

MODERN SCIENCE AND NATIVE KNOWLEDGE: COLLABORATIVE PROCESS THAT OPENS NEW PERSPECTIVE FOR PCST

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PCST has a global goal in recreating community, sharing specialized knowledge and enabling people. Time has come to be more inclusive of other knowledge systems. Native Knowledge or Indigenous Knowledge Systems and Collaborative process of co-creating a new useful knowledge could open a new perspective for PCST to broaden its scope, renew methods to enrich and reach more people toward knowledge society and sustainable development.

La PCST tiene como meta global recrear comunidad, compartir conocimiento especializado y capacitar a las personas. Ha llegado el momento de incorporar otros sistemas de conocimiento. Los sistemas de conocimiento nativos o indígenas, y el proceso de creación conjunta de nuevo conocimiento útil podrían abrir nuevas perspectivas para la PCST; ampliando su alcance y renovando sus métodos con el fin de enriquecer y llegar a más gente para avanzar hacia la sociedad del conocimiento y el desarrollo sostenible.

Historical aims and frameworks of Modern Science and Native Knowledge

Despite the mainstream practice to value global modern knowledge of science and technology for development, the pluralism of native, local or indigenous knowledge systems and cultures is increasingly recognized and prevailed. Usually, current development strategies tend to ignore, to underestimate and sometimes to undermine other knowledge systems of developing countries which are often labeled as non-scientific and non-universal. Nevertheless, for few decades traditional knowledge systems have been studied, more understood and received growing interest and appreciation even among scientists and development practitioners worldwide. Such knowledge systems represent an enormous wealth, yet not well mobilized.

These systems of knowledge are known in various terminology and in general can be used interchangeably, for example, *indigenous knowledge (IK)*, *local knowledge*,

traditional knowledge, *folk knowledge*, *traditional ecological knowledge (TEK)*, *local wisdom*, *people's science* and *community knowledge*.

In 1999 in Budapest, *UNESCO-ICSU World Conference on Science* stressed the importance of integrating traditional knowledge into science, especially in scientific education and research. And more and more countries have incorporated IK in mainstream society via formal education system in any levels. For example, in Uganda, South Africa, and Thailand IK is reflected on primary to higher education curriculum development. Thailand's National Science and Technology Development Agency has set up a program since 2002 to study the process and mechanism of how to use modern science and technology to leverage Local Wisdom in the areas of food, herbal medicine, and handicraft. (The term Local Wisdom-LW is more popular in Thailand than Indigenous Knowledge.) The result will be proposed to the government to establish national policy on S&T for leveraging LW of the country for social and economy development.

Modern, or Western sciences, and indigenous knowledge systems (IKS) represent different knowledge systems because of their respective backgrounds and values, organizing principles, habits of mind, skills and procedures, and - how the knowledge is used. The real challenge is to find mutual recognition and respect to work together in a complementary manner toward enhancing the well-being of mankind and sustainable development including entering countries into knowledge societies. In this way, modern scientific approaches would also enrich themselves taking into account more global vision, paying attention to psychological, social and cultural dimensions which used to be considered as outside the scientific logic. So, the strategic question is *how* this could be achieved?

Modern value of Native Indigenous Knowledge

As much effort has been on moving toward knowledge-based society, the importance of knowledge for economic and social development is increasingly vital. At the *2nd Knowledge for Development Conference (GKII)*, organized by UNDP, the World Bank and other organizations in March 2000, Kuala Lumpur, Malaysia, the final action plan includes a strong endorsement of the Indigenous Knowledge program and specifically calls for the identification, development and dissemination of local knowledge in various forms, including local languages. It also calls for developing strategies for using indigenous knowledge in development. Development is no longer the exclusive domain of modern science and technology (Liebenstein, 2001).

Not only that IK is obviously relevant to the local community in which the bearers of such knowledge live and produce. Gorjestani (2000) asserts that IK is a key element of the «social capital of the poor». It provides self-reliance and self-sustenance of rural community. World Bank has also identified another two higher levels

to use IK in development process. In order for development programs to be sustained within the limited facilities of the rural communities, they have to meet the needs and fit with the contexts. Integrating IK in the development programs will make them relevant to local people and provide good foundation for success and sustainability of them even after the programs end. It stresses that development agents (CBO, NGO, government, donors, local leaders, private sectors initiatives) need to *recognize* it, *value* it and *appreciate* it in their interaction with local communities. Before incorporating it in their approaches, they need to *understand* it-and critically *validate* it against the usefulness for their intended objective.

For the highest level, World Bank sees IK as part of the global knowledge. In this context, it has a value relevance in itself because it can be preserved, transferred or adopted and adapted elsewhere.



Considering the differences

Modern science and IK are seen as polarized because of their differences and characteristics as summarized in table I.

Bridging global knowledge of modern science to indigenous knowledge

Studies have shown that IK contributes to science in many fields, especially in the area of agriculture, natural resource management and health. At the same time, modern science assumes a critical role in working and modifying IK for modern world in many ways. For example, in the case of traditional medicine, scientific validation is important prior to sharing practices beyond the original context and location to provide assurance and safety including effectiveness. And S&T also help to innovate new forms of herbal medicine for more convenient and wider use. In such recognition, modern science and IK should be viewed as two systems of knowledge that can supplement, rather than compete with

each other. Or to put in other words, they can work together co-intelligently.

An example from Thailand

One exemplary case is from a research program (2000-2004) in Traditional Medicine and local healers of the northern region of Thailand. This research program allow scientists and researchers works closely in the perspective of mutual respect and mutual learning with local healers of the north in the attempt to identify, to collect, to codify, to conceptualize, to systematize and to validate local knowledge of traditional medicine. It not only renders great success in codifying tacit knowledge of traditional medicine but also providing insight and understanding of its holistic approach (inclusion of family/community participation, cultural and spiritual dimensions) in curing and preventing diseases. All involved parties work toward magnifying traditional medicine of the north and local healers' role in the new National Health Act.

Related to this research program, various university curriculum and diplomas at undergraduate and graduate levels are provided. Training programs through non-formal education system are given. It significantly sets a model and guidelines for three other regions to follow suit. This will enable people to use this knowledge to take care of daily life symptoms and primary healthcare in preventive approach. It rebuilds family and community ties. Dr. Yingyong Taoprasert a medical anthropologist, Director of School of Traditional Medicine and Alternative Medicine, Rajabhat Chiang Rai University, and Coordinator of this research program states that it is strategically and economically important to use the strength of traditional medicine to compensate the weakness of modern medicine (which focuses on curing the disease only, no attention on cultural nor spiritual level) and vice versa.

This research program also inspires local communities to restore their medicinal plant resources. Community forests provides places for native plants used as medicine and food. Researchers are working on improvising the preparation of herbs for more usability and flexibility, for example, herbal ball for curing muscle pain,

herbal pill, patch, gel and lotion. Some local communities grow medicinal plants as raw materials for hospitals and producers that produce new products from herbs. It is hoped that more use of traditional medicine will decrease national expense and dependency on Western knowledge and technology in healthcare and medicine which is so high as over a hundred thousand million bahts (about \$2,700 million U.S. dollars) each year. Growing number of hospitals and healthcare units nationwide are offering patients with dual systems of modern and traditional medicine. And it is well received.

That is just one of many successful examples that modern science and IK can work together in a desirable condition and with good results. There are other promising areas with bright future like in handicraft, food production and cosmetics that the Thai government has been promoting within the national project of «One Tambon, One Product-OTOP» (One Village, One Product).

Considering the example above, communication is the key enabler to transform these two different knowledge systems into new useful knowledge for the whole society. It provides the framework of path to knowledge society. Then, would PCST want go beyond its global goal to be an active part of this scenario? And in what way PCST could transform itself responding to this happening?

New Perspective for PCST?

The global goal of PCST is to recreate community (to bring closer science/scientific communities and society), to share specialized knowledge and to enable people (Fayard, 2002). He continues that though modern science is global, when it comes to public communication of science, the local and cultural dimensions play a major role. And history has shown that when a society evolves, changes occur in the ways of producing scientific knowledge, and the availability of communication tools, as a consequence, ways of doing PCST change too.

In response to collaborating modern science with IK to co-create new useful knowledge, PCST might find itself a new challenge that could be useful. The fact that IK values harmony, respects nature, is dynamic and has

Table I **Characteristics and differences between Indigenous knowledge and Modern (Western) science**

Indigenous knowledge	Modern (Western) science
LOCAL: IK is rooted in a particular community. It is a set of experiences generated by people living in the communities.	UNIVERSAL OR GLOBAL KNOWLEDGE: It is the knowledge generated in modern scientific institutions and some industrial firms. This knowledge has the same «universal truth» no matter where it is.
TACIT: IK is embedded in people who generate it and use it. Hence, it is difficult to capture and codify this kind of non-formal knowledge.	EXPLICIT: The knowledge has been noted for its rigorous procedures of creation through observation, experimentation and validation. These procedures could be specified and put into instruction easily.
TRANSMITTED ORALLY: IK is rarely recorded in written form. It is transferred through imitation or demonstration.	TRANSMITTED IN WRITTEN FORM ACADEMIC AND SCHOOLING SYSTEM: As the knowledge is produced and carefully documented, it can be taught via formal education system.
EXPERIENTIAL RATHER THAN THEORETICAL KNOWLEDGE: IK is derived from experience and trial and error. It is tested through time in “social laboratory of survival «of local communities».	THEORETICAL KNOWLEDGE: Knowledge is derived from hypotheses and scientific methods. Studies have been made in laboratories or with scientific or mathematical models.
LOADED WITH SPIRITUAL AND SOCIAL VALUES: Spirituality is an important and inseparable dimension of IK. Subjectivity takes the role. Nature is revered as mother or provider of all things.	NO SPIRITUAL VALUES: It separates attitudes, beliefs or cultural dimensions from the knowledge creation process. Objectivity is the approach. Nature is to be conquered or mastered.
HOLISTIC APPROACH: Humankind is considered part of the nature. Natural tendency toward equilibrium is the central theme of IK.	COMPARTMENTAL APPROACH: This system of knowledge breaks down matter for study into smallest components in order to reach into the deeper and hidden facts of what being studied.

been used for thousand of years by large number of population in developing countries, could open a new perspective for PCST to broaden scope, renew methods in order to enrich and reach more people. PCST is familiar with modern context where mass and high technology media play important role in the communication process. Traditional popularization of S&T is rather content-oriented with global perspective to reach large number of audience and fast. And evaluation tends to be quantitative.

Let's look at communication and issues of concerns within the context of IK that PCST might consider in order to adapt itself.

Much of IK is not in written form and is re-created through communication from one generation to the next. Such repetition can take two forms: *use* (as when

IK knowers practice the skills) and *communication to others* (Mundy and Compton, 1995). Here, the process of communication, thus, is a method of preserving the body of IK within a culture. Breakdowns in intergenerational communication can have disastrous effects on culture. Face-to-face or communication on personal basis proves to be efficient.

Diffusion of information or communication from one area to another will create lateral networks that bring new ideas into the culture. Networking and building of partnership are invaluable instruments (Libensteine, 2000). Trust and confidence have to be established in close working relationship at the initial stage. Much of the work on indigenous communication has been studied by specialists in various disciplines (e.g. develop-

ment communication, extension, anthropology, and education) as well as scientists in agricultural and health-related disciplines. However, the work is largely concentrated on using indigenous channels (folk media, social gatherings, etc.) to promote innovation and transfer of technology coming from outside. So, mostly it is an imposed knowledge of modern science over IK. But situation is changing.

There are various issues on debate when it comes to bringing IK from a slow pacing society onto modern stage of fast changing and economy driven world. The controversy rises from the concerns of bio-piracy, intellectual property rights, dis-locating, and depreciating IK because of incapability of outsiders to appreciate traditional cultures and social values of a local communities.

If PCST wants to broaden its global goal with humanistic and democratic motivations including environmental concern for sustainable development

and knowledge society, a more community-oriented approach can be learned from IK. High communication, but low technology media are possible to ensure success. Though the availability of ICT is spreading throughout the world, effective communication begins with people's involvement. Efficiency is measured on qualitative basis. Specificity of this new target audience taking into account the cultural and social values of the local communities will transform the way content is presented. Knowledge is not the aim, but to integrate better knowledge. In the controversial issues within IK itself or from S&T (e.g. biotechnology), PCST can help facilitate dialogue and democratic decision. Within this open and new perspective, PCST is welcome to expand and strive for its global goal, especially in empowering rural local communities. And at the same time modern society and the rural one could be interwoven within knowledge society reality. ¶

References

- FAYARD P.: *Issues for Public Communication of Science and Technologies in the Knowledge Society*. Paper presented at Korean Science Foundation, Seoul, Korea, 8 November 2002.
- FAYARD P.: «Strategic Knowledge Community: A Western Proposal for the Japanese Concept of *Ba*», *Journal of Knowledge Management* 2003; 7 (5).
- GORJESTANI N.: *Indigenous Knowledge for Development: Opportunities and Challenges*. Paper presented at UNC-TAD Conference on Traditional Knowledge, Geneva, 1 November, 2000.
- LIEBENSTEIN G.W.: *Interfacing Global and Indigenous Knowledge: Towards an Indigenous Knowledge Information System*. Paper presented in the Sixth UNESCO-ACEID International Conference on Education, Bangkok, Thailand, 12-15 December 2000.
- LIEBENSTEIN G.W.: «Linking Local and Global Wisdom», *IK Monitor* 2001 (9-3).
[<http://www.nuffic.nl/ciran/ikdm/9-3/column.html>].
- MUNDY P.A., COMPTON J.L.: «Indigenous Communication and Indigenous Knowledge», en: Warren D.M., Slikkerveer L.J., Brokensha, D. (eds): *The Cultural Dimension of Indigenous Knowledge Systems*, Londres, Intermediate Technology Publications, 1995: 120-123..
- TAOPRASERT Y.: *Approach in Healthcare Systems of Lanna Folk Medicine* (en thai), Wanida Press, Chiang Mai, 2003.
- Personal communication with Dr. Yingyong Taoprasert, 10 February 2004.
- VVAA: *Indigenous Knowledge for Development : A Framework for Action*, World Bank, November 1998.
[http://www.scidev.net/dossiers/indigenous_knowledge/ikdocs.html].