Parallel session 2: Main challenges in the coexistence between native knowledge and modern science

KNOWLEDGE FROM EXPERIMENTATION AND KNOWLEDGE FROM EXPERIENCE

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Abstract

Technoscience can be outlined by means of words like control, efficiency, rules (theories), abstraction, verification, artefacts (devices), description, system or invention. We call this the experimentation frame. Quite different is the non-scientific knowledge acquired through personal involvement in both nature and traditional culture. This kind of knowledge is related to words like adaptation, harmony, commitment, concretion, coherence, tools, sense, community or cultivation. We call this alternative the experience frame.

By well-known reasons, in post-industrial countries the experimentation frame is the prevailing one. From an intercultural outlook, our goal here is to show its influence on the weaker world of experience and to underline the increasing importance of keeping alive this today unbalanced and frail coexistence.

Key Words: Experience, Experimentation, Technoscience.

1. Context

Along the last decades, and as a result of the close links among science, technology and industry a new and very pervasive force has settled its place in the middle of all modern societies. Technoscience is the name we will use for this coalition. Some consequences of the technoscience presence are obvious in almost every activity and practice of human life (business, communications, education, nourishment, medicine, leisure…) Culture, in its broader sense, like social and personal relations are not exceptions to this general rule.[i] It is important to keep in mind that technoscience is not just machines but a many-sided system which also encompasses new ways of economic and political relations together with different schemes of social organization. This system not only shows *what* we can do but also *how* it should be done.

When considering the new and pressing challenges raised by the intercultural dimension of our actual world, it seems to be more than appropriate to elucidate which is the importance of the unavoidable tensions appearing when knowledge is formulated and evaluated among different cultures or traditions

[3, 4]. So, let us now address our attention towards what kind of knowledge technoscience develops and promotes in front of other types of knowledge not suitable to its structural requirements.

2. The experimentation frame

At least since the works on astronomy by the English Franciscan monk Roger Bacon (1214-1292), mathematics and experimentation have been accepted to be the core of the modern scientific approach. Three centuries after Roger Bacon, another Bacon, Sir Francis (1561-1626), announced without hesitation what could be his main lemma: *Scientia et potentia humana in idem coincidunt* (Human knowledge and human power meet in one). Contemporary technoscience appears as the pitch we have reached by developing this lemma neither weakening nor saving efforts. So, now the most praised knowledge is the scientific one, which allows us to dominate and deeply transform nature and matter. In fact, the truth of this knowledge relies on its power. From a formal point of view its validity is founded on both, the coherence with previously accepted knowledge and the possibility of verifying every prediction.

Under the scientific eye everything can be manipulated as an object over which it is possible to carry as much experiments as necessary in order to selecting and quantifying relations and properties considered outstanding. The result of the scientific research is a description of the phenomenon formulated as a set of rules or a theory, system, law or mechanism. Technology applies itself to use this abstract knowledge —in an efficient way— to produce all sorts of goods, artifacts and techniques devoted to increase some specific power or to open up new opportunities.

Perhaps the main characteristic of the technological enterprise is that it cannot conceive a stable position, not to mention a final one. The main principle is to look always ahead, because it is always possible to perform something faster, smaller, bigger, easier, stronger or more sophisticated. The best is just a promise waiting for us somewhere in the future.

3. The experience frame

In the Preface of his book [2] the American social philosopher Lewis Mumford wrote,

> "Furthermore, in defiance of contemporary dogma, they [his books] did not regard scientific discovery and technological invention as the sole object of human existence; for I have taken life itself to be the primary phenomenon, and creativity, rather than the 'conquest of nature', as the ultimate criterion of man's biological and cultural success."

The rationalist approach to knowledge is not the only one, nor is always the fittest everywhere. Other perspectives are and have been alive inside and outside Western culture. By considering the pattern established by modern

science, we find that men and women have created and developed non-scientific ways of knowing where coherence, sense, harmony and adaptation take the role of verification, model, efficiency and control respectively. In these softer choices of knowledge it is common that people pay special attention to aesthetics. Also, they often look for establishing links with some aspects of their social or spiritual life. So, commitment and respect —to nature, community or tradition— appears where science puts self-explaining theories and systems.

In this frame, cultivation is more relevant than invention. The latter points to something standing outside of the inventor, as a final product of his or her ingenuity. The former expresses growing, a calm but continuous process of learning where someone is at the same time the learner and also part of what is learnt. Artisans, poets and artists are good examples; they labor to create something using what they know by experience, or strive to show in a work of art what they just know by intuition.

4. Final remarks

In many places around the world, the experimentation frame exists side by side with the experience frame. But this proximity does not mean a living together, because this is not a balanced relation. Technoscience is growing every day and its —many times undesired— effects extend without ceremony everywhere. This powerful expansion often damages, or finally destroys, human practices or activities neither able nor interested in competing against it. It is easy to understand that because of this ruthless behaviour, violence appears in some people or groups as the only possible reply.

Ends and means are equally important; in a harmonious life both should always be rational and reasonable enough [5]. Nevertheless, our main necessities as human beings point to ends, not to means. This signifies that human life —in fact, any form of life—, is quite different from a technical problem. On the one hand technoscience is among us, there is no way back. On the other we have and must take the choice to put it at our service.

Notes

[i] Some observations about possible ethical consequences of technological systems can be found in [1].

References

[1] Basart, J. M. (2004). "Which Ethics Will Survive in Our Technological Society?", *IEEE Technology and Society Magazine*, 23 (1), 36-39.

[2] Mumford, L. (1970). *The Pentagon of Power (The Myth of the Machine, vol. 2)*, New York: Harcourt Brace Jovanovich, Inc.

[3] Panikkar, R. (2003). *Pace e disarmo culturale*, Milano: Rizzoli.

[4] Pannikar, R. (2001). *L'Incontro indispensabile: dialogo delle religioni*, Milano: Jaca Book.

[5] Toulmin, S. (2001). *Return to Reason*, Cambridge (Massachusetts): Harvard University Press.

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BETWEEN ORAL HISTORY AND ICT: CREATING NEW SPACES FOR SOCIAL CHANGE IN GHANA

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Abstract

The article examines the relationship between two forms of communication: oral history and ICT. Both forms generate new structures of knowledge production and are constitutive for the dynamics of societal knowledge repertoire in Ghana today. The actors creating these dynamics are women's organisations and networks trying to act and react in a changing social environment. They have established social and virtual spaces for politicising knowledge aimed at transforming the knowledge order as well as political institutions along the local-global scale on interaction. The two features of "communicability" and "explication" of knowledge are significant indicators for the gradual transition of a Southern country to a knowledge society.

Introduction: Glocalisation, Knowledge and Communication

Academic debates on the emergence of knowledge societies have extensively focused on the transition in northern countries and have yet to include southern countries. According to Nico Stehr, the importance of a cross-cultural discussion concerning the nature of knowledge, the locations of knowledge production, and the control of knowledge lies in the insight that "(…) knowledge is not only the key to the secrets of nature and society, but the key towards the becoming of the world" (2003:22). One common characteristic of knowledge societies is the fact that a growing part of societal room of manoeuvre and of results of agencies is driven and governed by knowledge (Stehr, 2003:19). Empirical evidence in multiple sub-disciplines of sociology indicate that knowledge is one or even *the* major factor for contemporary societal change.

When conceptualising knowledge as a dynamic social process between actors, its new frame of reference lies in processes of globalisation and the new configuration in which knowledge is produced and generated: local and translocal. The interplay and communicative connections between localities constitute "glocalisation" (Robertson, 1995:26). These connections are opened by and continue to open social and virtual spaces for the building up of new knowledge repertoires. The actors I refer to are women's groups and women's organisations in Ghana, who have formed an "epistemic culture" at local, regional and even national level which extends beyond being connected with the interactive social and electronically supported World Wide Women's Web. The common aim is to bring about social change through politicising knowledge. The establishment of this local-global framework took place over

the last 25 years, during and in the aftermath of the four World Conferences on Women. Using different and multiple forms of communication emerging as a necessity for bridging distances, borders and in connecting localities as well as in connecting the electronically "connected" with the "unconnected" those living in rural parts of Ghana who do not have direct contact to new communication media. My intention is to show how multiple forms of communication co-exist. I argue on the basis of plurality and complementarity of communicative media indicating the existence of "multiple modernities" within one region.

Narrating the Past – Shaping the Future

Oral history is a practice of remembering its own past in the presence. In present Ghana, history is actively embedded by women's groups in a process of "reflexive modernisation" (Lash, 1994:113-115): by reflecting and acting on social constrains women groups refer to, reconstruct and include historical aspects in their discursive and strategic struggle for expanding their room of manoeuvre from the private to the public sphere. The core of struggle is to (re-)gain social and political power, which women have lost in post-colonial Ghana. At village, regional and national level, historical knowledge serves to claim for participation in political institutions. In new social spaces such as formal/informal meetings or forum women reflect on the decay of living conditions, critically examine the development of the modern (knowledge) system e.g. in agriculture or medicine, analyse the reasons for the "pathologies of modernity" (Habermas, 1981) and attribute it to their absence in powerful political institutions. In reference to the wisdom of the knowledgeable and well experienced old women in the family, younger women claim to be the keepers of knowledge and wisdom and use this identity for claiming political participation. In their everyday life, they use their historical knowledge for re-defining long-gone social and symbolic practices and fill it with new elements of knowledge whether concerning environmental, social, economic or educational issues. New elements of knowledge also based on scientific research results circulate through individual mobility in-between social spaces and through networking with global women's health, peace and environmental movements. Practising "innovative history" contains four aspects: historical and scientific knowledge, reflection on everyday knowledge and active transformation of the social order of knowledge. These four aspects create along a meta-level *knowledge on knowledge*. History as a re-representation in real time becomes even more important in a globalised age, contributing towards shaping the social and cultural diversity of localities and the formation of knowledge repertoires.

Strategic Information Channelling between Worlds

Using the Internet as a medium for communication and as a strategic tool for development has attracted women's organisations, groups and movements world-wide. The expansion of the scope of communication geographically towards a global "communicative accessibility" (Luhmann, 1997) among women, serves not only to connect different local realities but to transcend the diversity of local realities onto a global sphere. Gilian Youngs termed this power of transcendence towards the global level "shared politics" (1999). Shared politics is the active sharing of local realities at a global level meaning

that people in Ghana know what is of concern for women living in other parts of the world.

Electronic networks not only distribute power, but enable new forms of power, constituting the double feature of the electronic space as "cyber-segmentation" (Sassen, 2000:144). The network WiLDAF (Women in Law and Development Africa) uses ICT for distributing up-to-date newsletters, for emergency letters or for mobilization and extends beyond Africa in terms of common petitions addressing international development organisations (IMF, World Bank) and their specific interventions into national politics. The use of the Internet becomes in a political struggle over "conflicting views" (Sassen, 2000: 163) an expression of resistance, empowering women to act and react on external interventions. In its core, the electronic space is used for the defence, maintenance and security of the local lifeworld by combining the two processes of 1. strategic linking and 2. the links of strategies. The "disembedded", "deterritorialised" global sphere emphasises and empowers local actions. Many virtual actions like *www.womenaction.org*, *www.femmeafric.org*, *www.flamme.org* are well documented in the book *Women@Internet* (Harcourt, 1999) drawing our attention to the growing importance of virtuality as a new condition for defending localities in a global arena.

Conclusion: Belonging to Multiple Spaces of Knowledge Production

The current societal knowledge repertoire in Ghana is composed of different sources, which do not stand in isolation but are connected along multiple internal and internal-external relations. Three key elements form the societal knowledge content: historical, scientific knowledge and "informational" knowledge. Individuals now belong to multiple social and virtual spaces. More important: the new feature of societal "explication" and "communicability" on knowledge in the public makes knowledge a current relevant factor for social change and speeds up the emergence of this particular knowledge society through having the power of establishing a second order knowledge. Articulation and politicising knowledge enhances the growing control over one's own resources of knowledge. The sites of knowledge production will remain context-dependent, therefore keeping and maintaining cultural diversity; making one's own knowledge potentials even more independent on external knowledge and interventions.

"Explication" and "communicability" of knowledge are sustained by two forms of communication: Oral History and ICT. The specific difference are:

Oral History	**ICT**
Limited scope: local audience	Unlimited scope: global audience
Communicative focus on local life-world	Communicative focus on glocal life-world
Microcosm, limited personal	

mobility	Macrocosm, global mobilisation
Context-specific (language)	Context-independent (language)
Subject dependence	Technical dependence

The composition of knowledge and relation thereof refer to a pluralistic pattern of internal and internal-external relations. As researchers we have to deal *not with one or the other, but with one as well as the other*.

Coming to the overall topic of this conference of scientific knowledge and cultural diversity we can conclude that cultural diversity remains exclusive through its existence in a process of globalisation. Exclusiveness not as a cut-off product, but as exclusiveness through interwovenness. Fluid integration between scientific and local knowledge via mutual learning processes remains a challenge. Theoretically we must follow an agency and process-oriented approach for understanding the dynamics of knowledge repertoires in a locality. Practically, as outside researchers we can follow the manifest of Kwasi Prah who suggested that: "*First we have to learn to look at ourselves, hear others about ourselves, and above all, allow others to speak for themselves*" (Prah, 1997: 444-445).

Bibliography

Habermas, Jürgen (1981) *Theorie des kommunikativen Handelns*, Band 1und 2, Frankfurt am Main, Edition Suhrkamp.

Harcourt, Wendy (ed.) (1999) *Women@Internet*, Creating New Cultures of Cyberspace, London, Zed-Books.

Knorr-Cetina, Karin (1999) *Epistemic Culture*, Cambridge, London, Harvard University Press.

Lash, Scott (1994) Reflexivity and its Doubles: Structure, Aesthetics, Community. In: Beck, Ulrich/Giddens, Anthony/Lash, Scott (eds.) *Reflexive Modernization*, Cambridge, Oxford, Blackwell.

Luhmann, Niklas (1997) *Die Gesellschaft der Gesellschaft*, Frankfurt am Main, Suhrkamp.

Prah, Kwasi (1997) North/South Parallels and Intersections. In: *Critique of Anthropology*, Vol. 17, No.4, pp. 439-502.

Robertson, Ronald (1995) Glocalization: Time-Space and Homogeneity-Heterogeneity. In: Featherstone, Mike/Lash, Scott/Robertson, Ronald (eds.) *Global Modernities*, London, Thousand Oaks, New Delhi, Sage Publications.

Sassen, Saskia (2000) *Machtbeben*, Stuttgart, München, Deutsche Verlags-Anstalt.

Stehr, Nico (2003) *Wissenspolitik*, Frankfurt am Main, Suhrkamp.

Youngs, Gilian (1999) Virtual Voices: Real Lives. In: Harcourt, Wendy (ed.) *Women@Internet*, London, Zed-Books.

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MAKING SENSE: COMMUNICATION THROUGH ENGAGEMENT

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Key words: Native knowledge, culture and communication

Text

As an Aboriginal man involved in the research industry in Australia and in communicating research findings, I have a keen appreciation of why research has such a bad name among my Indigenous brothers and sisters around the world.

We've been objects of research and not participants and so researchers rarely appreciate what they can learn from us.

They don't give us feedback because they're not really engaged with us in the first place.

I set up a video production unit at a prestige health research unit in Northern Australia to try and correct this problem because video is a good medium for telling stories and I know that's how our people learn.

We start learning from a very early age to use our senses to make sense of the world.

The story telling part has always worked because I know how to do it.

I always try to use local Indigenous people as my video crew to build on skills they already have and get them involved in telling the story.

That means they tell it their way.

I want researchers to go further than just using video.

I want them to understand that they need to approach Aboriginal people as potential partners and then as people who are in a position to exchange knowledge about the particular problems that interest the researcher.

We need to promote respect for Indigenous intellectual traditions and respect for Indigenous ways of doing things.

And we need to promote the idea that research is about exchange and development for all the people involved.

For me, research is not a product and communicating knowledge from research isn't about selling a product.

It's all a process of engagement.

In Aboriginal terms, people belong to groups and they have to collaborate for survival or they die. This is still an expectation among Aboriginal people from all kinds of social and cultural environments today - remote, urban, rural. Individual action, without reference to others, was virtually unknown. People understood that survival needs collaboration and cooperation.

In our terms, people who do research do it on their own. They gather skills and knowledge which they claim to own and which they don't necessarily share. They have control over their domain – a wealth of knowledge and experience, kudos, the ability to attract funds for projects. These help them survive and prosper in the academic world. They don't always help them negotiate their way successfully through the Aboriginal worlds, though.

Aboriginal people's experience of research reflects these cultural differences. I've seen two ways of doing research. You can call them good and bad, positive and negative or whatever opposites you can think of. But they boil down to:

- on the one side, a collective, inclusive and collaborative approach that is directed and managed by the Aboriginal people involved in and affected by the research; and
- on the other the individual-centred, exclusive approach that is driven by the needs of the researcher.

But 'research' isn't a value: it's a series of processes and activities. And because it involves people, it needs to engage people and accommodate them. When you're gathering new knowledge from among people of a different culture – doing 'research', then you need to make sure it is useful, it can give people knowledge and insights and generally add to the human story that we all share.

In the process of thinking these things through, I began to think about how researchers approached people in communities and how they left them at the end of the research process. The researcher-oriented approach seems to have involved people coming in with their minds made up about what *they* want to do, and their objective is to talk Aboriginal people round to seeing things their way and agree to their agenda and their timeframe.

This approach is called '***consultation***'. But consultation doesn't mean much to Aboriginal people. Because it means you, the researcher or government official or businessman, doing what you wanted to do in the first place. It means leaving little room for people to tell their stories. It's not about communicating in an appropriate way. And the appropriate way is ***negotiation***.

People 'consulting' might also bring printed material to support their argument - brochures, pamphlets, posters etc – which they're familiar with and which they might use to tell their story to a non-Indigenous audience. That audience is familiar with, and comfortable with, the idea that you absorb information through bits of paper.

There is a place for printed material, sure. But it's probably a waste of time if people can't speak or read formal English, which is the way researchers try to

transmit project information. For most Aboriginal people the oral tradition is what still counts.

Part of the blackfella way of doing things is to sit down and talk: people develop stories to identify problems, discuss courses of action and negotiate agreement on what needs to be done. Everyone gets heard, no matter how long it takes. Aboriginal people have is a rich oral tradition – a way of negotiating information by talking it through until everyone has had a say and everyone's satisfied.

What matters is the story (the research agenda): how the team can develop it, how it incorporates other people's stories and how you reach agreement over all the detail. You can't do any of this without having a real relationship that blurs the distinction between 'researchers' and the 'researched'.

My experience of working with researchers has had its share of ups and downs. The really basic questions still keep cropping up, like:

Who gets empowered?

Whose skills get developed?

Who owns and manages the process?

What happens to the information – does it get taken away for good or does it come back?

Who gets the accolades?

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LOCAL KNOWLEDGE/GLOBAL SCIENCE?: CHALLENGES TO WESTERN GEOGRAPHIES OF EXPERTISE

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Abstract

Whereas the natural sciences typically maintain a divide between 'experts' and 'amateurs,' some scholars argue that this divide discounts local and indigenous peoples who contribute to Western environmental knowledge, but whose legitimacy the professionalization of science has erased. This globalization of science ultimately threatens local decision-making power over land use and economic development, with the 'experts' informing policy located far away from the places where the data was gathered yet immediately affected by the decisions. However, with the increasing recognition of the validity of Indigenous Knowledges, what is happening is more than a policy shift that incorporates native knowledge into the science. Guided by geographic theories of scale, I suggest in this paper that there is a change in the very definition of expertise and the structures of environmental management, forwarding a compelling political as well as epistemological challenge to Western positivism.

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NUCLEAR ENERGY IN RUSSIAN CIRCUMPOLAR NORTH. ASPECTS OF PUBLIC COMMUNICATION OF SCIENCE AND TECHNOLOGY

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Abstract

The development of nuclear energy in Arctic can be considered as a great challenge for local societies and highly vulnerable circumpolar nature. Taking into account historical roots of industrial and technological activity on the Russian Far North special attention should be paid to the analysis of political, technological, social, cultural and environmental concerns of local population.

The main objectives of the paper are:

- to provide interim results of the case study on public involvement in technological and environmental decision-making in the field of „Peaceful Atom` in Russian Arctic (Murmansk / Kola and Bilibino/Chukotka nuclear power plants);

- to highlight complex interconnections between technological activity and social, cultural and environmental problems in the mentionned regions of Russian Arctic,

- to clarify influences of technological activity in the field of nuclear energy and its social consequences on the practices and lives of indigenous peoples (Chukotka/ Bilibino);

- to evaluate existing strategies of public communication and participation in technological and environmental governance.

The methodology of the paper is a historical analysis based on a systematic qualitative approach and reviewing existed literature. Content analysis of relevant publications in media, and interviews aimed at the specification of both communications between science & engineering community and general public, and expression of public attitudes are also used as complimentary methods.

Although the paper highlights the results of the work-in-progress, interim conclusions will be made. By analyzing the aspects of PCST in connection with the development of the `peaceful Atom` in Russian Arctic it will be possible to reach a more comprehensive insight of the national PCST landscape, and to indicate prospective strategies in governance of science and technology in the region. The failure of some existed strategies of communication, especially with indigenious population, makes it necessary to implement alternative strategies and practices.

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THE VALUE OF IDIGENIOUS KNOWLEDGE AND ITS RELATION TO MORDEN SCIENCE

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Abstract

Indigenious knowledge or Traditional knowledge is very important in it`s context. Science has been practiced by various cultural groups long before modren technology was introduced. This we can gather from story telling, materials and prefomance. Native knowledge is a metaphor for what happens when humans experience and participate with the natural world. This incorporates knowledge of ecosystem relationships and code of ehtics governing appropriate use of the environment. The people possess ecological knowledge that is traditional in nature and depend extensively on this knowkedge for maintaining their relationship with animals and providing food from thier families. This is all gained from experience. Then natural laws are put in place. Native knowledge is not static hence morden science. Native knowledge has sacredness, livingness and soul fo the world. This all been stored and passed on to genrations by elders who are keepers of this native knowledge. This also helps the sustinance and survival of the cultural identity. Native knowledge is also evolving and new knowledge is generated from the the traditional knowledge hence morden science. Contemporary scientific knowledge denies the relevance of traditional knowledge and sees this knowledge as a means of denoting all that they know imposes a way of life on them that is shackled to the past and does not allow them to change. If this kind of knowledge can be used as a foundation to morden science in schools understanding of scientific concepts will be much easier as spontanious knowledge is recognised. If spontanious knowledge can be recognised this will inform and give new meaning and value to traditional and experimental knowledge. The richness and complexity of local knowledge systems derive principally from the fact that they incorporate, and are often the resolution of two very different world views.Therefore researchers cannot exclude any component of traditional knowledge when dealing with morden science. Morden Scientists or researchers just have to acknowledge whatever they incorporate from the past into the present.

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INNOVATIVE CULTURE IN THE SCIENCE AND TECHNOLOGY SYSTEM: THE MIXTURE OF KNOWLEDGE AND CULTURE

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Abstract

In the beginning of the 21st century has returned the old discussion about the role of culture within the relationships between science, technology and culture. The idea of the wide gap between science and humanities (Snow, 1963) has been followed by those who deny the social nature of science. Therefore, it is necessary to develop a scientific theory of culture (Malinowsky, 1970) shaped by the idea that knowledge is mixture. It is clear that science has existed as long as society has existed. According to Popper (1962) science involve proposing hypotheses and finding evidence to contradict predictions made from them. Due to these it is convenient to study the notion of innovative culture as a mixture of scientific and humanistic knowledge. In this process, culture is the key factor that defines the economic and social value of knowledge. In this sense, it might be convenient to remember the affirmation of Gell-Mann, Nobel in Phisics in 1969 for his discovery of the quark -particle of the atom which forms all the other particles- when he indicates that still nowdays the tension between the universality dreamed by the Illustration and the necessity to preserve the cultural diversity persists. Such cultural diversity is in itself a valuable inheritance that would have to be preserved. In short, to preserve the cultural diversity must be compatible with the understanding of the scientific knowledge. For this reason, our proposal of culture, in its taxonomy "innovative", attempts to improve the understanding of the different agents involved in the "Tech-Net Age", so that relations between concepts such as simple and complex, or individual and universal might be concialiated.

In our paper we will study as well the cultural and cognitive processes of towns such as Barcelona, Toledo, Londres, Estambul, Nueva York, San Francisco, etc characterized at best by its identitiy in a time of rapid progress.

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DEVELOPMENT OF COMMUNICATION CHANNELS IN INDIAN MEDICINE

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Abstracts

Medicine has always been a significant part of the Indian heritage. Flourishing about 2000 BC, the architectural design of Harappa does point to a conscious concern for public health and sanitation. The Atharvaveda was probably the first repository of ancient Indian medical lore and these were later transmitted through the Brahmana texts. It was magico-religious in nature in nature and incantations (mantras) were frequently resorted to (1). Ayurveda as 'the science of (living to a ripe) age', sans mantra, appeared around Buddha's time.. The concept of humorous or doshas which is central in Ayurveda, is nowhere seen in the Vedic literature. Nor it does reflect Hippocratic or Galenic thinking. The protagonists of this system may have been inaccurate in their knowledge of human physiology but they were extremely good at plant morphology, its medical functions and therapeutics. On the other hand Charaka and Sushruta placed emphasis on direct observation. But unfortunately their texts and later commentaries have no anatomical or surgical illustrations. It is difficult to see how such techniques as rhinoplasty could have persisted purely textually (2). In any case Ayurveda remained a living and fertile area of research and interpretations. The scenario became even more interesting with the introduction of Galenic traditions by the Islamic medical men. Gradually appeared the a hybrid Muslim-Hindu system known as the Tibb. They differed in theory, but in practice both traditions seem to have treated and borrowed from each other. History books galore with examples of their close connections.

These system of medical practice never received the due place in society (even till date) especially in society were it originated for many reasons. Historians have discussed some of these. Their main concerns have been the highly divisive caste system very peculiar to South Asian society, the combination of caste and faith, ruinous separation of theory from practice, of mental work In the practice the blowing heavy wind of taqlid (tradition) and the dimming of the lamp of wisdom…. the door of "how" and "why" has been closed and questioning and enquiry have deemed fruitless and tantamount to paganism (3). On the other hand when modern medicine entered the new lands riding the colonial wave they over took these traditional system in less than one and half decades. Apart from developing professionalism the Western medical discourse occupied an extremely important place in the colonization of India.

Taking the clue from Charak Samhita the western medical practioners organized periodically conferences and meetings. They not only met at time of

medical calamity but on regular basis academic and scientific gatherings of scholars and thinkers took place. This paper traces the advent of Western medical science and its strong communication channels in India. It analysis the strong institutional roots in the development of medical societies, journals and academic institutions so to overtake the traditional medical practices. It is argued that through these strong communication channels the western medical knowledge tried to bypass the strong Indian medical practices that existed for more that 2000 years. How effective has been the borrowed knowledge is question that requires an answer.