Parallel session 1: Which is the role of science communication in local knowledge dissemination?

TO DEVELOP THE ROLE OF PCST RESEARCHERS IN CREATING STRATEGIC KNOWLEDGE COMMUNITIES (SKC) TO NURTURE THE CULTURE OF CREATIVITY AND INNOVATION IN LOCAL COMMUNITY

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Abstract

To create SKC in fostering the culture of creativity and innovation, PCST researcher has developed four phases: creating partnership for enhancing collaboration for action, crystallizing and systematizing local knowledge, assembling local knowledge and scientific knowledge in creating new invention, and disseminating new invention.

This participatory action research using SKC has been conducted in Mahanam Village, AngThong Province in the central part of Thailand, this village is participating One Tambon(sub-district) One Product:OTOP project (developed by the government to make the community in each sub-district self-reliant by using own resources and wisdom) by producing fabricated handicrafts from weaving dried water hyacinth stems. To make Mahanam Village handicrafts acceptable to the international market, PCST researcher organizes the process to create SKC for villagers in cooperating with scientific scholars to develop their OTOP production and new creativity.

Key Words: SKC, Local Knowledge, Scienific Knowledge, Culture of Creativity and Innovation.

Text

SKC is abbreviated from Strategic Knowledge Communities. This hypothesis was first conceptualized by Prof. Pierre FAYARD1, who originally founded PCST in 1987. This Western hypothesis is the counterpart of the Japanese concept of ‘Ba’ which roughly means ‘place’ in English. Based on a concept developed by Ikujiro Nonaka2, Ba is the place where individual knowledge can be shared through interactions with others.

In this research, the researcher will organize the process to create ‘SKC’, which can be detailed in four phases as follows:

Phase I Creating Partnerships for Enhancing Collaboration for Action

To develop a positive interaction between the PCST researchers and the community, collaboration must be conducted between equal partners upon trust (care + love + mutual respect) and understanding by initially getting to know the community 'leader'. PCST researchers have to transparently introduce themselves and thier objectives to the leader, this step is the meaningful starting point for PCST researchers to launch the project. Second is getting to know the 'community'. PCST researchers must enrich our understanding of the grassroots. In the last step, creating 'network' between community and PCST researchers, networking will bring about coordination between PCST team and community, makes them work in a more collaborative way, energizes them to cooperate in project activities and interests them to communicate through sharing and exchanging of feelings, information, and ideas in achieving their goals.

Phase II Crystallizing and Systematizing local knowledge

PCST researchers will start with studying local knowledge and its practice. Following with analyzing local knowledge, PCST researchers will analyze local knowledge, its practice, and its problem that exists in the community by involving the community members through interaction. Ending this phase with documenting local knowledge, PCST researchers will implement database and document of local knowledge to preserve, and to promote local knowledge.

This collection of knowledge will be considered as baseline information for them to manipulate 'SKC': a meeting place (physical, virtual, mental) for the community and scientists to prepare the operational plan and to direct indicators for monitoring and assessing outcomes in the coming phases.

Phase III Assembling local knowledge and scientific knowledge in creating new invention

In this phase, PCST researchers will begin researching for scientists or specialists related to local knowledge then getting to know the scientists or specialists by introducing themselves and presenting their objectives based on mutual respect, understanding, and transparency. Next, creating 'network' between scientists/specialists and PCST researchers to identify the possible solutions based on the knowledge collected in Phase II. Experimenting with community and scientists, the role of PCST researchers in this step is the mediator in conducting participatory actions among community and scientists/specialists. The last is monitoring and evaluating to improve this new invention.

Phase IV Disseminating new invention

PCST researchers start Phase IV by conducting communication process to disseminate the new invention to community members. This phase is closely related to "learning-by-doing" which allows each member of the group to access the new knowledge: methods or solutions about strategy, innovation, or improvement via action and practice.

After operating participatory actions in Phase I and Phase II, the Mahanam villagers and PCST researcher found that the defect of water hyacinth stems caused by fungi was the first priority problem. The methodology is to protect their

products from this microorganism. Accordingly, PCST researcher began Phase III by cooperating with researchers from the Thailand Institute of Scientific and Technological Research (TISTR) and representatives from Alphani International CO.,LTD who provided the sample fungicide for experimenting. The result was satisfied, however the villagers denied to use this solution due to its high cost. PCST researcher re-operated Phase III by joining with Dr.Srisook Poonpholkul, plant pathologist at Plant Protection Research and Development Office, Department of Agriculture of Thailand, who provided the alternative lower cost fungicide. Although the experiment was failure at first, good collaboration among stakeholders made the experiment succeeded finally. Then, PCST researcher started Phase IV by conducting communication process to disseminate the acceptable solution to the villagers. This phase was closely related to "learning-by-doing" which allowed each member to access new knowledge.

From this participatory action research, although partnerships among community, scientists and PCST researcher have been established and the problem has been conquered, the process of creating culture of creativity and innovation requires time for nuturing it. Consequently, the future direction of research will focus on providing the learning process, information about scientific issues and impacts related to local knowledge. Hopefully, this would bring the harmony between science and the public particularly rural area.

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SCIENCE AND INDIGENOUS KNOWLEDGE TOGETHER ONLINE

Mr Allen Rooney

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Text

Questacon is Australia's largest Science and Technology Centre and is taking a leading role in developing cross cultural communication processes in science communication.

Questacon's **Indigenous Outreach Programs** aim to overcome the cultural and geographical challenges that arise when sharing information between cultures. In Australia these challenges include:

- Language: A large proportion of Indigenous people living in remote areas have English as a second or third language.
- Distance: Some communities in Australia are thousands of kilometres from major population centres.
- Cultural diversity: Today there are hundreds of groups of Indigenous people living in Australia, each with its own distinct knowledge and stories.

Questacon recognizes that many Indigenous Australians still hold their traditional understandings of the world. In the past, education institutions have attempted to replace these understandings with "correct, modern" knowledge causing confusion, uncertainty and some resentment. The cultural identity of the young Indigenous students was also threatened. Questacon acknowledges the importance of Indigenous ways of "knowing" whilst offering alternative explanations for phenomena.

The way they do this is through exchange, not delivery. This is done through establishing contact and gaining confidence within the communities and acknowledging place and culture. Through these links Questacon aims to have a genuine sharing of knowledge and stories with understanding and respect for others view of the world.

Questacon's ***Burarra Gathering Online*** exhibition draws on the content of the gallery exhibition ***Burarra Gathering: Sharing Indigenous Knowledge*** which presents contemporary and traditional knowledge and technology of the Burarra people of Arnemland. The exhibitions were developed through close consultation with the Burarra people and present a means for their community to preserve their knowledge and culture while sharing their knowledge with other Australians.

The award winning online experience has drawn very positive feedback and has highlighted some unexpected benefits in the field of Indigenous education.

The ***Burarra Gathering Online*** experience, together with Questacon's program of community visits, come together in an exciting new project which aims to facilitate the sharing of science and Indigenous knowledge in person and online.

This project aims to create more opportunities for on-line experiences in other areas. Students and communities will be involved in the research, development and construction of on-line resources and material where traditional stories are told alongside modern-day science stories. This hopes to encourage a greater understanding and knowledge of modern communications technology while also facilitating links between schools, communities and stories old and new.

About the Author

Allen Rooney has a strong background in education and has been involved in science communication at Questacon for the past nine years. He has been involved in a range of programs including exhibition development and support, national teacher programs, public programs and the development of educational workshops for students. He manages Questacon's growing range of programs for Indigenous Australians.

This paper will be presented by Miss Lish Hogge, Coordinator- Shell Questacon Science Circus.

The Shell Questacon Science Circus is the major outreach program of Questacon, The National Science and Technology Centre in Canberra.

Parallel session 1: The role of science communication in dissemination of local knowledge

INDIGENOUS KNOWLEDGE IN SCIENCE COMMUNICATION: DILEMMA AND PERSPECTIVES

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Abstract

Relations between science and the knowledge developed by indigenous peoples all over the world have oscillated from disdain to idealization, and more recently to its validation (i.e. the methodological study of isolated knowledge considered useful and fit for integration in science). Science communication has adopted a similar position towards indigenous knowledge, disdaining, idealizing, and facilitating diffusion of some fields of research that validate it. This paper offers a brief overview of this topic and the possibilities created by social studies of science to enhance an equality relation between science and indigenous knowledge, in which science communication can play an important role.

Key Words: indigenous knowledge, science communication, equality, pluriculturality.

Text

We live in a pluricultural world, where between four and five thousand indigenous peoples subsist, each with its own world view, language, territory, history, and knowledge.1 And notwithstanding, although on paper they have been declared equal, the reality is that the relations that define their coexistence are far from equitable. Instead, they are characterized by a profound asymmetry, which in turn has permeated the different images of indigenous peoples that have been developed in western culture. Science's view of its homologue, indigenous knowledge, has not escaped this context, oscillating between disdain, idealization, and validation. And echoing this vision, science communication has reflected these three currents over time.

Disdain

This attitude has been the most common, and although it has its origins in ideas regarding pagan idolatry, it took shape in the 18th Century with the enlightenment vision in which the civilized nations, possessors of the only true knowledge, had an obligation to shed their light on the world's savage peoples, who lived immersed in superstition and ignorance. The idea of progress rendered such peoples' knowledge anachronistic, seeing it as cumbersome cultural baggage that needed to be eliminated though science, as part of the broader notion that the world's inferior peoples needed to be civilized by their

superiors. The idea of revolution 2 (Neolithic, industrial, etc.), dominated by the cult of the tool3, with technology as the embodiment of knowledge, became the cornerstone of this vision, which in turn took it upon itself to judge the knowledge of other peoples, both ancient and contemporary. This scheme can be observed in the unwaveringly linear historical perspective of numerous textes of science communication, and constitutes the core concept of the most widely held theories of biological evolution4.

While it is true that this vision lost considerable ground in the second half of the 20th Century, this decline was far less pronounced with regard to its assessment of knowledge, as confirmed by the terms that we continue to use when referring to indigenous knowledge (empirical, traditional, local, etc.), and the wholesale imposition of technological and educational models that ignore the knowledge of the people involved. One of the clearest examples of this attitude can be found in policies regarding nature conservation, in which science reduces the role of the peoples that have inhabited the regions that concentrate the Earth's greatest biodiversity, imposing a logic foreign to their culture and laying the blame for environmental deterioration on their ways of using and managing ecosystems. The way these and other related issues are communicated to the general public is a reflection of this vision5.

Idealization

This vision grew out of the idea of the noble savage, pure and wise, whose main exponent was Rousseau, but which New Ageism and other post-modern currents have exalted to counter the scientism predominant in western society. It is based on a vision critical of science, mainly for its lack of spiritualism, and therefore often reopens fields of enquiry hitherto unexplained by science in its efforts to reaffirm their metaphysical dimension6 and the profound wisdom they encompass. Its diffusion is common in the more sensationalistic publications.

Validation

Validation is the process of investigation whereby science examines isolated aspects of indigenous knowledge, passing them through the sieve of method and experimentation and integrating them in its own vision. Non-western medicine is one of the best known examples, and has served as a guide for extensive research in many areas, such as that related to medicinal plants. The problem is that this often leads to a pillaging of indigenous knowledge7, which today goes by the name of biopiracy. Also, what science can explain is limited by its approaches and instruments, as a result of which it ignores many knowledges that could prove extremely valuable, and maintains a focus that proves unfavorable to intercultural dialog due to its inherent contempt for cultural context.7,9 It represents, notwithstanding, the most rigorous means of communicating indigenous knowledge, and by confirming its validity, has contributed to its reassessment, even if on a limited scale.

Equality

As countless studies have shown, science is not neutral, and represents a confluence of social, philosophical, and ideological factors, among many others.8 The separation between nature and culture established in the western world view is totally artificial, and consequently there are only natures-

cultures2, and relations between the knowledges of different cultures – including western culture – must be on an equal footing. Thus, it seems valid to me to use as metaphor the Banach-Tarski paradox regarding the comparison of non-measurable systems, in which if we take two different systems, regardless of their size – the moon and a ping-pong ball, for example – for each element we define in one (1,2,3,…n) we will find an equivalent in the other (1',2',3',…n'), by virtue of which they will both be equal. This would be the beginning of a genuine intercultural dialog, between two types of equally dynamic knowledge, which, while they are equally conservative, are open to exchange, and to the construction of a pluriverse.2

Diffusion of indigenous knowledge ought to be based on this vision of equality -without idealization or disdain, without the constant need for validation-, requiring a strict correlation of categories, classifications, causal schemes, between indigenous knowledge and science. Finally, as Darrel Posey writes, indigenous knowledge is not local knowledge, "but knowledge of the universal as expressed in the local"9.

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PCST ENABLES INDIGENOUS RICE VARIETIES AND THE COMMERCIAL ONES TO CO-EXIST:

A CASE STUDY FROM THAILAND.

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Abstract

This paper reports on a case study from a rural village of Thailand about rice which is the staple crop of the country for over a thousand years, hence the "rice culture". It analyses how PCST has undertaken a significant role in bridging local wisdom (LW) and modern science and technology within co-intelligent process. Problems of indigenous rice varieties being replaced by the higher yielding commercial ones, and dependency on commercial seeds were resolved. It shows that the synergy of different knowledge systems, with PCST as a catalyst, could provide perspective for LW and modern science & technology to co-exist and enrich each other.

Key Words: local wisdom – civic scientist - modern science

Text

Deep-root Problems in the Fields

To all Asian countries, rice if life. Thailand has been known as a "Rice Bowl of Asia". However, thousands of indigenous rice varieties are at risk of being replaced by a few higher yield commercial ones. This not only poses a threat to biodiversity of rice varieties but also to the social and cultural aspects in knowledge of traditional rice farming.

The commercial varieties are produced by hybrid rice technology. Rice harvested from these hybrid varieties cannot be used for replanting because hybrid vigor is lost, resulting in lower yield and non-uniform crop stand. Then, the condition creates dependency on buying new seeds for each next planting season.

But in the case of the inbred (indigenous) rice variety, its flower contains both male and female organs, hence, it can self-pollinate and produce seeds that can be replanted (Fernandez, 2004).

Quest for Solutions

In Tapaan Hin district, Pichit province, central plain of the country, Sinchai Boon-aaj a young man returned to his hometown from the impact of economic crisis in 1999. He observed that the farmers in his village spent large amount of money on rice farming every year, but with minimal income. Expense on chemical fertilizer was the biggest part. He tried to find ways to use local natural fertilizer to lower the cost. Though it did not work, Sinchai never gave up.

After his own trial-and-error and observation in the fields, he hypothesized that commercial seeds were technically and chemically treated from the start. So, they acquired the taste for chemicals and did not thrive on natural fertilizer.

Where could he find the commercial Khaow Ploog or rice seeds for planting that would have simple taste for natural fertilizer?

Another frustrating fact he discovered was that most of the farmers did not grow the indigenous varieties they preferred to eat. Instead, they bought. Because they had to save space for growing commercial varieties that gave higher yield for better income from the flour industry.

He, together with a few villagers, continued the quest by reading, talking with the old wise men in and out of his village, and traveling everywhere in search of knowledge. The wise men they met taught them how to identify indigenous rice varieties, some traditional formula for natural fertilizers, pesticides, and how to deal with some common rice diseases. And they went to see Decha Siriphat, a retired scientist who now runs Khaow Kwan (rice guardian angel) Foundation in Suphanburi.

The scientist explained and taught them a simple way to regain hybrid vigor of replanting. And he demonstrated an innovative way of propagating the seeds using low cost and low-tech technique to produce high quality Khaow Ploog. This technical knowledge seemed impossible for them at the first glance.

After coming back to their village, they experimented by themselves and were surprised of the success. They have been sharing the acquired knowledge ever since among other farmers through networking and mass media. Now in their area, farmers grow indigenous rice varieties for their own consumption almost ten percent of the land. The yields are as high as the commercial ones. And for producing Khaow Ploog seeds of indigenous and commercial varieties, there are growing number of farmers using the technique.

The Role of Public Communication of Science and Technology –PCST

We witness more and more of the role of PCST as the country strives to enter a knowledge-based society logic. Fayard (2002) argues that "…when changes occur in the way of producing scientific knowledge, in the scale and the impact of their uses or in the availability of communication tools, as a consequence ways of doing PCST change too."

In this case study, a civic scientist - a scientist who involves himself more in the public arena, made possible the use of scientific knowledge to complement local knowledge. PCST might not just identify new audience, new channels, or new media for PCST's sake to be more effective in promoting modern science in the rural context. But it is a new perspective of communication that creates

good condition for these two systems of knowledge to interact and collaborate with mutual respect within sustainable framework. Then, later dissemination of this hybrid knowledge can be considered to reach all sectors with different ways and means. PCST would find itself to reach more people taking into account cultural and social values of the community.

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IN THE PATH OF POPULAR WISDOM

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Abstracts

In a little village in the northeast of Portugal there is a congress of popular wisdom (around hills and popular ways of treatment). A local priest organizes the congress, already on his XVII edition. Because the village is very isolated and has no doctors nearby, the priest wants to promote the local knowledge and the local ways of heal. A few years ago, the bishop interdicted him to be the organizer of this congress and named the congress as the witches meeting. Suddenly, the unknown congress becomes very known and popular for impostor and quacks. We decide to go there for two years with a team composed by an anthropologic expert and a sociologic person specialized in this kind of popular wisdom. We decide to make recoil of opinions and make a descriptive study of this congress (that we have transform later in a documentary). Working with a camera we have found four categories of persons: Those that have a popular wisdom about herbs and his power of heal some hills. Those who are true impostors and that work in the domain of beliefs and palliatives. Those that are informed and look for different experiences and different ways of heal. Finally those that are not well informed and that believe in supernatural ways of heal and go there looking for learn something with the impostors. But talking with the autochthones persons we wonder stood that in the beginning the congress was different. There were no impostors. Local persons argue that impostors arrived with the bad advertise made around the removal of the priest. The conference will be presented with the support of images from the documentary that was produced with this team.

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INTELLECTUAL CAPITAL OF THE SOCIAL SPACES: CULTURAL CAPITAL IN THE CREATION OF SCIENCE AND TECHNOLOGY

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Abstracts

Science and technology have acquired a prominent role in the social system of the Knowledge Age. Scientific knowledge, defined as technoscience, opens a multidisciplinary discussion about the knowledge creation processes based in the relationships between science, society and technology. Cultural diversity provides native, historical and traditional knowledge to these processes that take place in the global arena where species and populations mix (Bordieu, 1997). By doing this it is built a social space where a new concept, cultural capital, creates an intangible value (Intellectual Capital) added to the economic capital (material capital). The several social spaces which made up the Knowledge Society offer essential and relational concepts for the creation of Intellectual Capital. The road to Intellectual Capital is constructed by the agents of the social spaces that take part in the creation of science and technology. They combine native knowledge and modern science in a episode in which the Cultural Capital and the Economic Capital of the social space is developed. The value of the intellectual and material wealth possesed by nations, regions, counties or towns emerges throuhgout this dynamic process. The concept of Intellectual Capital of the social spaces is based in the interdependence between Cultural and Economic Capital. The interdependence between both concepts express the posibilities for the development of science and technology in a globalized context. According to Stiglitz (2003) the key value of culture may discredit some of the socioeconomic myths of the nineties. Therefore, it is time to develop an international science and technology system respectful to cultural diversity.