

The inter-university initiative CAPTURED: Bridging worldviews, ways of learning and ways of knowing

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INTRODUCTION

Capacity and Theory building for Universities and Research in Endogenous Development (CAPTURED) is a collaborative program of University for Development Studies, Ghana, Universidad Mayor San Simon, Bolivia, Foundation for Revitalisation of Local Health Traditions, India, and COMPAS The Netherlands.

The main aim of the program is to develop the institutional capacity for universities and research centres to carry out strategic research and to develop university training and capacity building programs that strengthen Endogenous Development for poverty reduction. Endogenous Development is development based mainly, but not exclusively, on locally available resources, local knowledge, culture and leadership. It has an openness to modify indigenous and to integrate outside knowledge and practices. It has mechanisms for local learning and experimenting, building local economies and retention of benefits in the local area.

Three steps are envisaged for achieving the objectives of the program. First, directed activity to enhance the capacities of the three lead agencies. Curricula are being developed and undergraduate and postgraduate students are being trained in the theories and methods of endogenous development. They are also starting to conduct research and elaborate theories that build on local and indigenous knowledge. Newly trained staff will be employed by the universities to increase the human resources for education and research. In the second phase, the focus will shift to outreach, enhancing the capacities of 13 other universities in the regions. The third phase will involve deepening and broadening the endogenous development activities within universities and research institutes.

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Funding is provided by the Netherlands government, Directorate General International Cooperation. The University for Development Studies (UDS) in Ghana and the Universidad Mayor de San Simon (UMSS) in Bolivia have played a pioneering role in this consortium in developing theories, research and field methods and curricula related to endogenous development and in outreach of these activities to universities in their respective regions. The Foundation for the Revitalisation of Indigenous Health Traditions (FRLHT) in India has been a pioneer in developing field methods for revitalizing indigenous health traditions, and in research and curriculum development in a similar domain in India. The partner institutions provide MSc and Phd programmes with a focus on Endogenous Development. Research is focussing of themes that enhance the understanding of indigenous knowledge and practices, that contribute to its revitalization and to interscience dialogues.

UNIVERSAL SCIENCE VERSUS PLURIVERSITY OF SCIENCES

In contemporary medical practice, there is a great diversity of theories and practices. In all corners of the globe, indigenous, classical, traditional healthcare and western bio-medicine co-exist. But virtually everywhere western biomedicine predominates and is given official status. Similarly, traditional ways of food production, nature management and governance coincide with modern forms. And also in these domains, modern science based practices predominate and are supported by government regulations, research, educational support and private sector investors. A number of initiatives are being taken to give more attention to complementarity and co-evolution of different ways of knowing. This article gives a short overview of some of these initiatives and places them in a historical perspective.

SCIENTIFIC REVOLUTION⁽¹⁾

The global domination of modern sciences and technologies emerged from the scientific revolution in Europe, between

1500 and 1800. The Enlightenment era was marked by a period of economic growth as well as colonial and political expansionism. The foundations of scientific reasoning were laid by various traditions including Empiricism by Bacon (1561-1626), Rationalism by Descartes (1596-1650) and Mechanism by Newton (1642-1727). The development of Evolutionism by Darwin (1809-1882) and Classical Economics by Adam Smith (1723-1790) built on this scientific revolution. In this process, the classical idea that valid knowledge would emerge from observation, common sense and from logical interpretation of the observable world was replaced by a rational, mathematical-analytical and empirical approach.

Bacon and Descartes agreed on the idea that the aim of science was the domination and control of nature, and assumed that scientific knowledge could be used to render humankind the masters and possessors of nature. To make it possible for scientists to describe nature mathematically, they had to restrict themselves to studying the essential properties of matter: those that can be quantified by their shapes, weights, numbers and movements. Other properties like color, taste or smell and particularly emotions or spiritual values were considered subjective and mental projections, and were therefore excluded from the scientific domain.

August Comte (1778-1857) postulated that in the course of history, science moved away from theological methods, where supernatural forces were considered to explain the course of things, and also moved away from metaphysical methods that seek to give answers based on pre-scientific dogmas and abstract concepts as reason and spirit. He designed a scientific method known as positivism. In positivism the combination of logical thinking and empirical perception can lead to laws that can explain and predict phenomena. According to Comte, this methodology can be used both for natural sciences and for the humanities. The only difference is that in the social sciences, the number of variables is much bigger; therefore, the degree of predictability is lower than in natural sciences.

In positivism, there is a certain order in the way reality can be understood: the pyramid of sciences.

Mathematics is the very foundation of logic. It allows the ordering of quantitative data about space and time and movement. So mathematics is a condition for mechanics, mechanics for physics, physics for chemistry, chemistry for the science of living beings (biology) and biology for human activities, which can be understood by anthropology, psychology, sociology, history and economics.

The empirical research cycle is a methodological framework

of positivism. It follows a sequence of steps that combines induction and deduction by the formulation of researchable hypotheses, based on theories, and the systematic collection and processing of data. This notion leads to the thesis that modern science is universal because of its robust and universal methods of research and rational and tested theories.

PLURIVERSITY OF SCIENCES

As early as the 18th century, in Europe, the assumption of universality of science was debated and challenged.^[2] The critics of this position made a distinction between Explanation and Understanding.

Positivist approaches can possibly explain how things are, but they fall short in understanding why things are happening.

Biologists and medical scientists realized that living beings show processes of growth, life, consciousness and intelligence. They saw that the object of their science was not reducible to matter only, and that linear and mechanical causality was not always obvious, and that they therefore needed a different approach for research. Also, historians, studying the course of human history, argued that the use of universal causal reasoning would assume that changes in cultures and in social systems would be due to general laws that also apply to human systems. This suggests that there should be something like a general human nature that would guide or determine the process of human development and thus make the future predictable. However, history shows that many historic events are the result of unique processes. History cannot be reduced to a series of events that follow universal laws.

There is a basic difference between natural biological and social sciences. The objects of natural sciences are physical objects. In biology, they are living organisms and in social sciences the objects have biological and also mental characteristics such as beliefs, intentions, ideals and values. Mind is an inner expression of the spiritual character of living identities. To understand this inner world, the methods of natural sciences are inadequate. The differences between the approaches of natural and social sciences are so big that the reduction of the scientific method to those of positivism is problematic. This then leads to the notion of scientific pluriversity.

This pluriversity was initially considered to apply to the sciences that emerged in Europe. In this article however we use this notion for all sciences that have emerged and exist in all parts of the globe. The Vedic knowledge system, as much as Chinese, African, and first nation American and Australasian traditions have their own dynamics and

histories. We therefore postulate that different cultures and historic learning processes have led to a great diversity of ways of knowing and diversity of sciences. Each of these sciences will have its strong and its weak points.

Our position is that through intra-cultural learning and inter-cultural exchange we can establish a transcultural and transdisciplinary way of knowing that builds on different contributions, and goes beyond the limitations of the individual cultures and disciplines. For this to happen, however, there is a need for a different way of dealing with the diversity of worldviews and ways of knowing. The dominant science should accept that it does not have a monopoly in the world of science. Marginalized sciences are invited to revitalize their knowledge base. And further, mechanisms for complementarity, synergy and co-evolution between different scientific traditions need to be sought.

DEALING WITH DIVERSITY OF WORLDVIEWS AND WAYS OF KNOWING

At present, a number of different approaches are being used simultaneously to deal with classical and traditional worldviews and ways of knowing. They vary from anthropological research, establishing institutional databases and traditional knowledge centers, initiatives for seeking complementarity between indigenous knowledge (IK) and outside knowledge to initiatives for revitalization of traditional knowledge and co-evolution of sciences. Below we will briefly explore each of these methods.

DOCUMENTATION OF TRADITIONAL KNOWLEDGE BY OUTSIDERS

Anthropological research

Anthropological research has basically played the role of studying culture, worldviews and knowledge of peoples outside the culture of the researcher. Different schools and approaches have put different emphasis and used different methods: structural and functionalist anthropology^[3] symbolic anthropology.^[4] Cognitive anthropology^[5] ecological anthropology or cultural ecology^[6] and actor-oriented anthropology^[7] are examples. From this emerged the different ethnosciences, as they are called, the study of specialized domains of traditional knowledge such as ethno-botany, ethno-zoology, ethno-veterinary and ethno-medicine. In most such studies, western science is taken as the baseline. Others, e.g. Charles Frake^[8] recognize indigenous, culturally agreed categories, which are to be 'discovered' by ethnographers by careful question and answer.

One of the limitations of the different anthropological studies is that the studies being carried out by outsiders are

often phrased in terms that are not recognized by the local people and are hardly accessible to them. Their role could be described as a conservation activity, but their impact on the protection or revitalization of indigenous knowledge is generally minimal. Organizing decentralized databases and traditional knowledge centers was proposed as a solution.

TRADITIONAL KNOWLEDGE DATABASES

Different databases and registers can be distinguished, depending on who takes the initiative, who controls and manages it, and who benefits from it. The UNU-IAS Report, *The Role of Registers and Databases in the Protection of Traditional Knowledge (TK)*,^[9] makes a comprehensive analysis of different databases.

Institutional databases

There are currently hundreds of millions of pages of published texts available on open access databases that include references to traditional knowledge. Natural Products Alert, better known as NAPRALERT at the University of Illinois, and MEDLINE are two of the best known examples of 'academic' databases that serve as important tools for information exchange associated with genetic resources and Traditional Knowledge. Likewise, the CABI Medicinal Plant Database in Wallingford, UK, holds over three million entries on scientific studies on medicinal plants.

Mike Warren,^[10] Jan Slikkeveer and others have promoted the establishment of a number of traditional Knowledge Centers not only in the USA or Europe, but also in a number of countries in the south. The aim was to enhance access and to allow more contributions from the grassroots to the databases on traditional knowledge established at academic centers.^[11]

Partly by building on these initiatives, other organizations have further documented the scope and incidence of traditional knowledge in order to make its content accessible for development initiatives. This has resulted in publications like database for best practices of traditional knowledge (UNESCO/Nuffic)^[12] and - Indigenous Knowledge for Development Program of the World Bank.^[13] The Encyclopedia of the history of science, technology and medicines in non-western cultures (Selin and Emeagwali) provides a comprehensive academic overview of the state of the art of non-western knowledge and science.^[14]

The BioZulua database was established by the Fundación para el Desarrollo de las Ciencias Físicas y Naturales (Fudeci) from Venezuela. It is an academic, scientific database, which contains information and data concerning indigenous communities in Venezuela related to traditional

medicine, ancestral technologies and TK, pertaining to agriculture and nutrition. It provides genetic profiles of every plant entry and the global positioning system coordinates of exactly where it grows.

The Traditional Knowledge Digital Library in India (TKDL) is a collaborative project between the National Institute of Science Communication and Information Resources, the Department of Indian System of Medicine and Homoeopathy and the Ministry of Health and Family Welfare. TKDL seeks to prevent the granting of patents over products developed utilizing TK where there has been little, if any, inventive step. Second, it seeks to act as a bridge between modern science and TK, and can be used for catalysing advanced research, based on information on TK for developing novel drugs. Information from about 36,000 Slokas (verses and prose) describing Ayurvedic medicine has been put on the database during the first stage of its development.

Registers established by law

National law in a number of countries has established registers for the protection of traditional knowledge. This has included the adoption of administrative, legislative and policy measures in many countries including the Indian Biodiversity Act 2002, Brazil's interim regime (medida provisoria No. 2.126-8) on ABS, Kenya's register of traditional healers, Panama's law on folklore, Peru's collective regime on traditional knowledge, Portugal's TK law, and Thailand's register of traditional medicine, as well as measures within the Andean Community, the Organization of African Unity, and the South Pacific Forum, providing for the registration of traditional knowledge.

Despite these efforts, the majority of these instruments are not yet operational, and discussion of their relative merits and limitations is therefore restricted by lack of firm experience upon which to base an analysis. In the case of Peru, indigenous people have already proposed a series of modifications to the law, including calls to broaden its scope to include not only knowledge, but also their innovations and practices relating to biodiversity, and for increased protection over TK in the public domain.

These data bases and encyclopedia can still be looked upon as *ex-situ* information systems. A study or database is compiled through an outsider's lens and provides information to outsiders. They generally study and describe IK from the perspective of western researchers or donor agencies. Amongst the millions of pages of TK available through open access databases, very little is available in the languages of the original custodians of such knowledge, making such knowledge inaccessible to the communities

and indigenous people from whose ancestors it was obtained.

SEEKING COMPLEMENTARITY BETWEEN IK AND OUTSIDE KNOWLEDGE

Since the middle of the 1970's, a number of development programs have built their work on traditional knowledge, and seek complementarity between IK and external knowledge. Efforts are made to combine the best of both traditional and outside knowledge.

NGO Co-operative databases

India has been one of the most important testing grounds for registers of traditional knowledge. These have included a range of experiences such as People's Biodiversity Registers, the Honey Bee Database and National Innovation Fund, the Farmers Rights Information System (FRIS) and GREEN foundation. The scope of knowledge recorded in databases in India is very broad, and includes knowledge on conservation and use of biodiversity, agricultural and farm practices, livestock management practices, water management practices, herbal medicine and human health practices, rural craft, and innovations in general. The registered knowledge has economic, sociocultural, ecological ethical and spiritual values. The databases display a wide diversity of objectives, and have developed distinct operating practices, which in turn have provided a wider range of experiences from which to inform national debates on the development of legislation-based TK databases.

An example of a worldwide effort to understand traditional knowledge and to develop an approach to development that takes the best of both traditional and scientific knowledge is: ILEIA, the Information centre on Low External Inputs and sustainable Agriculture (Haverkort *et al.*^[15]) This program was initiated to address on the experience of agronomists that in many situations in tropical areas, the application of technologies from outside (such as hybrid seeds, fertilizers, chemicals, machinery, credit systems etc.) were not always effective, and could even be disappointing for many reasons. Ecological conditions might be inappropriate for its application, price relations could be unfavorable, inputs might not be available, maintenance and follow-up systems could be lacking or it might not fit the people's social or cultural conditions, or other kinds of situations. It was concluded that for such situations a categorical or generic application of modern technology was inappropriate, and technologies needed to be found that would build on effective use of locally available resources. Methods for such LEISA farming included: increased use of local seeds and local animal varieties, use of unconventional plants and animals for food,^[16-18] use of botanical pesticides,^[19]

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microclimate management, intercropping^[20] agroforestry,^[21] organic fertilizers,^[22] water and soil harvesting,^[23] and integrated gardening and farming.^[24]

Many viable examples of innovative farmers around the world have been documented, and synergetic cooperation with outside experts could lead to diffusion and further adaptation and improvements of these local technologies.^[25-29]

All these methods are different from the time consuming and researcher centered anthropological and ethnographic methods. They are all participatory, place heavy emphasis on rural people's own knowledge, can be carried out in short time frames, and are open to non-conventional inputs from the rural people. However, these methods were not sufficiently able to revitalize and strengthen the traditional worldviews' ways of learning and knowledge base. Despite their deliberately participatory character, they mainly remained instruments in the hands of outsiders, development workers who were trained in western science and disciplines, and were often working for western development agencies. Their focus was often more on the search for effective solutions within the development arena than on understanding and enhancing the dynamics of traditional knowledge holders, their worldviews, values and traditional ways of learning.

REVITALIZATION OF TRADITIONAL WORLDVIEWS, WAYS OF LEARNING AND KNOWLEDGE

In a number of situations, it was learned that traditional people and indigenous experts choose to give priority to revitalizing and strengthening the traditional knowledge base. They see intra-cultural learning and Endogenous Development (ED) as a necessary prerequisite and first step towards intercultural dialog and sustainable development. Initiatives with ED aim at strengthening the dynamics of traditional knowledge systems. Such initiatives do not merely study traditional knowledge from a western perspective or build external knowledge on traditional knowledge, but take the traditional perspective as starting and end points for ED. Such initiatives start with expressing, understanding and appreciating the culturally embedded worldviews, ways of learning and theoretical frameworks of people by the people themselves.

Experience indicates that such an approach can culminate in revitalizing and enhancing indigenous knowledge and value systems.^[30-35] It can lead to empowerment and enhanced self-awareness of local and indigenous populations.

The International Council for Science and UNESCO organized The World Conference on Science in 1999. The objectives of the Conference were to help strengthen the commitment of ICSU and UNESCO's Member States and

other major stakeholders to science education, research and development, and to define a strategy that would ensure that science responds better to society's needs and aspirations in the 21st century.

The report^[36] affirms that scientific knowledge has led to remarkable innovations that have been of great benefit to humankind.

But at the same time, it emphasizes the challenge to use this knowledge in a responsible manner to address human needs and aspirations, and that proper interaction between science and local cultures is crucial to achieve this task. It states that traditional and local knowledge systems as dynamic expressions of perceiving and understanding the world, can make, and have made, valuable contributions to science and technology, and that there is a need to preserve, protect, research and promote this cultural heritage and empirical knowledge.

Partnerships between the science and technology communities and local and indigenous people will in many areas be essential for promoting sustainable development. The founding principle to foster positive interaction between holders of traditional knowledge and the scientific community is that collaboration must be initiated between equal partners. This goal cannot be attained unless partnerships are founded upon mutual respect and understanding, transparent and open dialog, informed consent, and just returns for the holders of traditional knowledge through the flow of rewards and benefits.

Re-vitalization of local knowledge and ED are gaining momentum due to their success in boosting peoples' self-esteem and determination to revive their own culture, and in improving rural life in sustainable ways. Intra- and intercultural dialog is central to the approach to enable communities to better understand differences and interactions between traditional and modern knowledge systems in order to reconstruct their own knowledge system, and to make better informed decisions about which knowledge (internal or modern external) to use.

RESEARCH, TEACHING AND DEVELOPMENT

Most universities and research centers in all corners of the globe use research methods, and teaching materials based on, or borrowed from, mainstream or Western sciences and technologies. This is a result of the colonial past, and is still being justified under the assumption that these sciences and technologies are universally applicable and relevant, irrespective of the economic, sociocultural or ecological environment, in which they are being applied. Primary and secondary education,

as also vocational training and teaching at colleges and universities, generally do not adequately prepare students to use and improve traditional knowledge. Such education often has the effect of alienating students from their cultural roots, and fails to enhance the dynamics of traditional knowledge systems. Modern education often makes students ill-prepared to work in traditional environments. Often they are educated to embrace modernity and to reject traditional knowledge. Modern knowledge, through the way it is presented in educational systems, generally substitutes traditional knowledge rather than complementing it. Hence traditional knowledge is not systematically subject to innovative processes nor further developed through experiments, publications, and debates, as in the case for modern knowledge.

Yet increasingly, voices from the South as well as from the North express the need for research, education and project approaches that address the specific perspectives, needs and potentials of non-western societies and environments.

In the different cultural scientific traditions, the approaches people follow to come to an understanding of the existing reality (ontology), the way people learn and acquire knowledge (gnoseology), the way they formulate their theories and knowledges (epistemologies) and determine their values and aesthetics (axiology), vary greatly. Together these activities constitute a specific science. And therefore we postulate that across the globe there is great diversity of sciences, each having its own strengths and limitations.

CAPACITY AND THEORY BUILDING FOR UNIVERSITIES AND RESEARCH CENTERS IN ENDOGENOUS DEVELOPMENT (CAPTURED)

CAPTURED is a new program of cooperation between universities and research centers, NGOs and rural communities in Africa, Latin America, Asia and Europe. The main aim of the program is to develop institutional capacity for universities and research centers in the South to carry out strategic research, development and capacity building programs that strengthen Endogenous Development (ED) for poverty reduction.

The proposal builds on the experiences of, and collaboration between three centers of excellence in Ghana, Bolivia and India and of Compas, an international program to compare and support ED. Endogenous Development is development based mainly, but not exclusively, on locally available resources, local knowledge, culture and leadership. It has an openness to modify traditional and to integrate outside knowledge and practices. It has mechanisms for local learning and experimenting, building local economies

and retention of benefits in the local area.^[37]

Specifically, the proposal brings together 16 universities from four continents to cooperate and share experiences in enhancing research, capacity building and field work in support of ED. The University of Development Studies (UDS) in Ghana and the Universidad Mayor de San Simon (UMSS) in Bolivia have played pioneering roles in the consortium in developing theories, research and field methods and curricula related to ED, and in outreach of these activities to universities in their respective regions. The Foundation for the Revitalization of Local Health Traditions (FRLHT) in India has been a pioneer in developing field methods for revitalizing local health traditions, and in research and curriculum development in a similar domain in India.

In cooperation with Compas, these organizations have been lead agencies in regional programs on worldviews and sciences.^[38]

Their activities have brought to light substantial demand for endogenous knowledge-related support services. This program for enhancing capacities of university research and education for ED in the South is proposed to address the lead agency's problems of limited capacity, so as to be able to scale up activities.

To this end it has proposed a three step approach.

First, specific actions to enhance the capacities of the three lead agencies in each of the three continents (2007-2009) have been undertaken. For this, the three universities will develop curricula and train BSc, MSc and PhD students in the theory and methods of ED, and embark on research and theory building that build on local and traditional knowledge from the Andes, West Africa and India. They will train and employ staff to increase education and research capacities.

Second, activities will be undertaken to outreach these activities and enhance the capacities of 13 other universities in the same regions. (2010-2011).

Third, to deepen and broaden the activities, more in depth studies, initiatives in development or poverty reduction, and international policy and scientific dialogs, involving many more scientific and development institutions will be initiated (beyond 2011).

The CAPTURED program offers a unique opportunity for building bridges between Vedic scholars and local experts in India, traditional experts in Africa and Latin America, and modern and postmodern scientists across the globe. We hope to contribute to a transcultural learning process

that enhances co-evolution of a diversity of sciences.

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