery to create demand-based-technology market for rural communities. Besides, there is also an imbalance between strategies and effective management programmes. Propagation of technology/schemes for rural development is slow and there is a lacking in wider participation of different stakeholders. An ideal approach may therefore, include the government, panchayats, village personals, researchers, industries, NGOs and private companies to not only help in reducing this imbalance, but also to have a multiplier effect on the overall economy.

0617306 RAJORIA, SONIA (School of LiberalArts, Noida International University) DIGITAL TECHNOLOGY- A BOON FOR RURAL DEVELOPMENT

This paper intends to mainly focus on its focal theme "Human Future in Digital Era" from where thematic area has been chosen is 'Digital Technology and Rural Development'. In last few years rural India witnessed a progressive change w.r.t to its organization and development. It is well known that Indian economy is the fifth largest economy in the world measured by GDP. To boost our economy, an initiative was taken by our Prime Minister on 1st July, 2015 "Making India Digital". The objective of this campaign is to connect rural areas with internet connectivity to improve digital literacy. To resolve the purpose of the present paper we take sources direct through the Internet i.e Prime Minister Modi has said " Digital India Initiatives have created 3 Lakh jobs, empowered citizens" given by the PTI Government Channel on dated 15th June, 2018 with its url link is http://economictimes.indiatmes.com also the Telecom Minister Mr. Ravi Shankar Prasad " that Government's Digital India Project can create 5 crore jobs" is mentioned by the PTI channel with its url link is http://www.bgr.in>News. Digital technology has transforming the lives of the rural people economy into skilled jobs in rural areas. It brings growth and innovation, opening of new working arenas and providing platform for easy working. It would be an advantageous for rural population in raising their living standard. It is also producing the many more job opportunities and the method of e-learning through online education i.e. very comfortable for the rural community. Under Digital India, technology delivers many online services like Pradhan Mantri Gramin Digital Saksharta Abiyaan is targeting the 40% rural areas by 31st March, 2019 to make the rural society become more literate. It is the right time to work out on integrated planning strategies to execute the governance models and make the realistic emerging India. A framework is needed to influence and bring out the changes into the rural technologies and for fostering the participation of the rural population. There are still some parts of rural areas where uneven diffusion of rural technology is being observed, hence causing the division of digitization in many parts of the rural India. Low rate of literacy among rural population is the main cause which creates hindrances in its development. Many sociologists and thinkers have formed the advanced rural technology as well as are engaged in polishing the existing rural development integrated policies and programs. This paper analyses the problem on the basis of secondary sources of information is sourced from direct internet quote , speeches, government reports, documents, news and websites. There is an attempt to find out the obstacles/ lacunae in the path of digitalization of rural India. This paper also discusses the initiatives taken by government and the impact of these policies in making the rural India digitalized. For better future of people must be encouraged to adopt new digital technologies and develop the powers as well as curtail the traditional norms and notions which are pushing them back.

Key Words: Digitalization, Technology, Social Organizations, Rural Development.

18. SCIENCE COMMUNICATION AND SCIENCE POPOULARIZATION

0618307 MADHU, K P (F - 4/5, Mantri Avenue II, Panchanvati, Pashan, Pune). IMPACT OF DIGITAL REVOLUTION ON THE PRACTICE OF SCIENCE COMMUNICATION

The practice of science journalism/reporting/communication has changed completely in the last three decades. Though the number of specialised areas of scientific investigations, the number of scientific journals and the technical terminologies have all increased many folds, for a science journalist, the task of reporting and popularising science has become simpler, primarily due to easy accessibility to sources, availability of digital resources and tools to deal with knowledge explosion and mushrooming of digital platforms for communication. These developments have been disruptive for the media industries in general. But for the individual journalist/reporter/communicator, the times have changed for the better; the digital world has empowered the individual content creator by providing better tools of production. In this paper, I will compare and contrast the ways that a science journalist used to work in the earlier decades and now. I will review the new digital tricks and tools that a science journalist can use today to keep himself/herself updated about scientific advances, to deal with the complexities of ever narrowing disciplines, to manage knowledge outside his or her mind, to double check and validate reports, while on tight deadlines.

19. SCIENCE, TECHNOLOGY AND SOCIAL DEVELOPMENT

0619308 MISHRA, KRITI (Centre for Development Studies, University of Allahabad, Allahabad, Uttar Pradesh 211002). **SULABH'S TWO-PIT TECHNOLOGY: CONVERGENCE OF SCIENCE-TECHNOLOGY AND SOCIAL DEVELOPMENT**

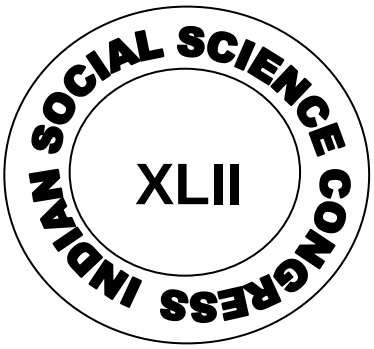
According to The World Bank, social development is the core of the principle of "putting people first" in development processes. In this way, social development is the central theme of human development, both as a concept and practice. Within the development process, the contemporary times have seen the emergence of sanitation. Sanitation broadly refers to the clean and safe drinking water, safe disposal of solid waste management, access to toilets, clean and healthy environment. For the United Nations, Sanitation literally means measures necessary for improving and protecting health and wellbeing of the people. Sanitation is any system that promotes proper disposal of human and animal wastes, proper use of toilet and avoiding open space defecation. Thus it forms one of the basic elements of human lives. The Millenium Development Goal # 7C: Halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation. Further the United Nations Sustainable Development Goal # 6 focuses on provision of clean water and sanitation targeting by 2030, achieve access to adequate and equitable sanitation and hygiene for all and end open defecation. In sync with the global needs and priority given to sanitation, Swachh Bharat Mission (SBM) as the India's largest cleanliness drive was launched on 2nd October 2014 by the Honourable Prime Minister Narendra Modi aiming to make India an Open Defecation Free country by 2019. The aim of the SBM is to achieve Swachh Bharat by 2019, as a fitting tribute to Mahatma Gandhi on his 150 the birth anniversary. Sulabh International Social Service Organisation founded by Dr. Bindeshwar Pathak has been working in the field of sanitation since 1970. Sulabh's two-pit technology is a powerful agent of social development and change. In Sulabh's two-pit toilet technology, two pits are constructed and both pits are used alternatively. When one gets full the excreta is diverted to the second pit. In about two years the sludge gets digested and is pathogen free. Thus this can easily handled by hand and also can be used as manure. This can be used for agricultural purpose also. It is hygienically and technically appropriate along with being socio-culturally acceptable. The singular importance of such a technology becomes evident when we see that according to the Census of India 2011, at the household level, nearly 10 million (13 per cent) households do not have access to any sanitation facilities, and hence they resort to open defecation. Another 6 per cent depend on public or community latrines, and 4 per cent have access only to unimproved latrines. In this way, Sulabh's two-pit technology not only addresses the crucial of issue sanitation and social development, but also contributes significantly into the Swachh Bharat Mission (SBM)**.** My paper begins with conceptual outlining of both social development and the locale of sanitation within it. Subsequently, the paper outlines features of Sulabh's two-pit technology and how it addresses sanitation issues in contemporary India.

20. SOCIAL PROCESSES, SOCIAL STRUCTURES AND SOCIAL ALIENATION

21. UNITY OF SCIENCE/SCIENCE OF NATURE-HUMANS-SOCIETY

0621309 MALLICK, SAMBIT (Department of Humanities and Social Sciences, Indian Institute of Technology Guwahati, Guwahati 781039). **SCIENCE AS A SOCIAL CREATION: UNITY OF KNOWING AND DOING**

Philosophy in its pre-19th century incarnation may be divided into two parts, viz. natural philosophy and moral philosophy. Natural philosophy is nothing but 'science' in the present sense of the term and moral philosophy refers to philosophy (ethics) today. Natural philosophers (scientists) are engaged in the epistemological questions whereas moral philosophers are engaged in ethical questions. Inquisitive minds often attempt to integrate epistemological questions with ethical questions. Upon such integration, we arrive at philosophy of science, an inquiry into the nature and limits (not limitations) of a particular knowledge. Such framework forces us to examine the nature of science, normative structure of science based on empiricist-rationalist accounts, and also to look beyond – that is, science as a social creation, science as socially and culturally embedded, coevolution of science and social (dis)order. In this lecture, I make an attempt to address one of the most intellectually stimulating questions which Aristotle posed: "What is the method of science?" Moving forward progressively: "What are the probable methods of science?" To address this concern, it is germane to travel from the absolutist-idealist immanent development to science as a purely conventional social construct, albeit not in a linear fashion. The argument that science is an act of knowing and technology an act of doing is no longer sustainable today. Technology predates modern science keeping Marx's materialist conception of history in mind. Similar unsustainable argument is that technology is autonomous unmediated by any other external influence moulds society to fit its patterns. Technology is the medium through which human beings interact with nature. The neutrality of any technology or technological system is based on design and control. Mumford's classification of authoritarian and democratic technologies (1964) may be a case in point. This lecture purports to highlight that technologies should be evaluated not merely in terms of their productivity, efficiency and environmental effects but also in terms of the ways in which they embody power and authority (Winner 1980). Marx in *Economic and Philosophic Manuscripts of 1844* (1959) astutely puts it: 'To assume *one* basis for life and a *different* basis for science is *a priori* a falsehood. … Natural science will in time incorporate into itself the science of man, just as the science of man will incorporate into itself natural science: there will be one science'. Science in the capitalist world has entered into a state of crisis, due primarily to (i) the subjugation of scientific research to the capitalist monopolies and to military purposes, and (ii) the conflict between new discoveries and old idealist and metaphysical ideas. In this context, it is important to deploy science as a weapon for the self-introspection and for the advancement of science as a social and philosophical investigation.



PART VII

SEMINARS/SYMPOSIA/COLLOQUIA/WORKSHOPS

ON

HUMAN FUTURE IN DIGITAL ERA

PART VII

ABSTRACT OF PAPERS

ON

SEMINARS/SYMPOSIA/WORKSHOPS/COLLOQUIA

ON

04. IMPACT OF DIGITIZATION OF THE WORLD ON HUMAN FREEDOM AND EXISTENCE

0704310 RAI, NEETU SINGH (……). LINKING OF AADHAAR WITH CITIZENS OF INDIA AND NATIONAL REGISTER OF CITIZENS A WAY AHEAD TO DIGITIZATION

This paper presents a view on National Register for citizens in Assam and utilization of Aadhaar card to enhance accuracy and transparency by linking with citizens in other States of India too if required.

The Supreme Court has declared the Centre's flagship Aadhaar scheme as constitutionally valid, but with conditions. The exercise of completing the National Register for Citizens was started full fledges by the Government of Assam. Assam was among the three states where Aadhaar was not introduced, due to objections by student organizations, who insisted to complete National Register for Citizens first and then introduce Aadhaar. First draft of National Register for Citizens published in Dec 2017, which mentioned the names of 1.9 crore people as legal citizens out of 3.29 crore total applicants.

The National Register for Citizens final draft says that the citizens can check their names on National Register for Citizens website and through SMSs. citizens can also visit the National Register for Citizens Sewa Kendras across the state. The National Register for Citizens list will feature the names, addresses and photographs of all Indian citizens, who have been residing in the north eastern states.

The exercise of completion of National Register of Citizens exercise is among the most ambitious and desirable experiments the Indian state has undertaken. Though the population census is conducted after every ten years at national level and provides an insight into the size and nature of Indian population. However, the National Register for Citizens is a unique exercise in itself because in this exercise the onus to prove the citizenship lies with the citizens. Aadhaar and National Register for Citizens are not linked for this purpose, as having merely an Aadhaar number does not qualify an individual to claim citizenship. People have to prove how they became citizens of India and living in Assam. They need to provide documentary evidence to validate their claim to ensure placing of name in National Register for Citizens.

Implementation of Aadhaar linking with Citizens across the country would not only ensure in filtering out the infiltrators but also ensure that the Government’s benefits reaches to its own Citizens. Implementation would also eliminate the chances of having multiple fake voter identity cards and bank accounts for claiming benefits of the Government.

Therefore the purpose of the study to reveals the impacts of Aadhaar linking in India and National Register for Citizens with reference to Assam.

Keywords: National Register for Citizens (NRC), the Unique Identification Authority of India (UIDAI), Information Technology, Digitization, Citizenship Acts, National Population Register (NPR).

0704311 THAKUR, DINESH (Faculty of Social Science, Delhi Public School, Patna). **IMPACT OF DIGITIZATION OF THE WORLD ON HUMAN FREEDOM AND EXISTENCE**

The story of human civilization is the story of development. Human society is a progressive society. From the beginning of civilization man has been adopting new ideas and innovations at the same time man has been suspicious about new technology and ideas. Apart from the basic needs of life that is food, shelter and accommodation man has adopted new innovations and ideas in every field of life let it be transport, large scale production and communication. Expression of ideas and passing the information to others and to the next generation has witnessed a massive development. From ancient mode of communication we have entered into the era of digital information. This transformation has massive impact on the life of the people. This impact is seen in every field of life like transport, communication, education, health care, entertainment and so on.

Digitization is the process of transformation associated with massive adoption of digital technologies that generate, process, share and transfer information. There is a big difference in the process of digitization and other innovations. Other innovations are one time event but digitization is not a one-time event. It proceeds in waves driven by technological progress and diffusion of innovations. Digitization builds on the evolution of multiple technologies: telecommunications networks computer technologies software engineering (operating systems, machine learning and artificial intelligence) and the spillover effects resulting from their use (common platforms for application development, electronic delivery of government services, electronic commerce, social networks, and availability of online information in form of blogs and portals). The gradual adoption of these technologies has led to a massive technological discontinuity, similar to the introduction of steam engines, electricity and railways, sweeping across economies, affecting our societies, and leading to spillover effects within the local, regional and global communities.

The central theme of this paper is to to evaluate the process of digitization and its impact of the life of people. It focuses on the positive and negative impact of digitization and suggests the ways to minimize the negative impact so that the positive impact can be harvested equally by all sections of the society. The objectives of the paper are listed as under:

- To determine the meaning of digitization
- To examine the different phases of digitization
- To evaluate the positive and negative impact of digitization
- To examine the concerns of digitization
- To suggest remedies to minimise the negative impacts so that the benefits of digitization is equally harvested by all.

The paper will be based on primary and secondary sources. Materials will be collected from libraries, books, magazines, periodicals and news papers. Primary data will be based on field work. Data will be presented and analyzed in appropriate manner.

The process of digitization has taken place in successive waves. Each wave has its own merits and significance. The first wave of digitalization is associated with the introduction and adoption of technologies, such as management information systems aimed at automating data processing and applied to monitoring and reporting of business performance, telecommunications technologies such as broadband (fixed and mobile) and voice telecommunications (fixed and mobile) which allow the remote access of information.

The second wave of digitization entails the diffusion of the Internet and its corresponding platforms (search engines, marketplaces), which enable the networking of enterprises to consumers and enterprises among themselves for purchasing of supplies, and distribution of output.

The third wave of digitization entails the adoption of a range of advanced technologies, such as big data/analytics, Internet of Things, robotics, sensors, and artificial intelligence, and is aimed at enhancing information processing and the quality of decision making, while further automating routine tasks within business enterprises

and governments. These technologies are not typically adopted in a stand-alone fashion but are integrated with the mature technologies characteristic of the first and second waves.

Every phase of digitization has a specific set of social and economic impact. Computing, broadband and mobile telephony networks have been instrumental in relaxing industry scalability constraints, thereby allowing traditional sectors of the economy to grow more rapidly. The alleviation of the resource constraint has led to increased demand for labor in service industries like financial services, education, health care, etc. Although it also had a positive effect in manufacturing. Finally, the first wave appears to have had an impact on the growth of household income, and the facilitation of social inclusion (access to information, government services, and entertainment content).

The second wave of digitization has led to the introduction of new services and applications such as Internet information searches, electronic commerce, distance education and a whole range of collaborative businesses that characterize the digital economy This "innovation effect" has yielded enhanced demand for labor in certain occupations linked to the development of digital services or the emergence of collaborative business models, coupled with the disappearance of repetitive low and middle-skilled jobs resulting from task automation.

The third wave of digitization has significant implications for productivity improvements. It also promises to have significant benefits on social welfare, more particularly on several Sustainable Development Goals, associated with the delivery of public services. The five evidence so far with regards to the disruptive labor effects of the third wave are quite speculative, unless once believes that third wave disruption is merely an extrapolation of the second digitalization wave effects. However, there is almost universal agreement that, similarly to the prior waves of innovation, automation will tend to favor those workers with more education and training. In this context, it is relevant to consider the policy remedies that could propel the benefits of automation and limit the negative outcomes.

Emerging countries need to actively promote the digitization of production and digital transformation. This requires emphasizing policies focused on accelerating the digitalization of production of small and medium enterprises, by reducing the cost of technology acquisition, training of employees, and the provision of consultancy services to support companies in their process of digital transformation. It is essential to launch changes in educational and training systems to address the human capital gap.

The policy challenge going forward is that the digital transformation resulting from all three waves of digitalization is so all-encompassing that sector-specific strategies developed within institutional silos are not applicable any more. Governments need to build cross-institutional links fostering the collaboration among education, ICT, industrial promotion, science and technology to devise and jointly implement policies. In addition, the future public policy scope has to be significantly expanded beyond traditional domains such as taxation, competition, and digital literacy to include new areas such as privacy protection, cyber security, and the fostering of digital adoption such as trust and enhanced customer experience. As it is clear, the challenges for policy makers are significant, but so are the benefits for citizens and the need to mitigate any potential disruptions.

Finally, digital transformation has an impact on human relationships and individual behavior, facilitating social inclusion and communication. It should be noted, however, that digital transformation could also result in potential negative effects, such as workforce disruption, the disappearance of companies, cybercrime and social anomie. The concerns of digitalization can be listed under three headings:

In the beginning it was believed that computers would be smarter than people and in the job sector people would be replaced by computers. In the past, our perception of digitalization was largely based on improvement: doing things faster than people. With time, machine capability evolved to allow machines to do things that people could not do at all. Nevertheless, machine capability remains highly focused on a pre-determined capability or method of learning. Certain capabilities which rely on uniquely human emotion or versatility are still well outside the range of automation.

Now it is believed that computers are changing humanity it seems there are digital devices everywhere. Technology astounds. Digital devices are making water cleaner, helping to educate children in remote regions, and augmenting health care assistance to otherwise marginalized individuals. It's not all necessarily good. There are concerns about having too many "devices," children not spending enough time with physical activities, the loss of intimacy in communication, and the erosion of privacy. We are living in a time where it is becoming increasingly important to understand not only what our digital agents are doing, but also how those agents may be changing the way we act and react. It is how we implement technology, and how we understand the actions of our electronic agents, that portend the impact on humankind.

Like any emerging field, not everyone agrees on the best way forward. Recently, some of the greatest minds such as Dr. Stephen Hawking have warned that digital development could actually effectuate an end to mankind if not properly managed. These warnings are serious but still there is a hope. The biggest concern is to become complacent. I don't worry about taking direction (to some extent) from a robot. I already take direction from automation. My phone alerts me to an upcoming meeting and I go. My fitness monitor tells me I'm not walking enough and I get up and walk. The danger, it seems to me, is in surrendering our will to a machine and allowing that surrender to be an excuse for rational thought.

Digitization is the need of the hour. The degree to which it will have a positive or negative impact on society and the world are entirely up to the creators of new technology and the consumers of that capability. The challenge, as I see it, is to embrace the digital evolution going on around us, but to be thoughtful about how that digitalization may be exacerbating marginalization, driving out creativity, or otherwise bringing about unintended consequence. There is still ample opportunity to serve the underserved, to think new thoughts, and to innovate in ways that far exceed machine capacity. The choice is entirely ours.

09. IMPACT ON DIGITAL TECHNOLOGY ON INDIAN ECONOMY AND INDIAN PEOPLE

0709312 DAS, ANUP KUMAR (Centre for Studies in Science Policy, Jawaharlal Nehru University, New Delhi 110067). OPEN RESEARCH DATA–FEATURES, ISSUES AND CHALLENGES: INSIGHTS FROM THE GLOBAL SOUTH

Globally open science movement is gaining momentum ever since the launching of the preprint repository Arxiv.org in 1991 and the signing of the global declaration Budapest Open Access Initiative in 2002. Free online scholarships have been getting support from the research funding agencies, while they are committed for the dissemination of results of public-funded research studies to the common citizens. The Global South is also taking interest in the global open access movement. Particularly, the BRICS nations are leading the developing nations in producing open access scholarship. In India, many universities and research institutions have established their respective open knowledge repositories. While, scholarly periodicals published by many of the public institutions have also made accessible online freely. In the open science ecosystem, the open research data is also an essential element. Globally, FAIR data principles have been adopted by the scientific community, to make data Findable, Accessible, Interoperable, and Reusable (FAIR). The FAIR data principles were published in 2016, while the term was coined in 2014. Present chapter discusses the salient features of FAIR data principles. The Chapter also highlights the issues and challenges for the developing nations in the Global South, as research institutions and funding agencies need to create suitable research strategies, protocols, as well as sustainable infrastructure for the proliferation of Open Research Data at the institutional, national and funders' level. The Chapter also highlights the availability of open research data in India highlighting a few success stories.

0709313 DAS, KESHAB (Gujarat Institute of Development Research, Ahmedabad). INDIAN MSMES IN TIMES OF NEW DIGITIZATION: KEY CONCERNS AND POSSIBILITIES

The new digitization ushered in through what is described as the 4th Industrial Revolution (Industrie 4.0) represents the impending transformation in the manufacturing sector based on cyber physical production systems that integrate communications, IT, data and physical elements. The information is processed and distributed in real time resulting in profound changes to the entire industrial ecosystem. These digital value chains are driven by four technological disruptions, namely, Big Data, Advanced Analytics, Human-Machine Interfaces, and Digital-to-Physical Transfer. The new digitization, it is averred, would lead to fresh approaches to creation of value and doing business. The intense inter-dependence between machines, digital systems of data storage and transfer and human intervention would form customized production with alacrity and high levels of productivity. With globally interconnected solutions of designing, services-cum-inputs procuring and manufacturing processes as would be possible through Internet of Things (IoT) enterprises enabled with such capabilities would receive recognition as Original Equipment Manufacturers (OEMs) for high-end companies/buyers across nations. As is being debated avidly across the globe, the digital transformation of manufacturing, or, what is labelled 'Smart Manufacturing', would depend and excel on the basis of the factors such as scientific excellence, core and base technologies, an informed and multi-skilled workforce and facilitative institutions. In the Indian context, while the transition to the digitized manufacturing systems would be possible for some of the large enterprises the same would pose serious constraints to the huge number of micro, small and medium enterprises (MSMEs) as key aspects of new digitalization – enterprise resource planning (ERP), product lifecycle management (PLM) and factory automation – required for sustaining growth of enterprises would remain elusive.

In India, with an overwhelming presence of MSMEs (36 million enterprises employing about 80 million people produce over 8000 products and account for 45% of total manufacturing production and around 40% of total exports) and a dynamic IT-ITES industry, initiation of smart manufacturing has been made. The Government of India (GoI) in alliance with private capital has been keen to transform MSMEs to be "interconnected and technically agile to be globally competitive" by infusing advanced robotics technologies.

These collaborations have been typically translated into global subcontracting arrangements whereby Indian MSMEs often serve global buyers within an unequal and unclear framework. Nevertheless, Indian MSMEs in certain sectors - especially, the machine tools, apparel, automotive, leather goods, ceramicware and

pharmaceuticals – have recognized that the new digitalization would be an efficient manner to enhance productivity and reduce costs and time of manufacturing.

However, the challenges facing Indian MSMEs include lack of resources and competence to transpose their internal processes to adhere to the specifications of new digitalization. There is also the other impending issue of if new digitization of MSMEs would be acting against creation of (or, even maintaining the existing) jobs in the sector. As an alternative proposition, it is held that Indian MSMEs might be uniquely placed to build high level of competitive advantage by blending the advanced digitization in manufacturing with low cost skilled labour. Those MSMEs ready to switch over to new digitization early on would emerge stronger compared to those who do not in broadening their market base and also subsequently investing in advancement in technology per se. It would be advantageous that the Indian IT majors would play a major role in the new skilling initiatives essential for the existing workforce. However, there is an absence of a responsive engagement with the nature and ramifications of informal production and labour processes in MSMEs, particularly as India is where the smart manufacturing would be shifting its base sooner rather than later.

0709314 GUPTA, RICHA (Bilaspur University, Bilaspur Chhattisgarh). PROTECTION OF CONSUMER RIGHTS IN E COMMERCE IN INDIA

E-commerce and consumer internet industry in India registered phenomenal growth rates with their shares in retail, grocery delivery and food tech palpable enough even in tier II and III cities. However, the space ceded from traditional businesses to online commerce has policy implications for consumer trust and confidence– one of the foundations in a market economy. A legal solution to this problem is found in concept and device of consumer rights so that factors such as information asymmetry, collusion between manufacturers and retailers, fraud, cheating and unfair trade practices do not disadvantage consumers vis-à-vis sellers or become a hindrance in expansion of businesses. First a brief overview of the architecture for protection of consumer rights in e-commerce in India is provided. This includes Consumer Protection Act 1986 and as well as its pending amendment through Consumer Protection Bill, 2018. Second part of the article looks thoroughly at all consumer cases filed in e-commerce category at district, state and national consumer forums in India so as to answer certain pertinent questions in this field which may benefit much from the attention of policymakers and researchers alike. This includes, firstly, what are some of the biggest consumer issues of concern and frequency in e-commerce in India? Secondly, is the current three-tier framework of consumer courts, viz. NCDRC, SCDRC and District Consumer Courts, sufficient to address growing volume of consumer complaints in this area? Thirdly, do consumer courts have adequate capacity to deal with questions involving consumer interests in a field that requires technological apart from legal know-how? Lastly alternatives and policy suggestions are given to strengthen consumer protection to ensure twin goals of swiftness and fairness of decisions on consumer complaints and cases in e-commerce in the country.

Keywords: E-commerce, consumer rights, district forum, SCDRC, NCDRC, unfair trade practices

0709315 JHA, ABHINAV AND SINHA, KUNAL (Centre for Studies in Science, Technology and Innovation Policy, Central University of Gujarat, Gandhinagar, Ahmedabad). MAPPING THE DIGITAL TECHNOLOGY DOMAIN WITHIN INDIAN AGRIBUSINESS

There are many studies describing the increasing importance of technology in the Indian agribusiness domain. From the earlier generation of Information and Communication Technology (ICT) to the latest cyber-physical systems, the agribusiness domain has seen the rise of new players, new networks, and new business models based upon the capture and analysis of data in myriad forms for decision making and design of new products. This space is full of recent innovations and is still experiencing the growing pangs that are the characteristic of an infant industry. This study is an attempt to enumerate the various players involved in this sector from both the government and the private sector. This enumeration is complicated by the diverse nature of the business activities involved, from big corporates present in the input and distribution domains to the smallholder farmers that are involved in the cultivation of produce. Many government policies are also impacting the role of digital technologies in this domain. From the recent DGCA policy on drones, to the Justice Srikrishna Committee Draft Data Protection Bill, there are innumerable policies that influence the rise of digital technologies in agribusiness. In general data has become the

new source of competitive advantage, but the principles of fair collection and exchange of data are not often followed. Businesses that collect data do not reveal the value of it to the source entities, often not even revealing to them that their data is being captured and will be analyzed to create new products. It is therefore imperative that these players be mapped and a relatively fair and equitable growth be achieved.

0709316 KUMAR, VIKAS (Centre for Studies in Social Management, Central University of Gujarat, Gandhinagar, Ahmedabad). ISSUES AND CHALLENGES OF MOBILE APPLICATION IN AGRICULTURE DEVELOPMENT IN INDIA: POLICY, PRACTICES AND THE WAY FORWARD

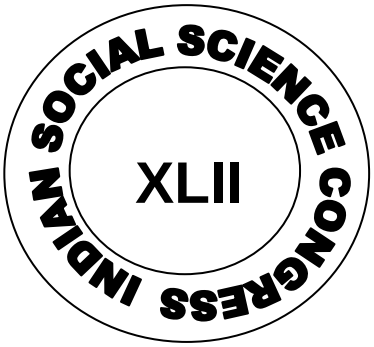
The paper attempts to scrutinize the role of mobile application in agriculture development in India. It delineates issues and challenges in implementing policies related to use of mobile application. Broadly, this application helps to collection data from the field. It includes collection of ground data, recording infrastructure facilities, asset mapping, disaster management, incident alerting, etc. Recent advancements in smart phones, GPS, wireless networks and Web GIS have facilitated the development of customised mobile applications for domain-specific attribute data collection with geo-tagging and field photographs. The mobile applications not only help in standardising the data collection process but also help the user to collect the field information at ease and in a systematic manner through the rich Graphical User Interface (GUI). Hence, the objectives of the study are: i) to study the role of mobile application in agriculture development and their challenges; ii) to analyze policy implementation and issues related to use mobile application at the field level; and iii) to examine the impact of this application on farmers at the field level. The study is based on quantitative research methods and relevant statistical analyses. Data for this research have been collected from the department of agriculture and ISRO. The analysis is supported by a detailed review of literature.

0709317 SAXENA, STUTI (Central University of Haryana, Mahendragarh, Haryana). EVALUATION OF THE NATIONAL OPEN GOVERNMENT DATA (OGD) PORTAL OF INDIA

This paper seeks to present an evaluation of the national Open Government Data (OGD) portal of India (https://data.gov.in/) and underlines the significance of maintaining the quality of the datasets published online. Drawing inferences from extant literature on OGD, the paper evaluates the national OGD portal using the usability framework.

There are many drivers to re-use the datasets published via the portal. At the same time, however, there are barriers to re-use the datasets on account of the non-publication of updated datasets. Implicitly, quality of the datasets should be improved. More involvement of the government agencies is required for contributing towards the datasets. Also, user involvement should be encouraged by encouraging them to contribute to the datasets and lending recommendations for the improvisation of the datasets published via the portal. Conceding that any OGD initiative seeks to facilitate the re-use of the datasets among a diverse set of stakeholders, the quality of the datasets published via the OGD portal should be rigorously maintained.

The study leaves lessons for practitioners and policy-makers to ensure that with the increased pro-active approach of the government in publishing datasets, citizen trust, citizen participation and citizen engagement in policy-making would be improved. OGD initiatives should be undertaken by the local and regional administrative levels too for improvising upon the public service delivery. OGD-focused research in emerging economies is few and far between. In this context, the present study shall contribute towards underscoring the need for maintaining quality so far as open datasets are concerned.



PART VIII

EIGHTH ALL INDIA YOUNG SCIENTISTS CONVENTION

HUMAN FUTURE IN DIGITAL ERA

PART VIII

VIIITH ALL INDIA YOUNG SCIENTISTS CONVENTION

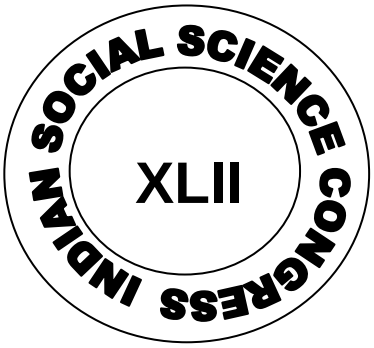
0805318 KAR, SANTOSH K (School of Biotechnology, Bhubaneswar-751024, Odisa). STATUS OF INFRASTRUCTURE AND CONGENIAL ENVIRONMENT FOR PROMOTING RESEARCH AND TECHNOLOGY DEVELOPMENT IN UNIVERSITIES AND INSTITUTES.

We all know how important it is for us to build infrastructure and create an environment for critical analysis of natural phenomenon to understand nature and gain useful knowledge.Since Universities and Research Institutes are the places where young and old are involved in the quest of knowledge it is very important to ensure that such environment is created and maintained in such places. While it is the responsibility of the Government to fund creation of such infrastructures it is the responsibility of the people who are using the facility to maintain it and allow every one to use it. Considering the enermous cost of creation of such infrastructures It may not be possible for any Government to create enough facilities for every one but the ones that has been created should be preserved and used properly and should be open to any researcher who possibly can benefit from it.

The creation of Indian Institute of Science at Bangalore in the year 1909 is a bright example. First listening to the convocation address by Lord Reay at the University of Bombay and Madrass in the year 1889 the idea of creating such an Institute came to the mind of Jamsedji and later when he travelled together with Swami Vivekanand on a ship in the year 1893 it took deeper roots. Then Indian Institute of Science was established on a 371 acre land donated by the Maharaja of Mysore in the year 1909. This institute has completed 100 years by now and is getting generous support by the Government of India. But we need to examine whether this Institute is standing to it's past glory or not. This type of analysis will tell us where we are going wrong and how we can rectify that. Similarly about seven years after the establishment of Indian Institute of Science at Bangalore Pandit Madan Mohan Malviya established the Banaras Hindu University at Varanasi in the year 1916. When it was started it had a sprawling campus and had the potential to become one of the best Universities in the country. Has it fullfilled that dream of Pandit Malviya? One needs to analyse very critically. If the Institutions which were built more than 100 years ago with great vision and dedication have failed we must understand the reason.

0805319 SAHAL, DINKAR (Malaria Drug Discovery, ICGEB, NEW DELHI 110067). QUEST FOR QUESTIONS IS THE OXYGEN FOR SCIENCE, CULTURE AND SOCIETY

The urge to ask Questions is a sign of life in all its manifestations encompassing Science, Culture and Society at large. Teaching must be such as to motivate and compel students to ask questions. However modern day teaching is often gloomy with no fun, no questions and no debates between either teachers and students, or among teachers and among students. Therefore, Questions will be central to my talk and I will first ask diverse simple and interesting questions to elicit answers from the students. I will then describe how we asked and answered a curious question of why amino acid residues in a protein are joined in a unique direction and not in the opposite direction. We asked this question in diverse ways to fathom its full ramifications. Starting with the chemical syntheses of S peptide of Ribonuclease (K E T A A A K F E R Q H M D S S) and its retro analog (S S D M H Q R E F K A A A T E K) we went on to explore the question of directionality in proteins. Our areas of exploration on isomeric “forward” and “backward” peptides included (i) complementation of S protein by S peptide (S) vs retro S peptide (RS) for ribonuclease activity, (ii) recognition of RS by S specific antibodies and (iii) recognition of RS by S primed T cells on the one hand and (i) RPHPLC, (ii) Circular Dichroism, (iii) NMR and (iv) MS/MS fragmentation for of S vs RS on the other hand. I shall narrate the results to tell that direction of peptide bonds changes (a) the physical & chemical properties and (b) biological recognition and catalysis properties of enzymes in ways that makes us wonder how cautiously proteins must have evolved to be meaningful in a cellular context.



PART IX

THIRD B V RANGARAO MEMORIAL LECTURE

PART IX

THIRD B V RANGARAO MEMORIAL LECTURE

0900320 SHARMA, DEVINDER (……)ADDRESSING AGRARIAN CRISIS: AGRICULTURE NEEDS TO BE REINVENTED

Their patience is running out. The remarkable resilience that farmers have demonstrated over the years in the face of growing stress, adversity and trauma is now beginning to break down.

For two decades now, farmer's real income stands frozen. Yes, you heard it right, frozen. A *Niti Aayog* paper has worked out that the real income of a cultivator has increased barely by 0.44 per cent every year over a five year period leading to 2015-16. In other words, farm incomes have stagnated. This was followed by the severe blow inflicted by demonetisation in 2016. The pressure to sell their produce at whatever price they are able to get resulted in an unprecedented crash in farm prices, forcing farmers to throw their produce onto the streets across the country. Tomato, potato and onions have been the worst hit. The impact is still lingering. For instance, an analysis published recently by *Agrowon* showed that by invariably buying at a distress price, Maharashtra farmers have been short changed to the tune of Rs 2,579-crore for pulses, and Rs 769-crore for oilseeds, this season.

A recent report by CRISIL points to the denial of a rightful income as the major reason behind the agrarian crisis sweeping through the country.

"While the average annual growth in Minimum Support Price (MSP) was 19.3 per cent between 2009 and 2013, it was only 3.6 per cent between 2014 and 2017," the report states. A recent OECD report concludes that farm incomes have remained frozen for two decades. Which means, in order to keep food inflation under control, successive governments have denied farmers their rightful income. The entire burden of keeping food prices low has been very conveniently passed on to farmers. In other words, it is the farmers who are bearing the entire cost of subsidising the consumers. Farmers are being deliberately paid less, kept impoverished. Still, what farmers don't realise is that every time they take to cultivation, they actually cultivate losses.

Even in Punjab, the frontline agricultural state, there is hardly a day when reports of farmers committing suicide do not appear in Punjab newspapers. Punjab, the country's food bowl, is no exception; the serial death dance across the country shows no signs of abating. At a time when it is generally believed that expanding irrigation and raising crop productivity is the way to enhance farmers' income, Punjab shows that the time has come to look beyond. If irrigation and high productivity alone could raise farmers' income I see no reason why Punjab, the food bowl of the country, has lately turned into a suicide hotspot. Punjab has 98 per cent cultivable area under assured irrigation and the crop productivity matches with the best in the world. With 45 quintals per hectare productivity of wheat and 60 quintals/hectare for rice, Punjab tops the global chart. And yet, Punjab is witness to a spate of suicides every week.

The tragedy that struck these farming families symbolises the agony that the entire farming community is living with. There is hardly a day when farm suicides are not reported from one part of the country or other. In the past 21 years, more than 3.20-lakh farmers have committed suicide; every 41 minute a farmer ending his life somewhere in the country. Those who have refrained from taking the extreme step are no better. They continue to somehow survive, living in acute distress, and hoping against hope. Several studies have shown that almost 58 to 62 per cent farmers sleep empty stomach.

Farmers are in reality the victims of an economic design.

The terrible agrarian crisis that prevails has brought farmer's anger to the fore. Over the year, farmers' anger has spilled to the streets. Between 2014 and 2016, a period of two years, farmers protests across the country increased by a whopping 680 per cent. In 2016, the National Crime Record Bureau (NCRB) recorded 4,837 protests,

roughly 14 protests a day. Since then the number and intensity of farmers' protests have only multiplied. The heat is now being felt at the electoral hustlings.

The electoral turnaround in the Hindi heartland in the recent Assembly elections is being increasingly attributed to growing farmers' anger.

It is generally believed that unless the ongoing agrarian crisis is able to sway the electoral outcomes the political leadership will never understand the severity of the socio-economic fallout. The latest round of elections will perhaps change that perception. The dominant economic thinking otherwise is that agriculture has to be sacrificed to achieve economic growth. Agriculture therefore is being deliberately kept impoverished to keep the reforms viable. Former RBI Governor Raghuram Rajan has time and again iterated that the biggest reform would be when a sizeable percentage of population in agriculture is moved to the cities which are in need of cheaper labour. The National Skill Development Council already has spelled out plans to bring down the population in farming from the existing 52 per cent to 38 percent by 2022. This is what the World Bank had directed way back in 1996, seeking 400 million people to be moved out of the rural areas in the next twenty years, by 2015. Successive governments have merely followed the economic design. Left, Right or Centre, the underlying economic thinking remains the same. Keeping agriculture starved of public sector investments, and turning farming into an uneconomical enterprise was (and is still) considered to be the best way to push farmers out of agriculture.

In such depressing times, agriculture needs to be reinvented. It needs a booster dose. More so considering that employment in the cities has been shrinking over the years. Since 2004-04, despite the high GDP growth rate, against the requirement of 1.25- crore jobs a year, only 1.6-crore jobs in the labour intensive industry have been created. In other words, against the expectation of 17.5-crore jobs, only 1.6-crore new jobs have come. Since the job market has dried up, common sense tells us that the challenge should be to make farming economically viable and ecologically sustainable. With 52 per cent population dependent on agriculture, almost 60-crore people, the emphasis should be on providing gainful employment in rural areas. This can only happen if the economic thinking shifts from creating an army of *dehari mazdoor* in the cities to rebuilding farming.

Keeping agriculture starved deliberately on the other hand, with farm incomes remain almost frozen or bare enough to cover not even the cost of production, the economic disparity has only worsened over the years. Keeping food prices low is also in consonance with the dominant economic thinking aimed at drastically reducing the work force in agriculture.

For all practical purposes, debt and farming have now become synonym. Seventy years after Independence, and 55 years after the Green Revolution was launched, economic freedom continues to elude farmers. Economic Survey 2016 made it abundantly clear. Accordingly, the average income of a farming family in 17 States of India does not exceed Rs 20,000 a year. In other words, farming families in roughly half the country are surviving on less than Rs 1,700 a month. Knowing that it is not possible to rear a cow in the same amount, I shudder to think how these families survive year after year.

It's a question of priorities. The 7th Pay Commission is expected to benefit 45 lakh central government employees and 50 lakh pensioners. Finance Minister says it will cost an additional Rs 1.02-lakh crore every year. But when implemented by State governments, PSUs and colleges across the country, Credit Suisse bank tells us that the additional burden will be around Rs 4.5-lakh crore. This will benefit an estimated 1 to 2 per cent of the population, the salaried class. Surprisingly, no economist has ever asked where the money will come from nor has anyone raised the question of widening fiscal deficit. In fact, the industry calls it a booster dose since the additional money into the hands of employees is expected to create more demand.

Imagine the demand that will be created from the rural areas if agriculture is to receive an annual additional budgetary provision of Rs 4-lakh crore. Much of it should be in the form of direct income support and a higher MSP. This has to be accompanied by a mechanism of an assured monthly income package corresponding to the salary of the lowest government employee. Although economists will raise heckles of widening fiscal deficit and the elite is going to question the source of money, the fact remains that the huge demand created in the rural areas will propel the economy in a rocket dose. This is not only good politics, but also good economics.

I am of the firm opinion that a tinkering here and there is not going to address the agrarian crisis. It needs a holistic approach, a paradigm shift in economic thinking. To begin with, the effort should be to make farming economically viable. After all, everything boils down to how much net income a farmer gets in his hand at the end.

LATE PAPERS

PART I

PLENARY PAPER

ON

HUMAN FUTURE IN DIGITAL ERA

0104321 DEB, DEBAL (Centre for Interdisciplinary Studies, Barrackpore, Kolkata). **AGROECOLOGY VS THE DIGITAL AGE TECHNOLOGY**

It's truism that technological advancements have been decimating biodiversity and destroying the ecologial integrity of life support systems of the planet. Yet, technology itself is used to detect and quantify the problems it has created. However, technology is unable to solve the envioronmental and social problems it engenders, because the particular mode of social arrangement created and fosters technology, which is highly centralized and historically geared to generate and serve industrial capital. The advent of modernization has industrialised all modes of production – agriculture, fishery, forestry and animal husbandry – where modern technology has been progressively employed to accelerate profit generation, at the expense of biodiversity and ecolgical integrity. Technology's foray in the food production sector includes not only more and more 'efficient' machinery to exhaust natural resources more and more rapidly, but also novel biological products from manipulating cell lines and genes to make the entire food production system enslaved to industry.

I argue that selective employment of a set of de-centralised, zero-emission technologies that draws on local resources may be one of the means to reintegrate the community of producers in a sustainable production system. In agroecology, based on zero-external input of materials and energy (except rainwater and direct sunlight) and community-centric need-based economy, traditional local technologies are proven to be appropriate for ensuring food security. Digital technology, including transgenics and computers, is neither necessary nor adequate for sustainable agriculture.

V. ABSTRACTS OF PAPERS OF RESEARCH COMMITTEES

14. ENGINEERING SCIENCE AND TECHNOLOGY

0514322 DAS, DIVYAJIT; RATH, ASHOKE KUMAR AND BERA, D K (School of Civil Engineering, KIIT University, Bhubaneswar). FLY-ASH MODIFICATIONS FOR CONCRETE WITH SILICA FUME FOR SOCIAL AFFORDABILITY FOR SHELTER

Shelter for shelter-less in India is a major concern. To mitigate the shortfall of Shelter through low cost housing, employing green technology has become essential. Moreover, it calls for research and innovations to recycle and reuse waste material like flyash for multi-dimentional help. Nevertheless, in application of the flyash generated from the industrial waste, it is all the more essential to ensure thermal conditioning of the houses for managing the heat of the Indian tropical climate. Research and innovations pertaining to the aforesaid approaches have lead to the composition of different types of Self Compacting Concrete(SCC).

Self Compacting Concrete(SCC) has become affordable for the construction industry. Its requirement has been overshadowed the normal vibrating concrete, for its ability to fill, flow and corrosion resistance. The properties of the flyash concrete are improvised with addition of pozzolonic materials like flyash and silica fume. The strength of cement has shown different variations. In similar cases it has been seen that 8% silica fume in SCC displayed better compressive strength and 20% flyash enhanced the mechanical strength. The blend of the both display a better outcome for the quality of SCC. The fly ash and silica fumes are a industrial waste material needed to be recycled for eco-friendly usage. However the cost of flyash is quite cheaper and cost effective than silica fume. Nonetheless both of them combined into the composition of a SCC can ensure economical constructions for cost effective housing at a affordable price for the shelter less and slums. It shall provide improvised condition of living for the poorest of the poor and ensure environmental friendly efforts to address climate change.

The research paper delve on the Indian climate and the application of fly-ash mixed self compacting concrete for understanding the science of thermal conditioning in different time series data studied in significant periods of the year. The finding of the data base has been appreciative of the factors of thermal conditioning, vis-a-vis demand for low cost housing which can be catered to the shelter-less population.

Keywords: Fly-Ash, Silica Fume, Concrete, Strength of Concrete, Shelter-less, Thermal Condition

25. POLITICAL SCIENCE

0525323 YADAV, LAL BABU (Department of Political Science, J. P. University, Chapara, Bihar). **इक्कीसवीं सदी का सामाजिक एवं राजनीतिक चिंतन**

विगत दो शताब्दियाँ पूँजीवादी और समाजवादी विचारों के संघर्षों की अद्‌भूत शताब्दियाँ थी। गरीब, शोषित, पीड़ित जनगण अपनी मुक्ति के संघर्षों में जितनी हीं तेजी से आगे आया, उतनी हीं तेजी से राज्य के बारे में नकारात्मक, उदारवादियों और व्यक्तिवादियों की सोंच में बदलाव आया। ये विचार पूंजीवाद के समर्थक विचार थें। तरह–तरह के विचार तथा अराजकतावाद सिण्डिकलवाद, श्रेणी समाजवाद, फेबियनवाद, गाँधीवाद जैसी विचार धाराएं सामने आई। सबसे बढ़कर मार्क्सवाद का विचार आया और सम्पूर्ण विष्व के क्षितिज पर छा गया। दुनियां विचारधारा के रूप में दो भागों में विभाजित हो गई। एक ओर मार्क्सवादी वैज्ञानिक समाजवाद की धारा तो दुसरी ओर पूंजीवाद की समर्थक उदारवादी विचारधारा। विगत शताब्दी के उत्तरार्द्ध में दो चीजे बदली एक तो विज्ञान और दुसरा प्रौद्योगिकी में नई–नई खोजे हुईं, सूचना टेक्नोलॉजी में गुणात्मक बदलाव आया, कम्प्यूटर, इन्टरनेट का सर्वत्र षोर मचा। इस प्रकार दुनियां के चेहरें को नई खोजों और नए आविष्कारों ने बदल दिया।

'इक्कसवीं सदी अमेरिका की' के पीछे अमेरिकी साम्राज्ववाद का कोलाहल सुनाई पड़ने लगता है। ऐसे में यदि कोई अमेरिका को अपना 'नेचुरल एलाई' कहता है, तो इसका प्रथम अर्थ तो यही बनता है कि 'राष्ट्रीय स्वतंत्रता' और 'राष्ट्र' की ज्ञानोदयी मूल्य परम्परा से या जनजागरण से या नवजागरण से हटते हुए प्रग्मेटिक प्रौग्मेटिज्म के उस रास्ते को खोल दिया जाना चाहिए जो विचार और व्यवहार के लैसेज फेयरवादी मॉडल का है, उन्मुक्त बाजारवाद का है, और इस रास्ते की विशिष्ट प्रकृति हीं सहज तथा अजनतांत्रिक सी है।

अमेरिकी नेतृत्व में यूरोप के बुद्धिजीवि राज्य के काम को गैर–सरकारी संस्थाओं को सौपने की वकालत कर रहे हैं और उसी तरह संयुक्त राष्ट्रसंघ के कामों को 'नाटो' के हवाले कर देना चाहते हैं। देषों की सीमाएं बहुराष्ट्रीय और राष्ट्रीय कम्पनियों के लिए खोली जा रही हैं। सम्प्रभुता की धारणा खंडित हो रही है। कुछ दिनों पहले राजनीति विज्ञान के अंत या पतन की घोषणा की गयी थी। उसे फिर से जीवित मान लेने के उपक्रम किए जा रहे हैं। इस तरह नई सदी में राजनीति विज्ञान का यही परिदृष्य हम–सब के सामने है। विगत पन्द्रह वर्षो से दुनिया विचारधारा के अन्त इतिहास के अन्त और सभ्यताओं के संघर्ष के विचार से आक्रान्त होती रही । सोवियत संघ के विघटन और समाजवादी शिविर के बिखराव के साथ यह घोषणा होने लगी कि इतिहास का अन्त हो गया ।

सैम्युअल हंटिंग्टन ने 'सभ्यताओं की भिङन्त और विश्व व्यवस्था की पुनर्रचना' नामक किताब लिखी और यह बतलाया कि वर्ग संघर्ष की जगह अब विभिन्न संस्कृतियों या सभ्यताओं के बीच भिङन्त या टकराव प्रमुख हो गया है । अफगानिस्तान, कोसोबो और इराक पर अमेरिकी हमले को कुछ लोग सभ्यताओं की भिङन्त के रूप में ही देखने लगे । हंट्रिंग्टन ने फरमाया इक्कीसवीं सदी संस्कृति की शताब्दी के रूप में शुरू हो रही है। अमेरिकी पूँजीवाद रूपी वैश्वीकरण के इस प्रभाव को बङे ही जीवन्त और विस्तृत रूप से पुर्तगाली उपन्यासकार जुजे सारामागु ने अपने हाल में प्रकाशित उपन्यास 'द केब' में किया है। उन कहानियों से जो मनःस्थिति बनती थी, वह कभी भ्रान्ति पैदा करती थी तो कभी आत्महत्या की ओर ढकेलती थी। सभी कहानियों में अतृप्तता पर जोर था।

इस तरह वैश्विक पुँजी और क्रोणीकैपिटल ने नवसम्राज्यवाद के इस दौर में दुनिया को अमेरिका के समक्ष नतमस्तक कर दिया है। क्या विश्व के समक्ष वैकल्पिक व्यवस्था बनानें की स्थिति में है। 21 वीं सदी के सोच और चिंतन की धारा की शुरूआत यही से होनी चाहिए। इस शोध आलेख का उद्धेश्य इस प्रक्रिया को आगे बढाना हैं।

PART VI

THEMATIC PANELS

21. UNITY OF SCIENCE/SCIENCE OF NATURE-HUMANS-SOCIETY

0621324 ROY, ARINDAM (Departmenty of Political Science, The University of Burdwan, Bardhman). **COST OF ELUSIVE COMPLEMENTARITY BETWEEN NATURAL AND SOCIAL SCIENCES: REFLECTIONS ON PUBLIC HEALTH IN INDIA**

The apparent disconnect between natural and social science constitutes the heart of human problem. The gradual compartmentalization of knowledge from a holistic science during era of Enlightenment and modernity or the further drifting of them in the name of celebrating fragmentarily during postmodernity has had a serious repercussion for human civilization. Several reasons can be identified for such disconnect: the first reason is the interest of the capital. The birth of science especially natural science could be seen as a capitalist instrumentality as natural science is more conducive for appropriating surplus value. Secondly, the capitalist apathy towards social science vis-à-vis natural sciences as exemplified in the discriminatory resource allocation between the two has further cemented the said disconnect. Thirdly, the epistemological crisis of social science vis-à-vis natural sciences can be attributed to the very interrogating nature of social sciences. Social science, unlike the homogeneous ,in-box knowledge of natural sciences, lays emphasis on criticalities and questioning. The apprehension that social sciences may interrogate the raison d'etre of the capitalist system has also contributed immensely to widen the gulf between natural and social sciences. Incubation of epistemic communities by the capitalists in a bid to rationalizing the gap between natural and social sciences or celebrating natural science for having the power of precision and predictability and control could have validated the above point. Hence, the elusive complementarity between natural and social sciences leads to wastage of public money. This can be better understood if we refer to the dismal state of public health India. Public health in India has had a colonial legacy. The colonial administration took a straight jacket approach to public health based on homogeneity biomedicine to push through their colonial agenda of mercantilism and empire building. Being the prisoner's of homogeneity and natural science, public health policies in India have typically ignored innumerable socio-cultural nuances embedded in the society. In fact, emboldened by the new breakthroughs in epidemiological sciences and bacteriology, colonial had adopted relatively proactive role in heath. Taking the patient as only a diseased body to be taken care of uniformly, colonial health policy had discarded socio-cultural constructions of health. Even after independence, the situation did not change much. The political leadership as well as bureaucracy of independent India had largely emulated their erstwhile colonial masters and tried to conceal their apathy to ethno-cultural diversity in the garb of an idealized uniformity and homogeneity. Consequently, successive health policies in Independent India fail to reach the target as the intended beneficiaries remain apathetic to those policies based on bio medical intervention. Hence, a proper cognizance of the socio-cultural nuances in addition to bio-medical intervention is necessary for successful public health policy.

Key Words: Homogeneity , public health, ethno-cultural diversity

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