



Way to Study Indigenous Knowledge and Indigenous Knowledge System

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Abstract

This paper is based on how to study Indigenous Knowledge and Indigenous Knowledge System (IK and IKS). Some questions have been raised and probable answers given. The main problem is regarding methodology. Definition and categorization of IK/IKS are also situational. IK and IKS are to be separated. IKS as a global knowledge system has to be understood. Hidden and open ended IK/IKS should have different methodologies. Symbols, cognition, post-structuralism, post-modernism, humanitarianism are different perspectives. There are as many research approaches. Rapid rural Appraisal has got special attention. IKS itself is a methodology. We have to realize the ground situation also concentrating on the area as well as approach to the area. Study can be etic and/or emic. Probable rationale of approach is to be formulated. We have to realize situations like IK/IKS versus civilization, global services from IKS, and traditional knowledge system and IKS. We also have to better understand colonial realm of the term "indigenous" and keep in mind the aspects like Indigenous Rights according to ILO.

Keywords: IK, TK, TKS, IKS, RRA, culture, biodiversity conservation, deep ecology, construction, performance, symbol.

Introduction

Knowledge is a part of culture and works as a set of various facts and information traits. It is of two types: scientific and traditional. Traditional knowledge traits are best maintained by indigenous peoples are hence known as Indigenous Knowledge (IK). Latter works in a systematic way and hence is treated as Indigenous Knowledge System (IKS).

IK is the actual knowledge of a given population that reflects the experiences based on traditions and includes more recent experiences with modern technologies¹. It is specific to a culture, a society and an ecosystem. It evolves not in the laboratory or any formal educational institution, but in the lap of nature where folk people reside with their perception of man-nature-Supernature and by saying Supernature, they mean to say their collective perception on faith, fear and belief. They believe in magico-religious perception or ethno-science which is something like science-religion-superstition nexus.

IKS is the systematic body of traditional or indigenous knowledge acquired by local people through the accumulation of generationwise experiences (intellectual reasoning in daily life) as results of informal experiments through trial and error, intimate understanding of the environment in a given culture, practical rather than theoretical facts, asymmetrically distributed traits and associated with culture or folk life for higher longevity^{2,3,4}. IK is also known as folk /traditional/local/indigenous technical/ traditional environmental (or ecological) knowledge. IKS is rather treated as People's Science or ethnology⁴. IK is basically local, oral and mostly undocumented³. IK due to its embedding nature in culture gets

longevity, repeats in a cyclical manner (for example, agro-seasonal cycle), has a hidden aspect according to the mental construct and that cognate of IK works as IKS guiding the entire folk life. IK could be a set of various information traits related to modes of production and reproduction. Such information traits are more or less of open type and could be documented through observation, interview and survey. Documented data could be transferred to colleges, universities, agricultural universities, animal husbandry and fishery institutes, medicinal plantations, nurseries and gardens, administrations, political institutions, mother and child care centers, child hospitals, medical institutions, etc. All these information traits are basically located in the technical domains of IKS. Technical to non-technical side could include various data leading to certain feelings: i. counting days and months, folk calendar, concept of zero and infinity, mathematics, weather forecasting, future prediction, suicidal tendencies, ii. ancient trade routes, sense for mega-construction and urbanism, iii. biospheres and the gene pool, food and food ways, consumption of fresh and contaminated foods, infection and food poisoning, illness and sickness, ethno-medicines, concepts of purity and pollution, concept about microbes and viruses in form of spirit concept, sacred groove, iv. comets and genes from outside the biospheres, stone worship, concept of Supernature, time space portal, time travelling, earth and sky, solar system, moon and star, universe and atom, outer-space and sub-atomic world, soul concept, extra-terrestrial entities, space-crafts, eclipse, unidentified flying objects, malevolent and benevolent deities, God and Demigod, shamans, faiths, fear and belief, v. brain and thought experiments, craziness, healing and self-healing, vi. fertility testing, secret sex, positive and negative selections, abortions, still birth, embryo eating, star child, God gene,

superman and superwoman, sacrifices, head hunting, cannibalism, life and death, after-life, returning of the soul, final journey of the soul, mummification, graveyard and construction of domes, chambers inside the grave, graveyard being treated as sacred groove, megaliths, reincarnation, burning the corps, use of symbols, concept of racial unification, war and post-war trauma, mental and health care of the survivors from any disaster, links with the mainstream society, migration to different social systems, impoverishment, loss of cultural traits, formation of a sub-culture, interaction of the folk with civilization, success and failure, new thoughts, mega-structure formation and destruction, emptiness, concept of hollow man and reverse journey from religious organization to magico-religious perceptions, dealing with the dead and bones, osteology, vii. unity in diversity, multiculturalism, religious syncretism, unity in form of naturalism, wildlife and being a part of the wild, viii. folktales, fairytales, proverbs, legends, myths, rhymes, story telling and short stories, ix. certain acts and their feedbacks, folk playing, gossips, gatherings, informal education, informal communications, solidarity and factionalism, property inheritance, change in center of power, family and lineage, clan and totem, kinship and secrets, x. norms regarding social, economic and political systems approved by the unwritten book of culture with a blue-print inside the cognate (due to unavailability of scripts and holy texts in an oral tradition), cultural values, customs, symbols, performances and magico-religious perceptions, xi. folk terminologies, typifications and taxonomy.

Therefore, IK contains both technical and non-technical parts that could not be fully segregated: latter is culturally value loaded, cognitive and hence part of folk life.

IK has the following characteristics: local, orally spread, informal experiments, intimate understanding of nature, accumulation of generationwise experiences, traits tested on "religious laboratory of survival", interactional and not individualistic, empirical, functional (open-ended IK), culturally embedded (close-ended), technical with non-technicality, rational with non-rationality, repeating with time, asymmetrically distributed, shared by many, cost-free (or low cost) and attractive to outsiders in form of global public service. Such type of knowledge is not completely associated with aboriginal or indigenous communalities, but peoples in a wider periphery due to their association with traditional way of living. So, IK is often treated as Traditional Knowledge (TK). TK is definitely community and ecosystem specific. But, IK could be considered with a wider perspective as there the knowledge might be of a single community or the entire Indigenous Peoples. Both TK and IK due to their embedding nature in culture work systematically and look value-loaded, which result into formation of TKS and IKS.

IK could contribute in biodiversity management, various conservation issues, disaster management, organic farming and many other things. There are so many IK traits related to

organic agriculture, but the agro-seasonal calendar is maintained by cultural performances and hence becomes quite systematic to act like IKS. IKS is the cognate of IK. IKS is a multidisciplinary subject and incorporates the following dimensions: physical sciences and related technologies, social sciences and humanities⁴. IKS in a broader aspect could be treated as summation of so many Traditional Knowledge Systems (TKS). IKS at global level has been recognized in the form of Indigenous Peoples and Indigenous Rights. In such a case, IKS could run parallel with the process of globalization (global market economy) and proper management between modernity and traditional aspects could bring in the situation much closer to sustainability.

Communities who consider culture as an output of their psycho-biological functionalism instead of psychic unity of mankind are more associated with interrelation among nature, human and Supernature (NMS), which might sound extra-scientific and not be counted on civilizational parameters⁵.

Way to Study IK and IKS

Indigenous Knowledge (in relation to Information traits, Technologies, Material apparatus, Experimentation, Natural resources, Human resources, Beliefs, Informal education and Informal communication) needs identification, decoding, proper documentation and classification and only then one could gradually understand historical background, cultural profile and systematic functionary in the form of IKS.

IKS often becomes a part of political approach. Polity could be stratified into 4 types: international polity, national polity, regional or state polity and traditional political systems⁵. In this global era, what should be the mode of development? Options are there: i. getting directly into the global system through proper way or by hooks and crooks; ii. (if failed), returning back to traditional or other earlier economic systems (on choice) and initiation from the beginning; iii. development in a sustainable way: people would be negotiated rather than remaining isolated or integrated. In Indian perspective, most of the people are still living in countryside which is again distributed into different agrarian rural structures. Here, the economy could be broadly classified into production oriented and trade related types; and simultaneously categorized into Traditional, Nationalized, Mixed, Macro and Global besides Micro economy and Micro-financing. In Indian Subcontinent, peoples could be grouped into certain categories on certain grounds and these are as follows- i. Agricultural communities, caste groups and hegemony of priestly category; ii. Mega Structure builders; iii. Mega Structure destroyers; iv. Localized femininity (in general); and v. Expanding maleness. These options are to be kept in mind before entering into any discussion regarding IKS and sustainability.

Key informants for IKS related research could be divided into following categories^{6,7}: i. local extension agent (for say Susanta

Paul, Chandana Barman), ii. village milk co-operative society members (for say Pradip Karji), iii. farmers (for say Paritosh Mazumdar), iv. men and women laborers (so many), v. credit co-operative society officials and relater groups or individuals (local SHG groups, farmers' club, fast food centers, etc.), vi. and local school teacher, headmaster or an eminent personality (for say Biplab Ray, Madhur Pramanick, etc.).

We could further include aged persons, Wisemen, political entities, religious and other respected personalities, teachers, local traders, etc.

A good key informant should possess certain criteria: i. historical background of production system and resource conservation, ii. a minimum of decade long association with the production system; and iii. no other involvement.

We could emphasize on communication among social researchers, agronomists and extensionists, which should be as such that information traits could be transmitted from extensionist to agronomist to laboratory⁸. We could emphasize on exchange of IK traits by means of following processes: identification, validation, recording and documentation, retrievable repository, transfer and broadcasting. Government and NGO collaboration (GO-VO) could also play an important role⁹.

Rapid Rural Appraisal (RRA) is the best option to be applied on the basis of proper planning through training and visit method (TandV).

Researcher could choose the village market days, temple days, village-level women societies and cooperatives to get maximum number of informants. He/she can begin as trainee or self-trainee and with passage of time grow up as monitoring and evaluating person deploying many more extensionists. IK needs high degree of accuracy. Open type of IK could be collected easily, but the hidden types that work as IKS and exist as integral part of cultural symbolism, cultural performances, way of living and thinking process could only be collected through thorough in-depth study.

Indigenous Rights postulated by International Labour Organization (ILO) can be another approach. It can be further extended to issues like bio-piracy, illegal knowledge transfer and intellectual property rights. But this approach is not going to utilize there. In order to gather primary and area-specific information relevant to this study; different tools could be used in combination: key informants interview, case study, silent observation, non-participant observation, participant observation, rapid rural appraisal, participatory rural appraisal, focused group discussion, story narration, and informants. Informant has to be a personality with minimum 10-year experience. In RRA, unstructured interviews in group, key informants interview, direct observation, mapping and diagramming, case studies, biographies, local histories, time

lines, ranking and scoring, short simple questionnaires, and rapid report writing are needed. It can include some more radical activism through empowerment, respect, localization, enjoyment and inclusiveness⁶.

IKS can be seen not only from sudden happenings or microenvironment (ecology and geography), but also through cultural aspects, historicity, mental construct, folk life, non-adaptive domains related to polity and economy, traditional health care system, informal education, links with mainstream, and obviously folk religious. Researcher has to observe, document (also document) and analyze^{6,10}. Further the researcher has to think and rethink more deeply.

No doubt, this work has to be done in more systematic way and according to appropriate methodology. The best ways are to do Rapid Rural Appraisal (from silent observation to mapping to rapid report writing), document properly and analyzing the facts later in-depth, select key informants and case study them in an unstructured way in such a manner that they willfully cooperate with you, decode the symbols, feel the folk life, make own mindset like the target community, think like them, become etic to emic, absolutely be inclusive, become post-structural, even post-modern, aware about research-informant biasness, chose proper extensionists in order to cover a wider area, implement extensionists only you have the feeling that you are now at a stage of evaluator and moderator, etc. (discussed in the methodology part). Focus Group Discussion can also be used. That is good for cross-cultural study. There researcher can be a moderator. There we could involve men and women, student and farmer, milkman and day laborer, hunter and fuel wood gatherer, highlander and valley people, rich and poor, Hindu and Muslim, semi-urban and absolutely rural, ethnic communities, different strata, etc. The study could shift from etic to etic-emic overlap. Regular visit to field is a must here. That can be throughout the season. If the target group know you in any way from earlier date, it could develop a perception of you in their mental construct, judge you according to their own cultural values and even feel you as a part of their way of living or not. Inclusiveness is very much necessary. You have to impress the informant on your own and try to overcome negative intervention of a third person. That type of rapport is really a tough job. And researcher has to remember always one thing that he or she needs financial assistance as the work is not village specific, but micro-environment specific from where the researcher has to document information as much as possible going upto post-structural and post-modern ways. Researcher has to go beyond questionnaire and schedule survey, and could try to go beyond the frame and follow alternative perceptions to look at the way of living. Being more and more objective, qualitative, extra-scientific and humanitarian, researcher has to understand indigenous perceptions about modes of production and reproduction, social system, economy, polity, folk religion, culture, mental construct and links with the mainstream. Researcher has to realize the story within the story. As researcher progresses, the output could be quite impressive and

visible from different angles of life. Researcher could go to public gatherings. He or she could select informant not on educational ground or connection to the outside, but on the basis of his/her understanding of nature, innovativeness and own perception about the way of living printed in the unwritten book of culture kept in the cognitive book rack. And the researcher has to think a lot before disclosing the secrets he or she has gathered or felt while studying cognitive aspects and being post-structural. It is an issue that whether he or she would disclose the hidden part of informants or not, especially when there an overall crisis is gradually approaching towards the folk from the mainstream and that could be overcome by fruitful negotiations with a clear-cut perception on sustainability, policy planning, certain social equilibriums or altogether "social engineering". This is actually related to ethics. You should know that an illiterate indigenous person is more sensitive than a literate one in terms of relation with nature. On the other hand, folk people look more superstitious and magico-religious while dealing with disease, deities, spirits, souls, Supernature and the God. At the same time modern people prefer to take a scientific approach to understand health related aspects, post-trauma problems, infections, food poisoning, microorganisms, viruses, natural selection, genetic changes, genetic engineering and biotechnology associated with it, comets, universe, sub-atomic world, mass, energy, time, space, extra-terrestrial entities, time traveling, time space portal, space crafts, unidentified flying objects, outer-space and science fictions. There is still a lot to do in the domain of science and so people still depend on unscientific approaches or extra-scientific processes like inventing the self through meditation and believing in astrology in order to know about the future and even have a control over or preventive measure against future incidents. But obviously the researcher has to construct some research questions to some extent. What are those? Basically Wh-questions are to be asked. And in the next step: How?

Actually, you will face the question from the people of the informant group first. If they do not ask your name, your place, your aim, your religion, your ethnicity; you ought to believe that the place is not right to conduct the fieldwork. Either they have misinformation regarding you from earlier or they should have bad impressions about the earlier visitors/strangers/researchers. And if they ask you the questions, then you should answer them in proper way (if you can communicate through language). It would depend on situation that if you name a person of neighboring sacred place or market. You may meet a shepherd, a peasant, a day laborer, a fisherman, a gatherer, a housewife working in her kitchen garden, a wood cutter, an aged person taking rest under the tree, children playing in a temple site, gathering in weekly market. Do not miss the opportunity to talk with women doing domestic work especially fuel collection or a person walking in the path on foot in a hurry. You may face embarrassing questions: Are you to here to buy our agricultural land? Are you a thief? etc. If you can convince them, they can invite you to their homestead. And even offer food and drink. Some simple questions you can also ask- Where is the religious

place? Could you bring me a glass of water? How long are you in this occupation? Is your job still profitable? Can I call from your mobile phone? What types of crops you usually cultivate? Why you do not cultivate this type of crop? What are you doing? Can I take rest here for a while? What are you eating? Can I join you? Can I help you? Share your experiences. What type of plant is this? What types of species do you have here? Why you pray to this deity? Yes! Political situation is like that...what do you think? How you manage all this? Is there any valuable object? Why are you afraid so much of this? And in this way you have to enter into discussion. As good would be the discussion, people will gather there and automatically a kind of group discussion will emerge out. You can also ask for castles, poultry and fishing. You have to be good in folk communication. You can ask about natural resources, their utilizations, micro-environments and distance related questions. But question only when you have to ask or you have a very short time span in your hand. Be aware that your collected information traits will not be mishandled or wrongly interpreted. Some typically agriculture related questions are as follows- What are the crops grown in a particular agro-ecological setup? Is it a process of monocropping or intercropping? What about crop rotation mixed cropping and alley cropping? Whether it is upland, lowland, slope, catchment or marsh? What are the irrigation techniques? What are manure types applied? How could one control on the weed/pest/fungal/microbial/viral attack? What are the pruning methods? What are the seedbed techniques and transplantation process? What is the size of farm holding? What are the primary soil types? What is the division of labour? What are the roles performed by the genders? What are the implements utilized? What do you feed your livestock? How you perform treatment of the livestock? How do you know their quality? Where do you keep them? How do you form complex production system? How do you make more profit? What do you think of your present and of past? What do expect of your future? Why do not you involve in alternative agriculture? Why are you using modern facility? Why are you not satisfied with the production system? How do not you send your children go to school? Why you prefer male child? Why are you not living in traditional joint-extended family structures? Why have many of your members gone to urban areas? And in this manner, many more questions could be asked. But ranking and scoring (timely approach) are highly maintained. And also some other relevant information traits are to be incorporated where Case Study or long interviews are must- beliefs, values, and customs of the producer, the process of decision-making and communication and relation among sociofacts, artifacts and mentifacts composing together agrofacts, production system, social system, economy, polity and religious issues as well as nexus among nature, people and Supernature. The research can also contribute to food production and resource conservation. Important steps are to be keeping in mind: cropping systems, seed processing or seed treatment, sowing process, seedbed management, land preparation, soil health care management, manuring, irrigation, transplantation techniques, crop nutrient management systems

(micronutrient application), weed management techniques, successful pollination, plant protection strategies (pest controlling measure, disease resistant strains, protection against fungal and microbial attack, viral infection, neem oil, biological control, friendly bugs and birds, various trapping mechanisms and regulated application of systemic and contact pesticides and insecticides), various pruning methods and post-harvesting performances. However, may not all the steps be covered! Or we can get some extra information.

The process of IK study would be more appropriate if the human sentiment associated with various unscientific facts would not be subjected for negligence. So, this kind of study can be done on humanitarian ground for proper documentation without primary level analysis during data collection from the field. There should be minimum scope of researcher-informant biasness and objectivity would exceed the subjectivity. New Ethnography has to be followed properly. Absolute objectivity in the research on IK/IKS is not possible, as it is humanitarian, contains various extra-scientific aspects and involves in various cultural aspects (including magico-religious realm). This can not be totally ruled out in the name of superstition, unproved, unscientific, meaningless, but rather be treated on humanitarian ground and perhaps called on under the domain of ethno-science. And here arise certain questions: i. How could IK of a community get a higher longevity by being embedded inside the non-functional or non-adaptive domain of culture? ii. What is the necessity to study Indigenous knowledge System (IKS) at a global level instead of being satisfied with only community-specific Indigenous knowledge System (TKS)?, iii. Whether could the IKS provide us good type of public services in favor of biodiversity conservation?, iv. What is the importance of deep ecology, cultural performances and cultural symbols to know about IK/IKS?

Result

Q.1: IK is not only present within the folk life of traditional communities, but actually folk attributes and indigenouness are there in every segment of the society up to any extent. Yet there has no universally accepted scale for measuring indigenouness. Holders of this indigenous knowledge may not be always aboriginal, but they have to be long inhabitants of a particular ecosystem with intimate understanding of biodiversity. They might be the peasants or other related occupational groups. They might even persist in a multicultural situation with possibilities of cultural diffusion, culture contact and acculturation as well as migration and cultural adaptability according to the ecology and available resources. There is always a risk of degradation in IK due to different inputs and external factors. Therefore, these societies are generally found introvert and show high-level solidarity.

IK traits can be preserved when they are systematically organized to give rise to IKS. This system of IKS behaves like one kind of power in a manner of 'continuously reproduced

outcomes' of human agency¹¹. IKS is the way of self-empowerment through negotiation and convergence of nature-bound epistemic communities in their own way¹². Further, IKS would become a tool to turn down difference between have and have not (analogous dichotomies). So, IKS is also important to understand the folk perspective of life- thinking and the World View of folk people. This folk perspective has to be understood carefully by the Policy Makers for successful implementation of any development inputs. This is going to be helpful in balancing input and output: proceeding from unidirectional approach to sustainable approach. Otherwise, a forceful developmental input from outside can generate between two opposite poles (country-town, caste-class, majority-minority, local-global, traditional-modern, ethnic-pleural, secular-communal, trade-agriculture, highlander-lowlander and so forth). TKS/IKS is part of folk culture and folk life and has its self-resistance power.

The entire folk life is assembled by gathering the following factors: i. non-reflective intangible part of culture (deeply rooted cultural values, social norms, folkways, taboo and traditional belief), ii. reflective intangible part (information and traditional technologies constituting IK), iii. reflective tangible part of culture (material apparatus), iv. mode of communication (formal and informal types consisting of human, nature and Supernature), v. network formed among agrofacts, artifacts, sociofacts and psychofacts/mentifacts and vi. the traditional social system (various institutions).

If we specifically focus on agriculture oriented IKS, then we could extend our study to interrelationship other types of modes of production, such as, ethno-fishery, animal husbandry and poultry, use of forest products (timber and non-timber), management of sacred grove and orchards/ agro-forestry, local ecosystem, food web, agro-seasonal cycle and conservation of crop varieties. Entire discussion could include both technical practices in a specific farming system and non-technical parts like culture and mental construct of the farming community. Besides staple crop cultivation, we could further include aspects like production of cash crops/vegetables/spices/fruit and flowering plants, alternative food sources, food and nutrition, traditional health care practices, handicraft (cottage industry), division of labor, biodiversity management (with feedback system), soil and water management, house construction and kitchen garden, folk terminology, folk religion (magico-religious), belief in Supernature, cultural lag, socio-economic aspects, social transformation, sustainable rural and human resource development¹³.

IK is more practical rather than theoretical and repeating with time¹⁴. It is highly functional and therefore, therefore this oral tradition needs a support and culture is the best thing to provide support to it. IK generates through informal experiments through trial and error, intimate understanding of the environment in a given culture and generationwise accumulation of experiences². These knowledge traits therefore become associated with culture, get longevity, act through folk

life, repeated with time and form a system called on as the Indigenous knowledge System (IKS). Holistically, IKS is quite fragmentarily distributed throughout the globe and therefore socially clustered. In each cluster, it works accordingly with particular geographic areas¹⁵. The indigenous communities are all fallen under the great umbrella of Indigenous Peoples and share with the basic attributes of Indigenous Rights¹⁶. Farmers, landless laborers, women, rural artisans and cattle breeders (apart from hunter-gatherers and local fishing communities) are well informed about own situations; what works and doesn't work and how one change could put its impact on other parts of the system¹⁷.

IK is reflective, intangible and functional and for gaining stability it takes shelter in culture. For prolonged sustenance, this IK could become part of cultural symbolism, way of living, cognitive aspect and folk religion. As a whole IK traits consolidate to form IKS. IK is sufficient for meeting psycho-biological needs of mankind, whereas IKS which is deeply rooted inside cultural performances and values works in the form of social structure consisting of various institutions, diverse social fragments and different strata (occupation-wise, gender-wise, status-wise, etc.)¹³.

Therefore, this is the mindset of the folk that understands the relation among human, nature and supernature so well; organizes its society and is quite capable in preserving TK/IK within its non-adaptive domains of culture, which takes the shape of IKS.

Truth formulated by a person from daily experience in practical life at a given time (in forms of TK/ IK) is always subject to correction. As a result of this, the sum total of these incomplete, particular, provincial and approximate truths gathered through generationwise process of trial and error is always approaching nearer but never to complete, comprehensive, final and absolute truth¹⁸. This nearly absolute truth embedded in culture and working as IKS is the core of folk life. This is the key factor that keeps life going on in its way even at a situation where there is no such modernity or civilizational backing or mammoth development. It may rather have an inner perception on nature conservation and controlled exploitation of nature with proper feed back. But this does not mean that IKS is against the civilization, but this can be hypothesized that IK is important to drive civilization in right direction, making it acceptable for all rather unidirectional.

Indigenous communities often devoid of any mega-structure or written script could be marked as less-civilized, but they might contain rich cultural heritage which however with time would become more and more complex. In such a situation, the culture can be treated as an agrarian civilization with some Great Traditions. We could see some structural developments with specific functioning. That could lead to state formation, affection to ancient trade routes and external links, construction of religious/secular mega-structures, agriculture on a massive

scale, complex mode of division of labor, trading of agricultural products and subsidiaries, written scripts, urbanism, formation of Great Tradition and culture pattern. So, communities with high level of indigeneness could be visualized with the spectacles of both culture and civilization. Eminent personality could deeply influence these indigenous communities, politico-economic perceptions and even their socio-cultural life. Information bulk that they contain within their IKS (both open and hidden forms) is useful for their systematic applications and service to the global public. Adjustment between modern and traditional systems could lead to sustainable development. Even the corporate houses are now thinking about corporate social responsibility.

So, culture and knowledge of indigenous communities are against but highly valid for the sake of civilization and development. Knowledge traits and material culture (material apparatus) are no doubt functional, but knowledge systems deeply rooted into moral ethos of the community get the stability. External input can not alter non-functional part of culture and could develop a cultural lag. This cultural lag due to advancement in material apparatus in a society or community under the influence of civilization is the indicator of cultural change, social mobility and gradual development. Cultural lag is also good for humanity as on the non-material part of culture, it is always active against complete social transformation as well as total damage to the cultural values, social norms, traditional institutions and IKS.

In case of India, we have to be concern on rural conditions as most of the South Asians are still residing in villages. Policy on how to implement IKS could be postulated through a micro-level study¹⁹. Such study would be more suitable rather than in comparison to a study on pure economic line. On Indian context; the other options are to conduct a study with political perspective; from a typical capitalistic or semi-feudalistic view; and lastly, through a Marxian model^{20,21,22}. Here, the aspect of Country-Town Nexus is a timely approach for policy implementation of IKS²³. In Indian context, villages have no longer remained isolated Little Republics. They have long crossed the way of alternative economies like barter or caste-oriented *Jajmani* system²⁴. In the monographs and ethnographies of post1950; there have been clear-cut indications of networking, cooperation and conflict in and around the cosmopolitan village life^{25, 26}. NGO, GO-VO model and extensionists can perhaps do a lot in favor of changing Indian contexts where New Economic Policies, Liberalization and Globalization of the market economy with various negative and positive impacts on humanity as well as nature/ biodiversity/ ecosystem have become the fact²⁷.

Q.2: TK/TKS might be a local matter, but IK/IKS could have a global impetus and also maintain a politico-economic aspect with it as it could be treated as the sum total of so many TK/TKS scattered throughout the globe and maintained by all indigenous communities gathered under the common umbrella

of Indigenous Peoples provided with indigenous Rights. IKS should have an objective of Global Public Services to the World Humanity. We could not discuss about a single community as a community could not stay in complete isolation. Such communities have local historicity and are also connected to World History. So, even to understand the IKS, we have to follow a holistic approach along with the community specific information traits.

To some scholars, IK/ IKS is equivocal with TK/ TKS. But actually the latter has no such politico-economic attribute on society which the former actually has. TKS has no global phenomenon unlike IKS and it does not have any global service. Rapid developmental activities of the Western-Modern Society in search of a wider global market economy might become the root cause of six major problems as pointed out in UNDP report²⁸: i. challenges of global warming, ii. rapid loss of biodiversity, iii. crisis-prone financial market, iv. growing international inequality, v. emergence of new-drug resistant disease strains and vi. genetic engineering.

Solution of these problems lies within the IKS which is the summation of various relevant TKS originated from different localities. So, IKS is far more effective than any community-specific TKS.

In broader spectrum, Global Knowledge System consists of both Modern/Scientific Knowledge System and Indigenous Knowledge System²⁹. "Now, the supporters of Global Market Economy are of opinion to create a universally applicable 'Indigenous Knowledge System' (IKS). To them, this system would behave as a part of the Global Knowledge System and simultaneously work parallel to the Global Market Economy. It would deliver some sorts of Global Public Service (GPS) through summation of all the TKS and therefore help in reducing the negative impacts of Global Market Economy...In favour of construction of IKS, all the folk communities (each designated as indigenous community) have now to be gathered under the global category of Indigenous Peoples and their respective cultures as Indigenous Culture. This is another kind of Globalization to save this present Globalization of the West who believes in regulation of nature on technology-and-science and no Supernature. Backward communities- the precious suppliers of the Global Public Service- are traditionally highly against the Western way of Globalization and therefore they have to be brought under confidence via the elite and advanced sections among them. They have to be provided with universally applicable protective measures...Indigenous Rights for all the Indigenous Peoples...There are again two distinct problems: 1. New way of colonialism and 2. Scope of ethnic conflict among various folk communities regarding their degree of indigeness"¹³.

IKS is multidisciplinary in nature and could contribute into various domains like agriculture, post-agricultural practices, livestock management, ethno-fishery, hunting and gathering,

craft making and artisan, ethno-medicine, folk remedy of diseases and traditional politico-economic system. IK/IKS could be deliver public services into various domains like agriculture, animal husbandry (along with poultry and fishery), handicrafts (based on local tools and techniques), food and nutrition, traditional health care practices (including ethno-medicines and psycho-social care), resource management (natural cum biodiversity), environmental management (including disaster mitigation) and human resource management (taking care of following aspects: saving and lending, poverty alleviation, community development, education and communication). Each of these domains has respective area and manifestation³⁰.

IKS is necessary to resolve the problems created by unidirectional development process running under Modern Western market economy. The probable solution is but to make the development multidirectional, sensitive, pro-people and sustainable. And to achieve this, a negotiation between science and ethno-science, or we can say between IKS and Modern Knowledge System, has to be postulated. The stakeholders of indigenous knowledge traits (not only the tribes but also the folk, peasant and inhabitants of the rural areas) have become the constituent elements of Indigenous Peoples in terms of both socio-economic and socio-cultural conditions. These people will be found much associated with Little Tradition if put on the famous Folk Urban Continuum of Civilization of mankind. They have been provided with Indigenous Rights by ILO.

Q.3: TK/IK traits are grown up from daily intercourse with nature and livelihood of the common people, of hidden and open types and dependent on the religio-cultural life for prolonged sustenance. So, in a systematic way, IKS can take positive steps reducing problems like biodiversity loss and supporting sustainable development.

Loss of biodiversity (forest/medicinal plant/agricultural) has become a threat to natural ecology and human welfare. Biodiversity management could be judged as both public policy and scientific issue. It is stratified into a four-level hierarchy (i.e., genetic, species, ecosystem and landscape). It assures ecological stability. Biodiversity management assures genetic conservation in different aspects like agriculture, livestock, fisheries, forestry (wildlife) and wetland management³¹.

IK provides major cost-free Global Public Services in terms of food, fiber, industrial compounds, fuel and drugs. It has some definite anthropocentric reason so as to preserve different IKS and related cultural diversities. The highest extinction rate of 1,000-10,000 species per annum since the mass extinction of 65 million years ago has become a serious problem³². This problem of biodiversity loss can be met with help from IKS of the folk people living in nature for thousands of years. In case of agricultural biodiversity; farmers have become both passive consumers and active problem solvers as they are now more and more taking part in agricultural productivities in various geo-climatic, socio-cultural and politico-economic contexts. They

are known for their local-level innovations and transmission of these discoveries to a wider periphery. Recourse poor farmers have to depend on traditional technologies and indigenous knowledge system facilitating biodiversity management³³. IKS is good for preserving biodiversity and countering rapid degradation of nature due to misuse of modern machinery, excess used of chemical fertilizers and pesticides and unilinear input within the capitalistic framework.

Proper networking among ethno-botanical knowledge of local people, integrated farming units, ecosystem, sustainable rural and human recourse development, existing cultural diversity and modern inputs is obviously helpful in genetic conservation of the crop plants and their wild varieties with medicinal values; broadening the genetic base of many important agricultural crops and enhancing resistance capacity against insects and pathogens as well as development of more viable crops without any genetic engineering, but in natural way *in situ*³⁴. Further, the conservation of Wild Relatives (CWR) has been critically ignored both *ex situ* and *in situ*. These are not all subjected harmful for the farming systems. Genetically modified crops are now replacing these wild, local and mixed domesticated varieties; this may be a timely approach to meet the increasing food demand for an increased population size. New varieties but are actually decreasing the genetic variability, biodiversity and gene pool of the crop species that will definitely put a negative impact on the whole ecosystem, food webs and nature. This gene pool may have many good genes that are not present within domesticated varieties and information about these genes will help in producing mixed developed varieties *ex situ* in a complete natural way. CWR is a rather complex but crucial

aspect of life survival on earth and human cannot deny from responsibilities. CWR is complex interdisciplinary process. For building up of information bulk on wild varieties and their active and passive usefulness at regional/national/global level through networking *in situ* experimentation with on-farm frequent experimentations; scientists should aware the local people about effectiveness of CWR in survival of nature as well as should learn from IKS of those laymen if they know any alternative role of CWR before construction of the sustainable agricultural policy^{35, 36}. Das Gupta and Saha in 2009 have discussed the connection between Indigenous Knowledge and Biodiversity. They have tried to characterize Traditional Ecological Knowledge (TEK) as a part of IKS and clarify how this TEK could help in providing global public service in favor of nature and biodiversity in one hand and on the other, in service of human systems from rural to urban and *vice versa*. Managements of agriculture, animal husbandry and poultry, fishery, forest resources, soil and water and disasters are all ensured in a rural life by TEK traits interlinked by well established network. So, proper systematization of TEK would organize into IKS giving particular global public service in form of Natural Recourse Management (NRM). Here we could further add options like folk cookery, handicraft, hunting and gathering, irrigation, pest control and fertilization, post harvesting practices, etc. Ultimately, the resultant outcome from NRM would facilitate Sustainable Livelihood Development (SLD) in favor of future generations for the sake of both nature and world humanity.

Here, I would like to interpret agriculture oriented IKS of Rajbanshi/Rajbansi people of northern West Bengal (India).

Table-1
Categorization of agro-oriented IKS of the Rajbanshi People of northern West Bengal

No.	Category
1	Protection of healthy variety of crops growing in nature, domestication of wild varieties, natural variety of high yielding crops, indigenous way of producing hybrids with high nutrition level, retention of soil fertility and soil classification, concept of upland, lowland and marshy land;
2	application of degradable ethno-toxicants, cutting, pruning, tissue culture and cloning, seed treatment in the nursery to provide healthy seedlings and saplings;
3	field preparation, application of organic manure, application of eco-friendly microbes and vectors, natural way of pest and herb control: use of larvae, insects, birds, fish, ants, white ants and earth worm;
4	symbiosis and nitrification, fishing-cum-paddy cultivation, techniques involved in shifting cultivation and step cultivation, feed-back manner, fuel collection, use of cow dung, classification of soil types, classification of cultivation ground, cultivation on the fertile alluvial soil on the river islands, bush fallow cultivation, seasonal cultivation, yearly cultivation, annual and biennial cultivation, flowering in the first year of a biennial crop variety, mixed cultivation;
5	identification of certain plant species on trees or in soil causing severe harm to the crop production, weeds used in removal of pests and other harmful organisms, earth-worm in maintenance of soil fertility;
6	seed and sapling selection, roles of women, crop selection, seed germination, crop sowing, protection of ripen crops from rat, insect, bird and bat;
7	crop harvesting, crop thrashing, grain storing, preservation of the crop, fish, food, fruit, fruit pulp and so on, pressed and puffer rice, alcoholism, fermentation of rice or fruit juice, palm juice, date juice and production of unsaturated sweet cakes, types of pickle, prickles in mustard oil or as stored in dried condition, use of dry <i>neem</i> leaves as preservatives, use of sun beam in preservation, use of dry soil as preservative, use of pond soil in facial and skin treatment, use of the straw stalks for fertilizing the soil, use of straws in mushroom cultivation, burning of the left-away straws in the post-harvest

	period on the cultivation ground, light trap, weed management, use of dry soil (of rat house) as preservative;
8	mushroom cultivation, mushroom varieties;
9	use of algae and lichen in cookery, classification of bamboo;
10	use of bamboo in every aspect of life from drinking water in a glass made of bamboo to house construction, techniques involved in bamboo cultivation, bamboo parts as food, fodder and pickle, bamboo and myth, flowering in bamboo;
11	use of algae, fungi, pteridophytes and fern in cookery, dye production, wax formation and medicinal purposes;
12	floriculture, use of pots, environmental influence, low-cost greenhouse manufacture, nursery and water shade, use of organic manure, cutting and pruning in horticulture, garden eco-system, shade trees, fish manure and bone dust, soil types and stones, soil sterilization, fencing, use of roots, rhizomes, shoot, bark, lattice, leaf, bud, inflorescence, flower, anther, nectar, fruit, seeds in various purposes, pitcher plants, extraction of essence from the flower, lemon grass production;
13	honey collection, nectar yielding flower species protection of the trees favored by the honey bees, role of honey bees in ecosystem and maintenance of food web, use of honey in food, as medicine and health protection, use of wax, use of birds in searching out the honey nest;
14	animal husbandry and poultry, construction of the shade, fodder, fertility control and breeding, grazing, milk products and curd, indigenous techniques for increasing milk production, protection of the cattle from leaches, protection of poultry from bird eating animals, veterinary and control of disease in the domestic plant species, animals and birds, use of animal produce, skins, wool, bones;
15	spice cultivation;
16	vegetable cultivation;
17	ethno-fishery, pond selection, protection of pond ecosystem, liming the soil for controlling the water pH level, careful observation of fishes in the cold foggy winter, especially regulating the water temperature in the pond, proper physical activity and regular feeding, disease treatment, fertility control, various techniques of fishing, fishing in the streams, fishing in the rivers, fishing under the waterfalls, fishing in the marshy land, fishing in the paddy field, fishes as good source of manure, fishing of fishes with extra-respiratory organ, group fishing, quick fishing in emergency, use of ethno-toxic elements in fishing, preserved fish products, fishes in maintenance of the health condition and nutrition level, superfluity and fish feed, cultivation of prawns, crabs, colored fishes, insect and mosquito eating fishes as well as hybrids, use of fishes in controlling mosquito larvae; control over snake, rat and frog; concept about water pollution and the role of pond water as the carrier of diseases in fishes, cattle and human and related disease cycle;
18	sericulture, selection of trees for sericulture, food chains in the natural process of sericulture, cocoons and production and storage of silk fibers;
19	lime production, relation between lime production and snail consumption system; frog eating and related belief;
20	cultivation of jute, tea, tobacco, shorea, teak, legume, betel, betel nut, arum and palm;
21	house construction, use of rice seed-coat in soil for wall construction, use of bamboo, grass, jute stick, straw and leaves in roofing, use of wood and bamboo in construction of the framework, house types in heavy raining areas;
22	construction of storage, manufacture of basket, use of basket for storing;
23	production of wooden plough and other artifacts; food preparation and cooking utensils;
24	wood and leaf collection, husking machine and the role of women; handlooms and women; women and self-help groups; women and trade; women in the village-level power sector;
25	use of fire, control on fire, earthen stoves, earthen kiln;
26	use of stagnant water in mud-ponds under bright sun beams to remove the dry jute fibers from the hollow straw, use of jute and straw, straws in construction, fencing and fuel source, collection and storage of jute and other fibers, their use in handlooms and weaving cloths, mats and seats, dying the cloth with natural color produced from soil, plant extract, emulsion of rice dust and charcoal;
27	pulse cultivation, production of sun-dried preserved pulse cakes;
28	medicinal plants; consumption of nutritious food and disease curing dishes; concept of disease, health and nutrition; health consciousness and illness, believe in Supernature [in order to control the nature and maintenance of the mental health];
29	alternative crop production;
30	concept about season and weather, related myths, disaster management system in case of flood, drought, heavy rain, land slide, soil erosion, deforestation, crop failure, storm, fire, attack of insects or birds or rats or elephant or other herbivores, weather forecasting from watching the nature and activities in the wild life;
31	Forestry, sacred groove, alternative food and fodder sources, plants with economic importance (timber, bamboo, cane, construction and handicraft raw material, gum, resin, nut, ethno-medicines, fibers, dyes, paper pulp, silk, rubber), conservation and maintenance of forest resources, indigenous plant classification systems (folk terminology and even folk taxonomy if any), terrace planting techniques in hilly slopes (if applicable), trees for different geo-climatic conditions,

	shed tree for plantation crops, social forestry, marketing strategies, agro forestry and orchards, associated religious belief system, flowering plants, honey collection, fauna in the wild (mammals, reptiles, amphibians, birds and insects), water management, ethno-fishing and ethno-toxicants, forest villages and agricultural patterns there, manure production systems, indigenous irrigation techniques and pest controlling measures (if any), water harvesting methods, livestock management, fuel collection, preservation of ground water level, brewing, food processing and stock raising (if any); recycling of waste products, utilization of the superfluity in various manner;
32	folk classification and folk taxonomy.

Q4: TK/IK was once viewed as romantic past, obstacle to development and cultural values causing barricade to the process of modernization. Success of IKS depends on following aspects: i. intimate understanding of nature, ii. accumulation of various relevant information traits, iii. trial and error method in informal experiments conducted by folk people, iv. way of living in close association with the nature, v. culture and mind construct as the book and the locker of the folk people who might have no script and no written text, vi. feedback processes, vii. mode of exploitation of natural resources, viii. fulfillment of minimum energy requirement for a given population size.

So, whether in favor of Globalization or not, in a country like India in South Asia there is a need to understand the complex agrarian rural structure which is again heterogeneous in form and involves various factors like caste, class and power. Even people in other occupations could not deny from a passive link with this huge agrarian structure.

Appropriate negotiation between developmental inputs and IKS could result into sustainable development which would be more pro people, nature friendly and facing less protest. IKS could be about a specific farming system (characterised by division of labour, use of technologies, agro-seasonal calendar, crop varieties and wild relatives, alternative food sources, any unique production system and various post-harvesting methods), ethno-fishery, animal husbandry, poultry and agro-forestry (use of forest products- timber and non-timber, sacred groove and notion of nature's conservation). IKS could further involve certain basic things like various ecosystems including agro-ecosystem, bio-diversity, micro-environment, water and soil management, habitation, grazing land, social forestry, kitchen garden and fencing, food ways, folk terminologies and speech, magico-religious performances and other symbolic expressions, belief-faith-fear about Supernature, formation of a cultural lag, socio-economic challenges, political aspects, thinking process, various changes and transformation with time, development of substructures and new extensions, folk life in countryside and sustainable human resource development. International Labor Organization (ILO) is in favor of protecting the rights of indigenous communities, their folk cultures and folk life of these stakeholders of IK traits. There may be constitutional and legal provisions in every State and county, but ILO has postulated Indigenous Rights for these indigenous communities who are basically treated close with the nature (and Supernature), backward and thus suppressed by the well civilized sections. In order to make these communities mainstreamed and utilize their IK/ IKS fruitfully, Indigenous Rights are to be applied worldwide

and all TKS are to be summed up into IKS as the integral part of Global Knowledge System. If these steps are taken properly, then this IKS could play good role in balancing unidirectional development input and traditional society relying on TKS, ask for sustainable development processes, resolve all the disputes in politico-economic as well as socio-cultural paradigm and lastly, ensure the development with all's involvement and share in a true sustainable and nature friendly manner. To have this mammoth task well persuade, it is a duty for the anthropologists, sociologists, biologists, agronomists and policy makers to bring in all such communities who: i. feel deep-rootedness in their surroundings, ii. entertain a custodial sense about the territory and resources, iii. bound together primarily through moral bindings, iv. amuse a sense of reciprocity and v. mutually reinforced the equalitarian (egalitarian) ethos under the huge umbrella of Indigenous Peoples³⁰.

The concept of sustainability is now also applied to developmental aspects and environmental agenda. It could be classified into four categories: Environmental, Economic, Socio-Political and Cultural Sustainability. Again environmental sustainability could be measured through three different gradations: Weak Sustainability, Strong Sustainability and Deep Ecology. The latter develops into an ecological wisdom by means of deep experience, deep questioning and deep commitment, which eventually goes into a continuing integration process of ecological and spiritual consciousness³⁷. It becomes a metaphysical discussion and hence moves beyond the scientific approach that only discusses about the Abiotic and Biotic Community within the ecosystem consisting of human, other species and abiotic compounds in nature. It tries to incorporate spirituality or Supernature has an impact on culture and its symbols, folk life, World View, magico-religious performances, belief, faith and fear. This is related to Man-Nature-Supernature communication process. Here, human is not just the biotic element in ecosystem, but a component that could conduct formal and informal experiments through trial and error method, folk way of living according to values and norms, thought experiments and communicative with Supernature.

So, we could experience a drift from pure scientific discussion to the sphere of humanities that tells us about folk perception on IK/IKS regarding nature and natural resources. When the policy for a certain development programme considers this extra-scientific folk perception on a global perception like IK/IKS; it leads to environmental sustainability and gradually proceeds towards economic, socio-political and cultural sustainability.

TK/IK can be decoded from cultural symbols and performances of a traditional society. It is generally tested in the religious laboratory of survival³⁸. Human components are actually analytical equivalents to environmental components and related information/knowledge in a given socio-natural system. Difficulties in front of encoding in religious beliefs, rituals, ceremonies and myths are highly related with the IKS. Rational and non-rational parts are inseparable here. But even then in order to gather the IKS of a given community, the researcher has no better option to decode these symbols³⁹.

Three types of communication (through both formal and informal ways) in relation to the study of IKS could be mentioned: i. with nature (via Traditional Knowledge System/TKS embedded and repeated according to cultural/ social/ magical/ religious/ agricultural-seasonal aspects), ii. with people (via exchange of goods/message/women/power of word); and iii. with Supernature (via the system of faith, fear and belief and through the process to make a communication with the outer-space or atleast areas outside the Earth's biosphere)⁴⁰.

The network so formed maintains connectivity among agrofacts, artifacts, sociofacts and mentifacts/ psychofacts. TK/IK (adaptive) is generally tested in the religious laboratory of survival (folk religion, magico-religious practices and even big religious organizations as a part of various non-adaptive domains of the social system) and transforms into culturally embedded value-loaded TKS/IKS and summation of all such TKS/IKS develops into IKS in a holistic manner.

Cultural symbolism, cultural performances, new ethnography, etic-emic overlap, synchronic and diachronic studies, ethno-science, humanitarian approach, documentation of extra-scientific aspects, in-depth study, qualitative approach and more objectivity than subjectivity during researcher-informant interaction are often prescribed to decode information traits from TKS with more accuracy and less biasness.

TKS or IKS in a common sense could be treated as systematic functioning of traditional knowledge of an indigenous community with close attachment with nature, intimate understanding of it, tendency towards informal experimentations with help of trial and error while interacting with nature, informal communication cum education system, generation wise accumulation of such information, particular folk way of living, culture, perception about Supernature and own thinking process. If we consider various TKS in terms of Indigenous Peoples, then IKS becomes a wider domain and merely summation of so many TKS. It could also include the people not indigenous or aborigine to a region, but participating in the traditional way of living.

IKS is very much dependent on interrelationship among modes of production and reproduction, social structure and magico-religious/cultural issues. We could say that culture along with magico-religious aspects is an unwritten book, religion is a holy book, cognate is the book shelf, cultural performances on regular

intervals or repeating with the seasonal cycle as regular reading of the book of culture, and manipulation of conventional cultural symbols as new editions of the book of culture. Communities staying far apart from one another but in the same ecosystem might show similarities in their respective books of culture with use of same symbol. On the other hand, a community with a specific book of culture could migrate to a different ecosystem and at that case the same cultural symbols could express a bit different meaning. If we consider megalith as a cultural symbol, then it could be interpreted in various ways: a burial, an astronomical incident, a mega-structure, contact with Supernature, a comet, a fertility cult, a statehood, an extra-terrestrial entity or an ancient civilization developed out of a folk life. So, a symbol contains a variety of (ever-changing) codes. And with time we the people could further manipulate them to find out new meanings according to our system⁴¹. Flag of the political institution in a buffer area might be changed due to its new communications, expectations and experiences, but the system especially at the ground reality with all even and odds might be the same. So, with increasing cases of communication, expectation and experiences, people try to see their conventional symbols with new meanings. In that case, an island containing megaliths could become a tourism destination. In an individual life, there might be two or more phases and each phase should have some different keywords, such as, i. war, medical assistance, a decade of construction in post-war phase, craziness to make contact with the Supernature or God, scientific approach, ii. anarchy, teaching, legal system, administrative experience, iii. stability, connection with business houses, rethinking historical background, contacts with new routes, new sorts of negotiations, holding new posts never expected a few centuries before and realizing importance of defense strategies, geo-polity, political phases and lifelong learning.

That could even lead to dialectics existing between a person and the society in which he or she resides in. That person could bring in certain information traits due to innovativeness, contacts, informal communication or thought experiments new for the society. A segment of the society could also deliver new information to an individual entity. A collective response of an important segment of the society could reveal some top secret or classified information incidentally planned by the highest authority. Again, explanation of the reasons lying behind the plans could provide the general public more information traits in a systematic way. People could learn about neo-colonialism, disaster management, sociobiology, importance of mega-structures, religious syncretism, quasi-egalitarianism, multiculturalism, application of dialectical approach in a scientific way on the society, intermarriages, subalterns, gender study, perceptions of the oppressed and minorities, regional forces, ethnic movements, indigenous aspects, new patterns in administrative structure, political changes, transnational aspects, anarchism, activation of human shields, perceptions in favour of micro-states and republican confederacies, resource management, food security, informal defense mechanism, perception of police state and activities of secret services, fuel crisis and international

interventions in terms of political-economic lobbies⁴². Ethics in social-cultural anthropological studies in this regard is highly relevant in this case^{43,44}. Sense of inclusion and exclusion is also crucial here⁴⁵.

It depends on the person or the society that who much and which book it would allow in the shelf. Culture is more predominant in folk life and characterized by magico-religious aspects. As society becomes more complex, civilization proceeds on its own way. At that time, society needs a model code of conducts which are implemented by various organizations including religion. Religious organization in critical condition could try to spread its impact over political and economic aspects, social issues, law, police and administration, cultural bodies, health and education systems, sports and business houses, changes, transformations, gender perceptions and extra-religious matters. Folk religion on the other hand more focuses on modes of production and reproduction, ethno-medicine, religious begging, craziness, spirit, soul, animism, animatism, magic, Wiseman, future telling, outer space objects, concepts of time traveling and time-space portal, self-healing and thought experiments which are equally relevant in case of major religions but in controlled ways.

Conclusion

TK/IK in the form of TKS/IKS/IKS (holistic) is definitely embedded in culture and to understand the same, researcher could not rely only on documentation or asking question, but has to observe and deeply observe to feel the way of living, thinking process and cultural symbolism. Repeating magico-religious rituals and folk religious performances are definite parts of culture, often look unscientific or extra-scientific, with or without any proper meaning, associated with the seasonal cycle and the ecosystem and therefore their symbolic expressions definitely tell us some relevant information about more of production and reproduction (IK) and all social/economic and political aspects depending on it (IKS). As the society progresses towards complex social structure and become more civilized in terms of technological assistance and mega-structures, we could not rely on culture only, but have to incorporate Great Traditions in forms of written scripts, sacred texts and/or scientific aspects.

Conservation of nature, feedback system, concept of sacred groove and people-nature-Supernature relationship in the name of naturalism in an indigenous community could be considered sacred to them and the way towards solid waste management in their perception, which we have to guess through religious aspects, particular social norms, solidarity in an ethnic movement, and myths, epics and literature with happy ending or sad ending or a question mark.

Researchers generally prefer micro-level study in order to sort out various knowledge gaps existing between modern system and traditional/indigenous knowledge system. Study on IKS is a contemporary aspect and has recently paced on from last two decades. The aims of such research on IKS has found generally

confined to biodiversity and traditional agriculture related with bio-diversity conservation; but actually it has a lot of scopes including social, cultural, politico-economic and global dimensions. Extentionists could be involved and a macro-level study to gather a huge bulk of information could also be implemented.

Studying IK/IKS is highly methodological: i. Qualitative, objective and deep micro-level study initiated through proper documentation without primary level analysis and emphasis on local-level innovations, ii. Cultural Performances: Study on repealing IKS, iii. Cultural Symbols: varying codes, manipulation and new meanings or keywords to a society or a person: Expression of folk perspectives: Decoding of hidden information in IKS: A journey from symbolic expression to reality, iv. Folk typification, taxonomy and folk terminologies or folk linguistics: A journey from mind construct to reality: overlap between etic and emic, v. Communication System (formal and informal, within and outside): Nature-human-Supernature communication: Gaining new data, informal experiments and successful transmission of IK/IKS: Global Public Services, vi. Biodiversity management and other aspects of issue of sustainability⁴⁶, vii. Cultural lag during the process of the gradual approach of folk community to civilization: Cultural lag between non-subjective part of culture that keeps TKS/IKS intact and the changeable part consisting of rationality coming from mainstream social system (organized by various institutions, viz. legal system and research centers dedicated to new scientific innovations) and input of material apparatus from civilized world.

And after all these discussions, there has still remained one question unanswered. Up to what extent does a folk community allow the researcher for proper identification, encoding, documentation and categorization of its TK/ IK traits and systematization to develop a Traditional Knowledge System (TKS)?

There is always scope for bio-piracy, harsh degradation of culture-knowledge-nature-identity-social value, transfer of IK/IKS to groups with vested interests, violation of land and other rights provided to the stakeholders and not considering their IKS providing Global Public Service as Intellectual Property.

To understand political and economic manifestations of IK/IKS, we have to focus on sustainable development by including folk peoples' perceptions, conservation of nature and the gap existing between researcher and informant: i. solidarity and community sentiments among folk people (indigenous or associated to indigenous) who are the stakeholder of IK/IKS and have the authority to allow any researcher/extentionist/policy maker/external entity to enter inside their society, ii. mode of exploitation of natural resources (along with concepts like resource preservation, recycling and feedback), iii. focus on Post-Modernism in order to reduce errors coming out during studying culture, cognate and way of living (errors in terms of value clash, researcher-informant biasness, objectiveness-subjectivity bias and

clash between scientific explanations and extra-scientific features which are still unexplained but highly believed).

Unidirectional process of development could lead to some sorts of discrimination, protests and politicization of that situation. So many dualities could be there: traditional and modern, Great and Little Traditions, psycho-biological and structural functionalism followed by various ways of thinking.

Study of IK and IKS needs help from proper documentation of data, decoding the symbols and explanation of cultural performances through RRA, some participations to develop etic-emic overlap, analysis and titling from post-structural, post-modern, extra-scientific, objective and humanitarian ways. That could be both action and diagnostic types of research. Ecosystem with perceptions like Deep Ecology and biodiversity management, modes of production and reproduction, division of labor including gender, social system, economy, polity, traditional health care system, informal education, folk religion, historicity, culture, mind construct and way of living are various ways to learn about artifacts, sociofacts and psychofacts related to highly integrated rational and non-rational aspects in IKS study. IKS is itself a methodology and related to aspects like Indigenous Peoples, Indigenous Rights and Global Public Service in terms of nature-friendly, cost-free or low cost contributions. The answers of above four questions might vary from scholar to scholar, and from situation to situation. We also need fund, GO-VO and extentionists.

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