

## Transforming the epistemic culture of development

Academic-farmer interactions in Vietnam's Mekong Delta

Presented to 'New perspectives on enduring research questions in university-society interaction?'

INTERACT-UNI EU-SPRI Conference, University of Twente, the Netherlands, 9<sup>th</sup>-11<sup>th</sup> May 2012.

*Quy-Hanh Nguyen*

*Center for Development Research (ZEF), University of Bonn, Germany*

*Email: hanh.nguyen@uni-bonn.de*

**KEYWORDS:** epistemic culture, agricultural and rural development, academic-farmer interactions, Vietnam's Mekong Delta

**JEL CODES IF APPLICABLE:**

# 1. INTRODUCING ACADEMIC INSTITUTIONS IN DEVELOPMENT

Globalisation has transformed the way knowledge is produced, transmitted and applied as well as the way science in development is understood. Traditionally the role of science in development is pursued under the two prominent frameworks, in which science is a crucial factor of societal modernisation (modernisation theory) or an instrument of dominance (dependency school) (GÖRANSSON & BRUNDENIUS 2011:5). Towards global knowledge economies, science is a global institution and (scientific) knowledge has become a productive element for techno-economic development (EVERS ET AL. 2009). It is however argued from the sociology of development viewpoint that despite enormous data and information produced, vast machineries of knowledge seem to be less effective in producing “instrumental knowledge – knowledge that can be used to put information into social, political or economic action” (EVERS ET AL. 2009:56).

The positioning of science as “the premier knowledge institution throughout the world” (KNORR-CETINA 1999:1) and the universities’ monopoly of basic knowledge production are thus challenged. EVERS (2005:11) holds the view that science is “increasingly intermingled if not determined by the organisations that govern the knowledge-based world market”. A growing body of literature, under the umbrella of triple helix research, points out that the science, industry and university in their polycentric relations interact and take “the role of the other”, which is conducive for knowledge production and regional innovation (ETZKOWITZ 2003, EVERS 2005, ZHOU 2008). The rise of corporate universities illustrates a new educational role corporates take when traditional higher education cannot yet provide a learning and work blended model (NIXON & HELMS 2000). Universities are making internal transformation too, for example increasing their entrepreneurial activities and social development goals in teaching, research and technology development, which provides spaces for producing polyvalent knowledge with theoretical, technological, and commercial potential<sup>1</sup>. Several universities extend a new entrepreneurial (ETZKOWITZ 2008) or developmental (BRUNDENIUS & GÖRANSSON 2011) identity.

In developing and transitional countries such as Vietnam where the private sector is emerging and the development of triple helix is rudimentary, the third role<sup>2</sup> of academic institutions, including universities and research institutes, prominently state-governed, maintains the inclination to attach with developmental missions and tasks of the sector and local communities. An analysis by TRAN & NGUYEN (2011) indicates that the majority of academic organisations in Vietnam are not capable of providing sophisticated services to industry, and thus, firms tend to rely on their own or other firms regarding technology innovation. Yet the authors (ibid) notice that particularly in traditional sectors, such as agriculture, and in some dynamic parts of the country, for example the South, academic institutions perform a vital role in diffusing technical solutions to farmers. Indeed, academic institutions can perform a number of knowledge-related functions that connect and translate global knowledge and scientific research into applied technology that informs locally specified conditions.

Based on relevant data from in-depth interviews, observations and secondary sources collected during one-year field-research (April 2010-11) in the Mekong Delta, one of the largest, most active and productive agriculture regions in Vietnam, this paper examines multi-dimensions of knowledge-based transactions and interactions between academics and farmers. The level of analysis concentrates on the local knowledge system. This paper argues that such academic-farmer

---

<sup>1</sup> Etzkowitz (2008:30) describes this as the second academic revolution in which universities undertake an economic and social development mission. The first academic revolution occurred from the mid- 19th century with transformation from a teaching to a research institution.

<sup>2</sup> In the wake of the second academic revolution, the third mission of universities is identified as economic and social development, apart from the two traditional roles of education (teaching) and research.

knowledge exchanges transform, apart from the life of the rural population, the epistemic culture - the culture of knowledge production for rural development.

The paper in the next section traces the agronomists' lost and regained roles in Mekong Delta community development. To explore interactions between academics and farmers metaphorically conceived as a "water and fish" relationship, knowledge diffusion practices and developmental impacts are scrutinised from both "formal" and "informal" modi and spheres and through cases of farmers as knowledge brokers and generators in Sections 3 & 4. Section 5 revisits the "water and fish" metaphor in the light of partnership development, leading to the conclusion section highlighting a transformation that the culture of interaction between academics and farmers with interchanging roles of knowledge producers, brokers and users is turned into an epistemic culture of development.

## **2. LOST AND REGAINED: THE ROLE OF ACADEMICS IN MEKONG DELTA COMMUNITY DEVELOPMENT**

Known as the national "rice granary", the Mekong Delta, located in the south of Vietnam over an area of around four million hectares, is the greatest and most active region of agricultural production in Vietnam. It contributes to the total national production approximately 50% of rice (80% of rice export) and food production, 80% of fruit production and 60% of aquacultural production (NGUYEN 2006, NGUYEN 2008). Modernisation of the sector while ensuring sustainable development is the most challenge of all stakeholders. New issues related to climate change and regional water management necessitate joint efforts, resources and knowledge. The local knowledge system over the past decades has undergone transformative processes.

As presented in Figure 1, public organisations are predominant actors in the knowledge production system for agricultural and rural development in Vietnam and the Mekong Delta, despite emerging research organisations in the private and civil society arena. For the purpose of this analysis, public research institutes and universities/colleges will be focused.

Decisions on research organisation establishment and distribution, depending on historical contexts, are often made in line with the state's agriculture development policies and local comparative advantages. Two main research institutes in the Mekong Delta include: Cuu Long Delta Rice Research Institute (CLRRI), established since 1977 in Co Do district, Can Tho city and Southern Horticultural Research Institute (SOFRI), established in 1994 in Chau Thanh district, Tien Giang province. Currently, under the management of Vietnam Academic of Agricultural Science (VAAS), they are nationally leading institutes in their fields. They provide master and PhD courses, training courses for officials and farmers and technology transfer for the farmer community via science and technology transfer centers (STTCs).

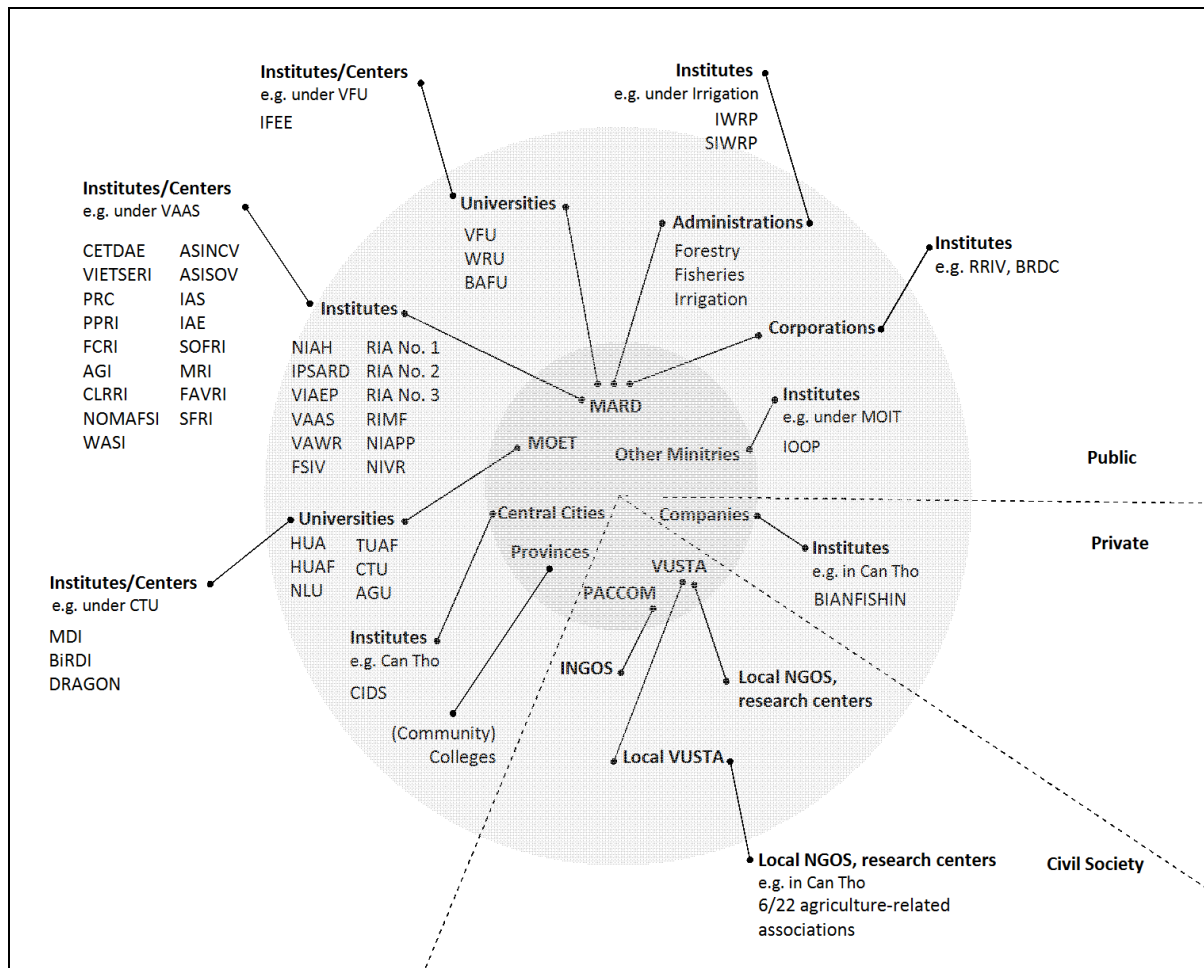
Can Tho University (CTU) is a regional-level university. It has various faculties and institutes with a long history and reputation in agricultural and rural development all over the delta.

- College of Agriculture and Applied Biology (CAAB) established in 1968 and College of Rural Development recently founded in mid-2011 as a demand of beyond-agriculture research
- Mekong Delta Development Research Institute (MDI) developed from a sub-department of CAAB in 1976 emphasises its strategic research on farming system development, plant resources and socio-economic policies. The two other institutes are Biotechnology Research and Development Institute (BiRDI) established since 1960s and Research Institute for Climate Change (DRAGON) founded in 2008 focusing on climate change, sea level rise and community resilience. Under-CTU institutes' missions concentrate on research, technology transfer and provision of advanced undergraduate programs.

Whereas, local universities and colleges often build up their education and research activities to meet the needs of local provinces which they are based in and serve. Significantly, the model of

community colleges is widely and rapidly developed in the Mekong Delta. These institutions highlight community ownership at the provincial level and community-based scientific and technological research (see further EPPERSON 2010).

Figure 1: The knowledge production system for agricultural and rural development in Vietnam (in reference to the Mekong Delta)



Source: Own presentation

The establishment of research institutes and universities/colleges has opened up and maintained constant interactions between academics and farmers in the Mekong Delta, which is often described as the “fish and water” metaphor (see further Section 4). However, the intensity of interactions allows us to distinguish three major periods of time with lost and regained academics’ roles in agricultural and rural community development.

**1980-1990.** This period is characterised by centralised agricultural production and collectivisation. The impact of the Green Revolution provided new opportunities of high yield varieties (HYV). Local farmers mainly relied on floating rice crops with very low productivity, proposing a need for crop model changes. Research organisations through central budgets carried out research and via STTCs transferred new technology to farmers. They played the role of the monopoly source knowledge for the rural community.

**1990-2005.** This period witnesses the agricultural privatisation as well as the emergence of agribusinesses. Farmers became more confident with HYV rice intensification and multiple sources of information from agricultural extension system, agro-companies and mass media. Research institutes were under internal structure changes with more organisational autonomy and declined state budget allocation. Their research and knowledge diffusion activities focused on agricultural diversification

models and sustainable development which did not yet attracted the interest and attention of the local farmers busy with income generation and economic development activities. Academics were losing their development positions and roles.

**2005-present.** This period remarks the regained importance of scientific knowledge and academic cooperation. Farmers have faced with new diseases and pest outbreaks due to intensive farming and pesticide dependence. Undecided by multiple sources of information with disintegrated and conflicted knowledge, farmers returned to scientists for legitimatisation. Commercial farmers and export-driven knowledge-intensive farming need updated and high-tech transfers which cannot be provided by normal public channels. Last but not least, the development of 'intellectual' farmers has required new methods and approaches for academic-farmer interactions and partnering.

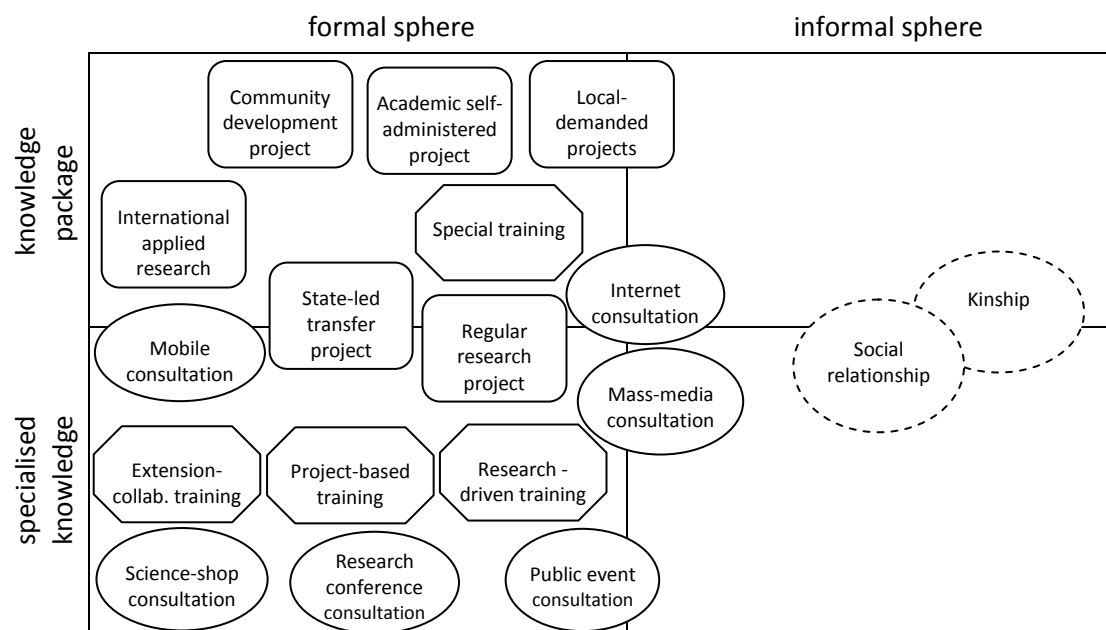
### **3. ACADEMIC-FARMER INTERACTIONS: FORMAL AND INFORMAL MODI**

The interactions between academics and farmers can be captured through an investigation into formal and informal modi. By distinguishing formal and informal, we wish to emphasise that besides formal interaction structures such as institutionalised organisations, planned projects or organised classes that are prominently promoted in literature and practice, less-informed informal and unofficial channels through kinship and social relations that are dynamic in reality should not be taken for granted. Then this differentiation is greatly for the purpose of this analysis. The formal and informal boundary, within a farmers' thinking system, can be far more blurred or indistinct.

Interaction modi which will be discussed in detail below are illustrated over formal/informal spheres and knowledge specialisation/package (Figure 2). We define three overarching formal modes including consultations, workshop and training courses, and projects (including knowledge transfer and community development). In the informal sphere, interactions motivated by kinship and social relations significantly translate scientific knowledge into local agricultural activities. Very often, an (in)formal mode resides within an (in)formal sphere. It is important to notice that an interaction mode can become rather plastic in spanning its inherited sphere where academics and farmers relations are not limited in one form of interaction. For example, academics and farmers maintain their "informal" knowledge and information sharing beyond the end of a "formal" research project.

Interactions that are under discussion in this section mainly refer to knowledge flows from academics to farming communities whether under uni-directional or communicative methods. Knowledge in diffusion can be specific within a subject aiming at an aspect or dimension of a problem or more comprehensive under a technical package towards complex and long-term issues.

Figure 2: Academic-farmer interaction typologies



Source: Own presentation

(Note: ○ consultation, ⬡ training, □ projects, ○ informal modus)

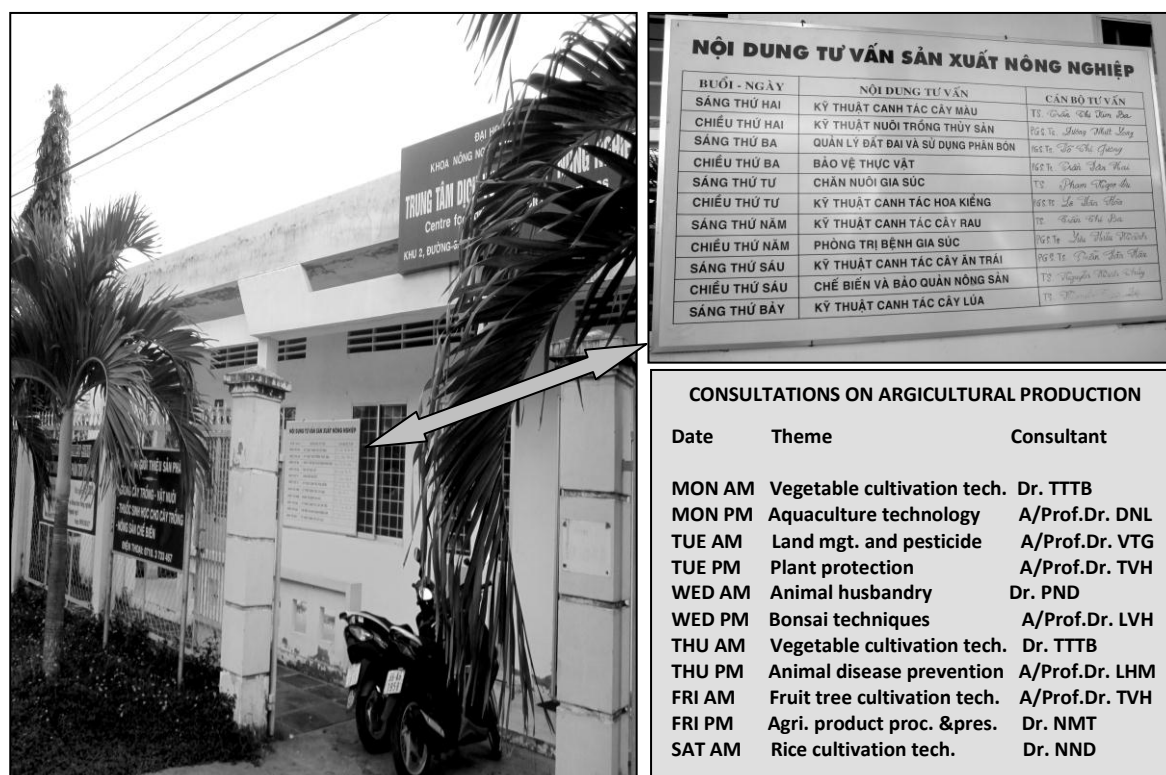
### 3.1. FORMAL INTERACTIONS

**Consultation.** Consultation sessions are a widely-applied knowledge transfer mode between academics and farmers in the Mekong Delta. They are increasingly diversified with the vast outreach of mass media and hi-tech devices into the rural life.

*Science-shop consultation.* STTCs are established as the main and resource-concentrated gateway to transfer knowledge to wider rural communities under the old-styled education and research system. This model has become less effective in processes of autonomy achievement of educational organisations with the state funding reduction and the growth and division of knowledge. Newly-structured organisations are more discipline-focused which are formed under colleges or faculties, for example, SOFRI, apart from its STTC, forms a fruit clinic focused on plant pathology. Under CTU, besides Center for Agricultural Science Services under CAAB, veterinary clinic is operated under Animal Health Department, CAAB. Under-CTU institutes such as MDI or BIRDI organise centers, showrooms, or seed supply points. Such multi-formed science shops sell agricultural input or technical products produced by local researchers as well as provide consultation, full-of-charge or free-of-charge, for farmers and all types of customers. Farmers can bring their plant or animal samples to the centers for hi-tech equipment supported examination needs and collect leaflets and brochures after the consultation for home reference. Consultation sessions can take place in person with schedule-fixed themes and consultants (see Figure 3) or via telephone in case of the SOFI Fruit Clinic.

One advantage of science-shop consultation is prompt answers to simplified problems farmers are encountering. However, its access seems to be more favourable for affordable households with telephone connections or residents in city/district centers where most of science shops are located. For academics, such consultation sessions are useful to inform the local current situation and over-time provide orientations for further research to more complicated issues.

Figure 3: Agricultural consultation provided for free at Center for Agricultural Science Services, CTU



Source: Author 2011

*Mobile consultation.* Institute researcher groups organise regular or urgent mobile trips to communities confronting plant/animal epidemic diseases. A vivid example is SOFRI mobile plant clinics. Community selection is based on epidemic assessments by researchers or demands submitted by local authorities. While Mekong Delta communities are focused, the team also operates tours to disadvantaged localities nationwide, for example, ethnic minorities in Lam Dong province to help with gardening improvements.

A trip often includes 7-10 plant 'doctors' with different specialisations (see Box 1). Information of local planting and disease situations has, via community representatives, to be collected and relevant 'prescriptions' printed in advance. Farmers were requested to bring plant samples collected from both healthy and diseased trees to the consultation session. Very importantly, plant disease books are delivered and kept by individual farmers. With registered household information details and recorded disease symptoms, disease causes, symptom expression and preventive methods, plant health can be monitored over a timeline. Mobile consultation sessions are taken place in a farmer's garden or in a community house with the participation of 100-150 local farmers.

Researchers and farmers show interests in mobile trips because of on-farm interactive contacts. Previously-trained farmers from SOFRI are encouraged to join, learn and share experience in these trips. One big challenge for arranging more regular mobile clinics in mounting need applications is perhaps limited funding allocation while researchers have to fulfil several teaching and research tasks.

*Box 1. The schedule of a mobile trip by SOFRI Fruit Clinic*

Epidemic outbreaks on longan trees are currently widespread and seriously affect longan-planting areas especially in Cai Be, Tien Giang. In addition, diseases are causing damage on citrus plants in many other localities. Therefore, the Mekong Delta Fruit C of SOFRI has planned mobile trips to help local farmers check and treat diseases on fruit trees. The scheduled timetable is as below:

- 24 August 2011: to Dong Hoa Hiep and Hau Thanh communes, Cai Be district, Tien Giang province (issues on longan trees)
- 25 August 2011: to Ngai Tu commune, Tam Binh district, Vinh Long province (issues on citrus plants)

Participating plant doctors include:

- Dr. Philip Neil Tayloran, expert from U.K.
- Dr. Nguyen Van Hoa , director of the Mekong Delta Fruit Hospital, plant pathologist
- MSc. Le Quoc Dien, entomologist
- MSc. Huynh Thanh Loc, entomologist
- MSc. Dang Thuy Linh, plant pathologist
- MSc. Nguyen Van Son, bonsai expert
- Eng. Nguyen Thi Kim Thoa, entomologist

Source: SOFRI website [www.sofri.org.vn](http://www.sofri.org.vn), translation by the author

*Scientific-conference consultation.* Universities conduct annual or every-two-year research conferences to inform among academia and to the public of their recent research results and innovations. In such scientific conferences organised by CTU CAAB, ‘advanced’ or project-involved farmers all over the Mekong Delta are also invited.

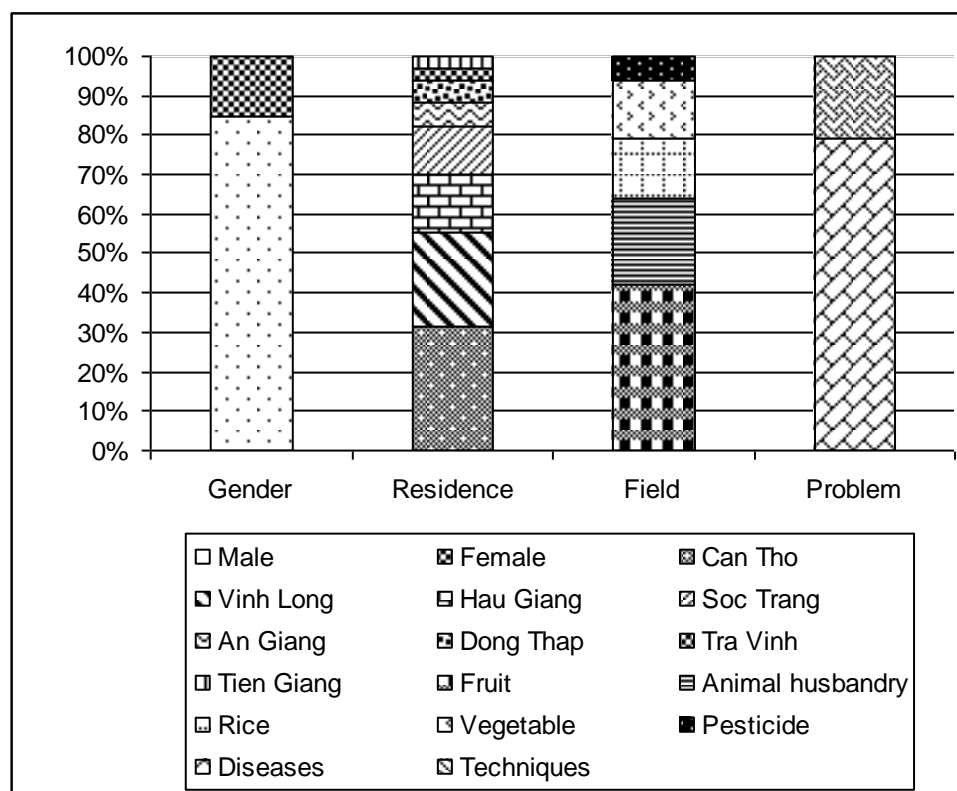
In attendance at plenary and thematic sessions, they have a valued chance to understand, from both scientific and practical reasoning, the significance, processes, results and impacts of projects they participated in. In a high scientific environment, they can share information and experience with agro- scientists, businesspersons and other farmers. Due to attendance requirements, this consultation service is mainly restricted to up-top farmers who are well-off and large-scale producers, yet their role in brokering new knowledge and technology to wider communities is still questionable.

*Public-event consultation.* There are increasing periodical international- and national-level agricultural fairs organised in rotation among Mekong Delta provinces under various rice, fruit, fish, aquaculture and rural handicraft themes. Those fairs usually combine exhibition sessions for the public and more closed thematic seminars and conferences as a scientific forum between researchers and policy makers. Farmers who visit institute/university stalls can be informed about their research activities and inventions and engaged in consultation sessions provided free of charge. This kind of consultation shares similar features as science-shop consultation, however the former might receive more diverse audience.

Our one-day observation of CTU consultation provision at an international agriculture fair held in Can Tho in 2010 indicates 35 visits of farmers (5 females) from eight Mekong Delta provinces (see Figure 4). Farmers’ questions have prominently focused on disease treatment and technical solutions for their fruit, rice and vegetable crops and animal husbandry.



Figure 4: Consultation for farmers by CTU academics at the Viet Nam International Agriculture Fair 2010 in Can Tho City (Date: 8 December 2010, N=35)



Source: Own presentation

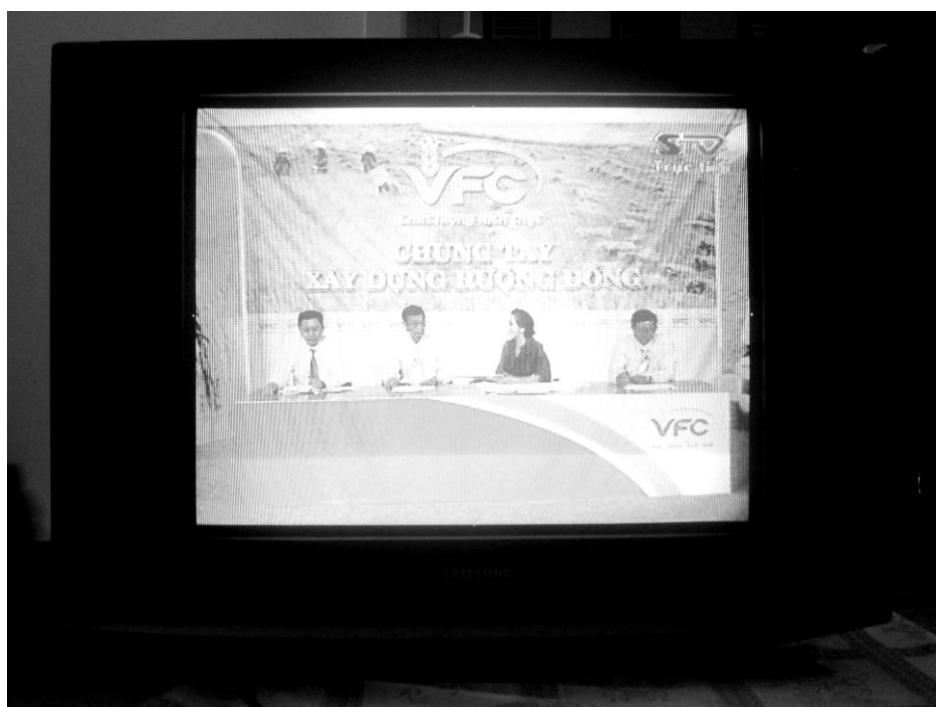
*Mass media-based consultation.* Consultation sessions led by academics are transmitted by printed newspapers or via radio and television programs. Most of agricultural newspapers at national and local levels have a column where farmers ask and experts answer, for example, the *Extension Bridge-Span* in the Vietnam Agriculture Newspaper. Radio programs on agriculture and rural development allot a certain time to respond farmers' inquiries. In a general manner, this kind of communication is characterised by a selection of representative questions and short and compact amount of responding information, mainly related to pesticide use, particularised agricultural practices or market information. As such, at the end of several replies, "direct expert consultation" is widely recommended.

Our farmer focus group discussions confirm that television is one of the most popular and important knowledge sources of farmers in the Mekong Delta. With the longer history, agricultural extension programs concentrate on technical procedures of specific agricultural activities and good 'models' of production. The recent booming of agricultural and rural development television series with regular live programs offers viewers a more communicative channel to interact with an agriculture expert trio including an academic, government official and agribusiness representative (see Figure 5). Themes of the programs are decided based on the purpose to implement a governmental program/policy, the significance evaluation by the television staff and in accordance with the farming seasonal calendar (a Mekong Delta local television survey in 2011 by the author). Around 20 farmers are purposively selected by the television station and invited to the film studio to pose direct questions to the experts while other viewers can send their questions via the hotline system. Untouched questions during a live broadcast will be collected and sent to experts for answers when possible.

Many of our interviewed farmers agree that television programs provide them with updated, diversified and visualised information and knowledge. However, effective knowledge acquisition

requires an uninterrupted and attentive (with note taking) viewing which is practiced by few farmers (Interview 199, farmer, male, Can Tho, 25.10.2010). Others become critical of the objectivity of suggestions made by experts in agro-company-sponsored programs (Interview 333, senior plant protection expert, male, Tien Giang, 14.03.2011). Also, the less modification of agricultural programs that stress an emphasis on technical presentation or general situation description without evidence-explored analysis is demotivating farmers whose technical knowledge is over time strengthened or those who need more comprehensive knowledge for their intensive farming (Interview 294, senior researcher, male, Can Tho, 14.12.2010).

Figure 5: A highly-presented expert trio on a live agricultural television program



Source: Author 2010

Based on the entertainment-education soap opera or drama formats, several radio and television programs have been also designed to promote farmer's perceptions and practice of integrated pest management and sustainable agriculture (HEONG ET AL. 1998, HEONG ET AL. 2008). In the recently-developed series of *Ke hay nong nghiep* (New Agricultural Ideas) broadcasted over Vinh Long Television once a week, each 15-minute episode comprises (1) a drama-based conversation in which farmers meet and discuss an agricultural issue or concept in the confusion of negative, transitional and positive values and (2) scientific consultation that legitimises and clarifies the discussed issue/concept (HO & ESCALADA 2011).

*Internet-based consultation.* E-consultation is often used in the recent agricultural extension, via website or email communication. Some university faculties and institute centers via development projects also set up websites to provide farmers with technical and market information and e-consultation. Although there have been a number of commune-level projects of computer and internet infrastructure improvement for farmers, only a small group of progressive farmers do explore internet-based knowledge for agricultural production. Such progressive farmers include:

- “Advanced” large-scale farmers who have to invest in high-technology because of their intensive large area farming. Examples include aquaculture or fruit commercial farmers.
- “Advanced” collective farmers: They are head of agriculture cooperatives, clubs or groups. Concentrated resource allocation from government and non-government organisations on

farmer grouping greatly benefits group elites, including access to new technologies (NGUYEN & NGUYEN 2011).

- “Advanced” small-scale farmers: They cultivate on their limited land area with rigorous scientific knowledge application. They are supported to learn and work with academics. Case 2 in the below section is an illustration (see NGUYEN & EVERS 2011 for detailed analysis).
- Intellectuals as farmers: They are elementary and secondary school teachers who are engaging agriculture activities for extra income generation. Statistics show that emails for research institute consultations are mainly sent by these teacher-farmers (Interview 332, researcher, female, Tien Giang, 14.3.2011).
- “Pseudo” farmers: They are officers or workers in urban areas at the same time own and work on their farming land in rural areas, either as income-generation activities or for leisure purposes (hobby farmers). Taking advantage of their internet exploration competence, they become active participants in internet-based consultations and other services.

**Workshops and training courses.** Organised in a class form with separated or combined theoretical and practical components, workshops and training courses (or training in general) provided by academics aims to diffuse new research results and achievements or new applied technologies and knowledge in the agriculture sector. Interactions between academics and farmers are observed in the below types of training.

*Extension-collaborated training.* Multi-level extension agencies relied on their schedule and budget organise regular extension activities. University/institute researchers are invited to report new research outcomes, deliver lectures or instruct new technologies. In case of epidemic outbreaks, extensionists cooperate with academics to conduct on-field investigation and provide disease prevention/control measures.

*Research-driven training.* Providing involved farmers with research results is very much dependent on research ethical practice or research project design. For research implemented by researcher individuals or groups, local farmers are hired to conduct research activities without being sufficient informed of research processes, (potential) findings and applications. There are two corollaries of this deficiency: first, the loss of opportunity for new technology improvement and application with trained farmers and on pre-piloted sites and second, the misapplication of immature technology by involved farmers who want to take risks.

In well-designed research projects, training is a component. Workshops with various stakeholders are held to inform research objective and disseminate findings.

The two above training courses and workshops are taken place in a commune’s hall, community house or farmer’s place. Presenters usually use PowerPoint software application and handouts (see Figure 6). Some scientific terms and illustrations and foreign language expression very much puzzle message delivery. Our observation is that farmers are passive listeners and do not take notes. What makes the training sometimes irrelevant is the open discussion section at the end of the course is that farmers pose questions about agriculture policy, market information or financial support, which is beyond the authority and capacity of trainers to answer.

Figure 6: A half-day training course on new aquaculture regulations, fish diseases and climate change provided by provincial aquaculture officials and CTU researchers for Can Tho City farmers



Source: Author 2010

*Project-based training.* Training is part of technology transfer and community development project. As such projects aiming at farmers' capacity building, training focuses on know how, practice-based transfers. Accordingly, academics work with farmers in more intensified, interactive and long-term interactions.

*Special training.* Education organisations offer special courses for farmers to start up a new profession or position. For example, when CTU School of Aquaculture and Fisheries (SAF) successfully developed artificial breeding of Pangasius (*Pangasianodon hypophthalmus* and *Pangasianodon bocourti*) or giant freshwater prawn (*Macrobrachium rosenbergii*) in the 1990ies, intensive courses were opened to transfer the technologies mainly to extension workers. Sharp-witted and large-scale farmers who wished without delay to grasp and apply the new technologies on their commercially-oriented farming registered for such courses. The course fee was paid by farmers themselves or funded by local governments. Each course may last a few months with theoretical and practical parts over the biological cycles of studied objects.

Another example is certificate half-month courses given by SOFRI to selected fruit farmers in the Mekong Delta and Southern Vietnam. The training is currently free of charge as it is covered by an international cooperation project. Aiming to train fruit farmers as "expert" farmers (*chuyen gia nông dân*), participants are equipped with (1) technical and specialised knowledge and skills, and (2) computer, PowerPoint presentation and group speaking skills. During the course, they also work in a laboratory to diagnose diseases on plants and ask to integrate their practical knowledge and experience into the lecture they are supposed to prepare and deliver in front of the entire class. Graduated farmers are expected to maintain an active role in vertical and horizontal knowledge diffusion upon their return to their communities.

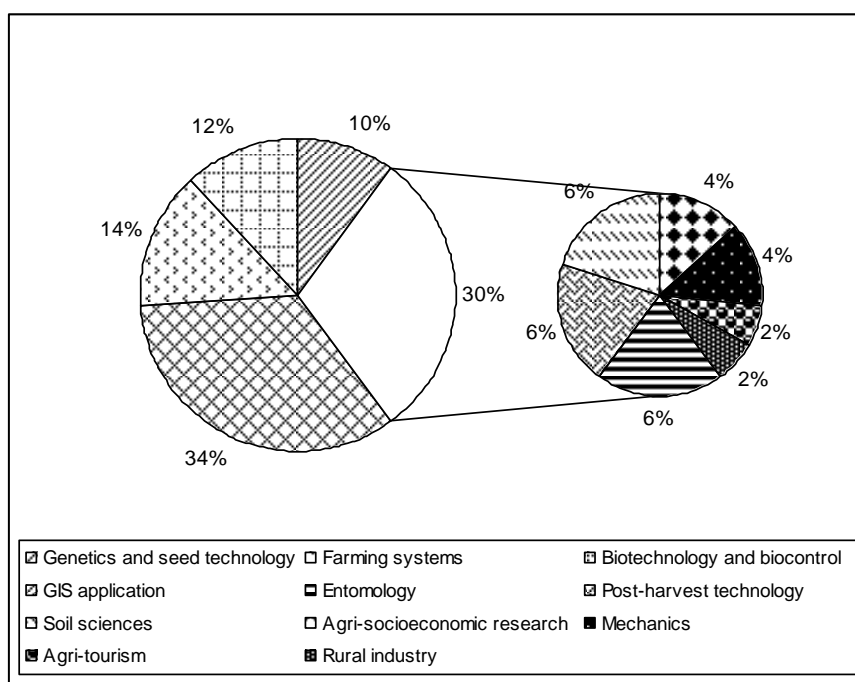
"In our first course, only 8 out of 13 participants were granted certificates. Those who fail have to re-sit the following course. Our "expert" farmers should make efforts to share knowledge and learn with other farmers, a task that cannot successfully be done if they are not professionally trained." (Interview 332, researcher, female, Tien Giang, 14.3.2011)

**Science and technology transfer projects.** Projects provide a wider space for academic-farmer interaction. Conventionally, science and technology transfer projects conducted by research institutes and universities target at extension workers and local officials who continue transfer new knowledge and technology to farmers. However, academics very often perform dual roles of knowledge producers and knowledge brokers, which is vividly illustrated through project design and implementation.

*State-led transfer projects.* These transfer projects are state-funded and thus have to meet pre-described administration and reporting procedures. Projects can be allocated by higher levels or from successful applications submitted under the extension system. Based on the log-frame design, such projects adopt technology-focused and “model” farmer-based approaches, which finally become best beneficial to better-off, large-scale and powerful farmers and local elites (NGUYEN & EVERS 2011).

*Regular (applied) research projects.* Researchers individually or in group carry out their regular research projects at state, ministry, institute and department levels. More localised applied research can be submitted and implemented through the provincial department of science and technology scheme (see BAUER 2011). CTU CAAB has taken the lead in province-levelled agricultural research projects in terms of coverage and quantity. Four focused areas of provincial cooperation are genetics and seed technology, farming systems, biotechnology and GIS application (Figure 7). However, provincial research projects might attract more attention and priority from academics if related administrative processes would be simplified and researchers have more spaces in their research and budget decision-making. Because scientists are high self-respecting and liberal in disposition, they would easily loose interests in research tightened with multi-levelled management and interlacing administration cobwebs (Interview 114, senior researcher, male, Can Tho, 03.09.2010).

Figure 7: Areas focused by CTU CAAB provincial applied research in 2000-2008



Source: Own presentation

*International cooperation research projects.* International cooperation in agricultural research in the Mekong Delta has evolved from “hard” investment in education and research infrastructure to “soft” capacity building through exchanges and recently towards research partnerships based on mutual trust and common goals in which research is co- designed, submitted for fund and implemented

(Interview 115, senior researcher, male, Can Tho, 27.08.2010). Agricultural research cooperation in which local researchers solely carry out the survey and input the data (BAUER 2011: 129) has given way to better-established knowledge-coworkership, challenging the potential success of old-styled collaboration (Interview 112, researcher, male, Can Tho, 24.08.2010). The long-recognised rice-research partnership between IRRI and Vietnamese research organisations over the past 5 decades can best illustrate such cooperation changes in essence.

It is important, in designing local or international research projects, besides scientific activities, to include funding and effort allocation for research information and dissemination activities for local stakeholders, not because of ethical reasons but also for the sake of interactive knowledge processes (cf. WALL 2008).

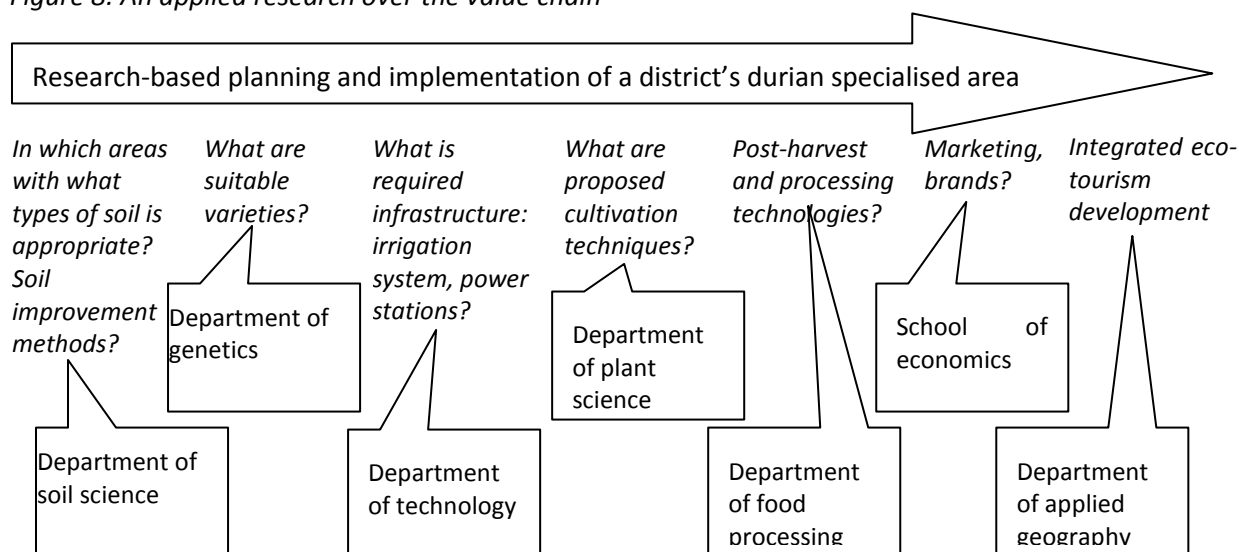
“In any of our research projects, local or international, we incorporate workshops and training courses in which local technical staff and farmers are invited, which is all the time approved. Language used in such training and leaflets should be simple, short and comprehensive for every farmers. These activities help farmers understand our research and provide a way to create research impacts on farming changes. Research ending with published journal articles does for me not live a full life.” (Interview 152, senior researcher, female, Can Tho, 06.10.2010).

*Academic self-administered projects.* Several veteran senior academics, through their long-established networks of alumniship, workplace and international cooperation, receive funding that allow them to design a combined interdisciplinary research and community development projects on their own assessment and prioritisation. A project management team formed with different disciplinary experts in the university select project sites and beneficiaries in cooperation with, not in decision of, local authorities. Duplication of integrated farming systems in the Case 2 of the next section or technology transfer projects for the development of around-campus communities are some illustrative examples. It is in the periphery of a research and community development project, of the role as a researchers and development practitioners that formal and informal interactions are intermingled, encouraging beyond-project communications and learning between academics and farming communities.

*Local-demanded transfer projects.* To what extent this kind of academic-farmer interaction is made possible is greatly dependent on the local leadership and endeavours in connecting science into local agricultural planning and development. Leaders from district governments have recently contracted with CTU academics for an all-inclusive agricultural development program with a knowledge-package transfer. For example, in Hong Dan, Bac Lieu province, researchers from multi-disciplines have worked to develop new rice variety and propose appropriate types of fruit and vegetable that are tolerant of acid sulphate and salinised soil of the district. Integrated models of mushroom farming, poultry and animal husbandry, and aquaculture are introduced with practical training. Fish-source and wine, traditional products of local people, are improved in quality with new technological application and now well-known with registered brands. Participating farmers have to pay 35 percent of the total contract cost.

Another example of local authority and academics of contract is an over-the-value-chain research and development project on a certain agricultural product as a local comparative advantage. In development of a 100-hecta durian (*Durio zibethinus*) zone for Cai Lay district, Tien Giang province, experts from at least 7 departments from 4 CTU schools and colleges (agriculture and applied biology, technology, economics and education) have involved in research and planning of planting areas, inputs, outputs, marketing issues as well as eco-tourism development (Figure 8).

Figure 8: An applied research over the value chain



Source: Own presentation

**Community development projects.** This is a special mode of interaction between academics and farmers in the Mekong Delta. The motive is that academics should do something to help poor communities around campuses that are located in rural areas. Different from other interactions, community work is emphasised with poor households prioritised despite indispensable technology and knowledge transfer.

CTU has a 100-hectare campus in rural Hau Giang province. It in fact serves as an agricultural experimental zone where Hoa An Bio-Diversity Experimental Research Center and recently-established College of Rural Development are based. To help poor neighbouring communities, CTU researchers implemented a number of continuous projects on local livelihoods and education development from different funding sources. CTU researchers' first interactions with local poor are through an Oxfam-funded women's empowerment project. Women formed saving groups of 15-25 neighbours and were trained on different agriculture-based income-generation models. Based on the local demand, researchers from Hoa An Center in the next project established a veterinary store to supply veterinary medicine, animal food supply and husbandry techniques. Women groups are still in operation with enhanced women's role in the community.

On recognising that there was a high rate of illiteracy amongst local children, CTU researchers decided to use a store-house to set up classrooms of what they called "classes of compassion" where children were enrolled their first grades with free provision of books and pens. At the present time, the school is developed into the formal education system of the province and 4 students from these classes are accepted for university education. More importantly, the local farmers' awareness about education is improved. Among many elements to the success of community development managed by academics, as a senior official of Hoa An center commented, is trust building, a process demanding high investment of time, knowledge and enthusiasm (Interview 145, senior researcher, male, Hau Giang, 29.09.2010).

### 3.2. INFORMAL INTERACTIONS

The above-analysed academic-farmer interaction modes are basically connected within formal contexts. As researchers are not only members of universities/institutes but also part of their families

and rural communities, knowledge diffusion between researchers and farmers can occur in less organised but possibly more interactive forms through kinship and social networks.

**Kinship.** Despite recently rapid urbanisation, the Mekong Delta's landscape and lifescape are prominent with rural features and styles. A number of city-dwellers, including academics whose families and relatives are living in the rural areas and doing daily agricultural activities. Through this connection that new knowledge and technologies are transferred to rural communities with academics' kin as first recipients.

A CTU senior researchers commented that before the finalised formulation of artificial breeding techniques of pangasius or giant freshwater prawn for mass education and dissemination, some researchers set up their own experimental facilities at home as a out-of-lab test as well as a source of extra-income. From these home trials and kinship knowledge sharing and learning that first fingerling supply houses have been developed, becoming the core of the supplier mushrooming in the following years. The head of fish seed supplier in Can Tho recalled his business commencement:

"In the mid-1990ies, my brother was a well-known fish seed supplier in this quarter. In fact, my brother was a university lecturer specialised in education. He had a sworn brother, also his colleague, who worked at the department of aquaculture. It is this sworn brother that provided training and instructions for my brother's business establishment. I worked with my brother until 1996 and then moved up here to start my own operation. We did not have enough pangasius seed to meet the demand for intensive farming for high "movement" years. Now that pangasius farming is uncertain and risky and thus farmers are trying various breeding stocks, I have to diversify my fish varieties supply as well." (Interview 289, farmer, male, Can Tho, 11.12.2011)

The last 2-3 years when the pangasius and aquaculture sector in general have been confronting difficulties in exports, many fish seed suppliers went under whereas business backed up with knowledge inputs from kin academics have been better operated because of its quality confidence, unless the owner wishes to change the job.

**Social relationship and learning for change.** Social relationships further diversify interactions between academics and farmers and challenge any typologification attempts. We emphasise on as below the four main trends as processes of learning for change in which formal and informal modi interplay.

- Formalisation: Social contacts and introduction ignite formal learning.
- Informalisation: Formal interactions provide an environment for social learning.
- Relativisation: Social contacts change into long-term communication and relationship of relatives.
- Partnerisation: Formal interactions are the foundation for long-term partnership.

Formalisation and informalisation are two main processes of formal - informal sphere spanning. By formalisation we mean the process in which social or informal forms of interactions are used to connect farmers into more formal learning spaces. Social contacts or informal talks with academics turn out to be a key moment of change of farmers by opening up new learning and working opportunities and environments. Without a doubt, such moments of change in order to create real change needs processual forces and efforts by farmers themselves. The below belle example illustrates how ideas and suggestions from informal talks with an academic led to training participation and new work for a farmer from Can Tho who have made use of the opportunity and create a change for her life and her community.

Mrs. T.D.H. from Yen Hoa village, Can Tho used to be a local secondary school teacher. She left her job after 10 years of teaching due to a low salary. She then stayed at home



and helped her husband with home-scaled business. In 2005, she started raising frogs. Soon in the following years she became well-known as one of the first froglet supplier in the Mekong Delta when frog raising has been promoted as an income generation model for farmers over the delta. Her business ideas arose along her courtesy conversations with a university lecturer who shared a hospital room with her father of whom she took care during his one-month medical treatment and multiple recheck in Ho Chi Minh City. The lecturer working at the Agro-forestry University once mentioned about their new Thai frog breeding experiments and recommended her to learn and raise this kind of frogs as their research suggested frog culture was of high development potentiality for Mekong Delta farmers. Taking the academic's suggestions seriously, she, with the introduction by the lecturer, many times visited the university to see and learn how frogs and other animals were bred and reared. Acquired with new technical knowledge and equipped with materials and leaflets, she decided to invest in frog culture, bought new frog broodstock from the university and started to apply what she had learnt into the real situation of her farm and water source. Her husband who was graduated with an aquaculture-specialised university degree but hardly worked in the studied field now had a chance to reuse his knowledge in frog artificial breeding. With combined knowledge sources, they with less difficulty succeeded in produced a brood of 1,000 froglets from 10 male and female frogs, making profits in excess of 900% from froglet sale. For many years, she has been an exclusive froglet supplier with customers from Can Tho, Hau Giang, Soc Trang and many elsewhere from the delta. (Narrative generated from Interview 269, farmer, female, Can Tho, 01.12.2010)

Quite a reverse process of formalisation, informalisation describes the continuation of academic-farmer formal interactions into less formal forms or context of knowledge application. Obviously, farmers frequently keep contact details of and keep contact with academics whom they have worked with, met or known through training, consultation or even radio/television programs. By informalising their interaction modes with academics, farmers wish to have prompt and more effective answers to their problems, increasing their possibility and intensity of adopting new knowledge for their agricultural production development. Other farmers through their engagement in academics' work, i.e. experiments or research, learn novel technologies as well as more scientific methods, which are then applied in their production activities. The following vignette is about how a farmer has employed what he learnt from working as a rice experimental assistant for CLRRRI on their farms and farming planning.

Compared with many others with working experience of ten years and over, Mr. N.V.D. is one of the newly-recruited workers to help CLRRRI's rice experiments. By contract, their working period is office hour-based all year long, except on September when the water is rising. His duties as a rice experimental assistant related to the life cycle of rice plants include rice transplanting, care-taking, harvesting, grain counting and storing under direct and close guidance and directions of researchers. Over time, he has learnt new rice cultivation techniques and old methods which are done with tremendous care and written monitoring. He had better knowledge about varieties under prioritised experiments, policy recommendations, and high/low demand by the market. He and his wife have a one-hectare field where normal rice has by season been replaced and updated with new varieties developed and recommended by CLRRRI researchers and new technologies he acquired. He has sold his certified<sup>3</sup> seeds to farmers and seed centers.

---

<sup>3</sup> The hierarchical system of rice seeds include breeder seed, pre-basic seed, basic seed, and certified seed. Farmers in the Mekong Delta and in Vietnam in general are still largely dependent on "uncertified" seeds that they randomly selected and saved from their previous crops. It has been promoted a wider use of certified seeds by training certified seed farmers and clubs. Pre-basic and basic seeds are produced and provided by universities, research institutes and seed centers to certified seed producers.

He often shares new knowledge and technology with interested farmers. (Narrative generated from Interview 197. farmer, male, Can Tho, 24.08.2010)

Relativisation is a special form of informalisation, with an emphasised affectional relation. As above mentioned, farmers tend to keep academics' contacts and increase their informal interactions through telephone, visit or other social activities. Seeing academics as all-aspects-of- life experts, very often farmers not only ask questions related to technical fields but also problems they face in their everyday life. Such so frequent contacts in both direct and indirect manners, besides knowledge flows from academics to farmers, enhance close relationships as relatives. As relatives, academics are often invited to these farmers' within-family anniversary celebrations and parties. The similar cases can be observed with local extension workers. Though further evidence is needed, our observation is that this relativisation practice is more popular in the Mekong Delta compared other regions in Vietnam. From a culture and personality perspective, this practice can be explained by the two main characters of Mekong Delta inhabitants: tolerance and respect for righteousness.

Tolerance is developed from Vietnamese culture-based synthesis and Yin inclinations situated in ecologically-favourable conditions of the Mekong Delta where various cross cultures and peoples meet. Tolerance is manifested by acceptance and respect for other cultural habits and customs, co-existence of different religions and religious beliefs, and admission of personalities of either extremes with high amplitudes. Respect for righteousness is another distinctive feature. Resulting personal traits include generosity, chivalrousness and frankness. Community bonds are not notably built on mutual assistance among those who are well acquainted with each other within stable, closed and well-structured villages in rural Northern Vietnam, rather on willingness to protect and help others in need regardless their origins or relations and high hospitality to any home visitors and guests are clearly observed. Swore brotherhoods or friendships are important linkage of members in open peasant communities in the Mekong Delta. (Ideas mainly extracted and translated by author from TRAN 2009)

In the context of such cultural practices, relativisation is consolidated by farmers' esteem and gratitude accorded to academics whose provision of solutions and new knowledge can create a change for their households and communities. From the academics' side, they also form and maintain, during their long engagement with farming communities, a network of "*ruot*"<sup>4</sup> farmers as key informants for their community-based activities. They are the closest group of academics' satellite farmers.

"Experienced researchers have their "*ruot*" farmers. Their relationships are built on mutual trust and time-testing." (Interview 331, senior researcher, male, Tien Giang, 14.3.2011)

Based on established trust, the farmers are invited to join different research and development projects carried out by academics. In agricultural development cooperation projects between Vietnam and some African countries, these farmers among other well-trained ones are sent abroad to work by side with local farmers on fields for direct knowledge exchanges.

Partnerisation is the most sophisticated process of academics-farmer interactions in conceptual, practical and affectual aspects. Its product is the partnership which is often discussed as what is most needed and should be achieved in interactions and relations between academics and farmers. When two knowledge worlds meet, partnering should be based on mutual respect and objectives. It means that in knowledge work, flows are two-dimensional and knowledge is co-produced. It needs a

---

<sup>4</sup> "*Ruot*" literally means intestine. In Vietnamese language, usually it is collocated with nouns such as father, mother, brother, aunt, etc. to assert a blood relation. The term becomes difficult to be translated here.

reconstruction of one unified universe ontology in development by a new design about human practice that includes plural worlds and knowledges (ESCOBAR 2011).

#### **4. BEYOND FORMAL AND INFORMAL INTERACTIONS: FARMERS AS KNOWLEDGE BROKERS AND GENERATORS**

The above section has discussed multi-directional webs of academics-farmer interaction over formal/informal spheres. In most cases, however, academics are knowledge generators and transferors while farmers are recipients of knowledge and development, on which partnership can be hardly realised. This section delves into cases of farmers through their interaction with academics have performed as knowledge brokers and generators. They are “barefoot” experts as mass media names them, “advanced” farmers as the community praises them or just “normal” farmers who everyday work in the field but are willing to share others their accumulated experience and knowledge. The following is the presentation of three cases as groupings of individual stories.

##### **Case 1: Farmers as first adopters**

Our farmers’ interviews reveal the number of cases in which farmers through their informal and formal interactions with academics have learned and applied new technical knowledge and farming models. Such applications have brought higher productivity and higher income and lifted them out of previously economic difficulties. Of course, new technology adoption is not always a simple straight arrow from scientific knowledge inputs leading to improved production outputs and better income for farmer households. Inside the in-between black-box is struggle of new and old knowledge, amplification of sources of knowledge and experience, including from family members and constant learning by doing. Stories of above frog and seed rice farmers both tell similar knowledge localising efforts.

Residing desultorily and working unconnectedly in rural communities, these first adopters often focus and become proficient through on-field practice in their one specific area of agricultural production, for example frog rearing, seed rice production, papaya planting, or water-melon farming. As their work is not always known by the local authorities and extension officials whose interests are greatly intended to project-based demonstration farmers under current promotion or campaign, their specified knowledge is likely to be mainly shared with within-community or same-farming-model farmers who get to know and visit them. Though it is often that knowledge sharing of this kind is quite limited in terms of number of followers and space of knowledge transmission, for example in the above case of seed rice farmer, he has exchanged new production techniques among 5-6 neighbouring households, large apprentice from many provinces in the delta however can be observed in high-economic value models such as frog raising. There are three major farmer-to-farmer knowledge-sharing patterns from our analysis:

- Non-sharing because of the menace of shrunk market share with the growth of producers. For example, a papaya farmer from Can Tho in consideration of this threat does not want to tell or teach (even with high suggested payment of fee) anyone about his successful production. A local commune agricultural official commented:

“Farmers like him (the papaya farmer) are selfish in exchanging knowledge because they do not want others to have better results than they do and get better market access. Another factor is the community spirit. In a community where farmers are active and interactive in community work, they organise joint efforts for road construction and economic development activities. Knowledge is also better shared among farmers in such a community.” (Interview 203, commune agriculture official, male, Can Tho, 26.10.2010)

- Partial-sharing because of willing to share, capacity to share and knowledge itself (NGUYEN & EVERS 2011:16-17)
- Full-sharing though information provision and direct throughout-the-process training. This is the case when farmers do not see more producers as competitors; they have alternative income sources; training are paid as mutual agreement; their knowledge sharing are encouraged through training courses and teaching material preparation (e.g. SOFRI fruit farmers); or they feel a need to help other farmers (because they are also farmers or because they have been supported by academics and it is their turn now to help further their community). The frog-raising farmer explained:

“Descended from a peasant family I thoroughly understand difficulties farmers are facing. I am willing to assist those who are in need. I transferred frog breeding techniques to many farmers from other provinces; some stayed at our house for days to learn it. I instructed them with my best knowledge, though I know I might loose my customers and this job one day. I can find another work then.” (Interview 269, farmer, female, Can Tho, 01.12.2010)

It should be noted that throughout knowledge localisation and learning from doing, farmers propose technical adjustment and changes, initiatives and innovations. Such little modifications or variations sometimes turn out to be major determinants of the success of whole technological adoption process. For example, decisions of the level, warmth and velocity of water supply to brood frogs are very important for hatchery, which are not in detailed described in training documents but can only accurately measured from practice.

## Case 2: Farmers as knowledge brokers

Compared with Case 1, this groups of farmers are well connected with academics and among themselves. Their interactions with academics is first established by their participation into the VACB<sup>5</sup> project managed and implemented by CTU researchers to learn and apply new knowledge, enhanced by their taking over practical component in academic’s training courses and maintained through frequent informal communication channels.

The farmers stated that as the main bread winners of their newly-formed families they have worked very hard for a better life. What makes these farmers different from other farmers is that, when selected as project beneficiaries, they made use of the opportunity to work with and learn from scientists/researchers in order to solve obstacles to farming and accumulate knowledge from the project courses and through their own practice. Formal educational attainment defines the ability of farmers to learn, but the desire to learn determines their knowledge diffusion and reproduction achievements. After a (sub)system has been successfully implemented on their farms, the farmers are then instructed by project researchers/technicians to set up the same model for other project participants. Through this process, new knowledge is transferred to other households, whilst the farmers’ knowledge and capacity are also enhanced via the training-the-trainer mechanism. Following the termination of the project and based on their capacity and personal qualities, they are selected from among other project beneficiaries to become collaborators with university faculties. They are paid to assist in running the more technical components of VACB training courses held by the university, and are responsible for on the spot practical training in a certain VACB subsystem, during which they try to link their instruction with the theoretical element taught by university researchers, by using their own language and experience to achieve the course objectives. Through the continual process of situated learning in action in close consultation with the researchers, the farmers become what

<sup>5</sup> VACB is a farming system designed to make small-scale rural farming more sustainable through integrated horticulture (V), pisciculture (A), animal husbandry (C) and biogas installation (B).

is viewed as “advanced”. However, they provide another development roadmap of “advanced” farmers, with its departure based on advanced technology/knowledge acquisition and mastering. Their economic growth is generated from intensive farming on their current land, while proactive knowledge sharing and brokering bring them professional confidence and local trust and respect. They have developed partnerships with international non-governmental organisations and local authorities and inter-provincial client groups. Their job has also become more professional through diversified farmer clients and new issues and problems they have faced. Besides technological transfer, they have to take care of the whole course of knowledge transfer and practical application of their clients while maintaining interest in their colleagues’ motivations, investment capacity and other traditional and cultural factors that influence the transfer process. Their brokerage professionalism has triggered the moving from mere knowledge exploitation to knowledge exploration at this stage. (Extracted from NGUYEN & EVERS 2011)

What is significant to notice is that they have coalesced to form networks/communities of practice to share knowledge and joint product supply. Horizontal knowledge diffusion is done through CTU and other development projects training involvement, contracts with farmer’s groups and within neighbours and local farmer’s organisations. Such farmer-led knowledge brokering functions as a key link to translate knowledge into the broader farming community. In addition, new knowns and unknowns are increasingly framed and developed through farmer’s experiments and testing in local conditions and knowledge brokering experiences, which need to be properly managed.

### Case 3: Farmers as innovators

The main characteristic of this group of farmers is their untiring passion, love and zealotry for agricultural home-made experiments and developments. They are effective producers on their farms, but their innovative power is actually kindled and flourished in the contact with academics via knowledge interactions. Their accumulated knowledge is gained from long-term self-practice and learning process supported with external learning and exchanges with local and international scientists, experts and local farmers. Their inventions include new varieties of plants, for example pest-resistant, salt-tolerant, indigenous rice seeds, novel technical procedures, production tools and machines or innovative ways of thinking and practice in agricultural production.

Before the national reunification in 1975, Mr V.V.C. from Tien Giang was a well-known rice grower in the region for dominantly higher productivity. He was invited by CTU to deliver regular talk with students about his in-field practical experience. On such visits, he learnt rice multiplication techniques from academics. One day, a CTU agronomist gave him an envelop with 8 grains of IR36 rice seeds, the last seeds of this type because distributed amounts to localities in the delta could not be kept after a high flood. Not a long time later, new rice plants was bred and filled up his 3 hectare field. This year, brown planthopper (*Nilaparvata lugens* Stål, BPH) outbreaks spread over the delta, which seriously injured fields with contemporary varieties and endangered crop yield and food security. Surprisingly, BPHs landed in his field for a while and fled away without causing any damage. In three years (1977-79), he produced and provided more than sixty tons of pest-resistant rice seeds, helping the delta escape from a food crisis by a narrow margin. Since then, agro- academics and officials, even state’s leaders and managers, have visited his home more often to exchange information and knowledge and promote his experimental work, the same way as he travelled to talk about his experience. (Data taken from TIEN TRINH 2011a)

The work of Mr. N.V.L from Bac Lieu or Mr. T.T.H. from An Giang provides other examples of farmers who are devoted to rice selection and breeding. Their achievements are gained again from patient and steady on-farm experiments backed up

by knowledge and skills previously equipped by formal breeding technology training courses delivered by CTU MDI or CLRRRI. Among hundreds of their new-developed rice lines, many varieties have been recommended for wide application, even some are nationally-recognised. Rice breeding successes have pushed and pulled farmers to work closer with academics. Through this partnership have they learnt to work with more scientific methods and expert's thinking and had chances to go abroad and share experience with farmers in the world. (Data taken from TRAN 2011, BAO VAN 2011)

Besides rice breeding, Mr. D.V.C. from Tra Vinh is famous for providing consultations to farmers to rescue 'diseased' rice fields. He pursues and practices the method that he calls 'positive therapy' which heightens the concept of the "existence will" of rice plants. Before any chemical treatment action is decided, he examines very carefully the disease sample and encourages other farmers to follow the same methods. (Data taken from TIEN TRINH 2011b)

Farmer D.V.C. is taking consultation work with knowledge and skills of an expert and his 'positive therapy' practice is quite close to the idea of integrated pest management (IPM) lengthily discussed in academic books. His success is not relied on words or written arguments other than practice-based concepts and actions. Care/caring principles (see NGUYEN 2012) suggested as a lodestar in localised conceptualisation of IPM and sustainable agriculture development are nicely realised and promoted in the reality by farmers like Mr. D.V.C.

The above are selected examples of innovative rice farmers in the Mekong Delta. Innovations and inventions can widely be found in fruit planting, aquaculture and agricultural mechanics. Applications and impacts of farmer's innovations are sometimes far beyond specifically-originated conditions and locations.

## **5. "WATER AND FISH" METAPHOR REVISITED: TRANSFORMATION OF THE EPISTEMIC CULTURE OF DEVELOPMENT**

In Vietnam's Mekong Delta, "water and fish" is often used as a metaphor to describe the symbiosis and collaborative relationship and interactions between academics and farmers. The metaphor's connotation has been extended together with transformative academic-farmer relations and interactions.

The extended metaphor, nevertheless, very often would be: "fish needs water more than water need fish". That is farmers need academics who provide them with new knowledge and technology for agriculture and rural development. Accordingly, following out the metaphor's spirit, universities and research institutes have been encouraged to take responsibilities for transferring their new knowledge and technology as well as helping disadvantaged community out there to develop. These tasks become more obvious with campuses surrounded by poor resource populations. Even when concentrated transfers through STTCs have been replaced by bottom-up approached and communicative methods, for many academics, that expert's knowledge is superior remains unchanged in their thinking and practice.

For senior researchers who have long experience working with rural communities, it is unwise to keep "insipid water" or non-interactive knowledge exchange and learning with farmers who have rich understandings about environments and changes. CTU academics, for example, for generations of researchers have developed a research culture that respects local knowledge and resources. It is explained that:

"For more than 300 years, the inhabitants of the Mekong Delta have been making the best uses of the biological resources for subsistence. They have managed to overcome

all the adversities in climatic, soil and water conditions to produce enough food, fiber and shelters for themselves, generations after generations. Through their rich practical experiences, by trial and errors, they have invented ways to take advantages of the annual flood water, which at time reached more than 1.5 meters in the fields. They conquered the toxicities of acid sulphate soils and saline soils in order to produce valuable crops and animals to share with the whole societies. And they made much more for their communities to survive and to thrive on. But these popular inventions were usually localized within the original communities; they were not spreading widely due to natural barriers, poor communications and transportations.

More recently, when formal education and training coupled with scientific research in the agricultural sciences to contribute toward rural development of the Mekong Delta, scientists started to experiment ways to improve the Delta. The wise scientists usually tried to learn the experiences from the local farmers who had lived there for generations, and whose practical experiences were still localized only in the communities. These experiences were precious because they had been well tested. The scientists' job at that time was to understand the process and the conditions (particularly soil and water conditions) and then tried to make some improvements using the latest technologies that the farmers did not know. The resulting improved technologies were then extrapolated to other communities having similar soil and water conditions." (Vo-Tong, Xuan cited in NGUYEN 2006:v)

Even so, farmer's knowledge is exploited for the purpose of accumulated scientific knowledge while farmers are pure information providers or low-cost hired workers. They are employed to carry out experiments about which they are less informed. As a consequence, farmers remain dependent on outsider experts' knowledge. Community's knowledge autonomy for development cannot be achieved. The dynamics of local innovative in a more uncertain context of and pressure from basin water resource management, climate change and food security cannot be fully understood and harnessed.

This paper attempts, via the analysis of the dynamics of local farmer's knowledge brokering and generation, to provide a reconstruction of the "water and fish" metaphor that emphasises that academics and farmers are partners in creating and diffusing new knowledge for agriculture and rural development. "Partnership" does not mean to invite farmers for innocuous participation into a pre-designed project, rather it is a process of development co- planning, implementation and evaluation. Also rural communities have undergone changes that facilitate a real partnership construction:

"Currently, a number of farmers get ahead of scientists in developing and preserving new plant varieties. In the past, sole experience guided farmer's breeding activities. Several recent participatory breeding courses organised by universities and research institutes have provided farmers with scientific methods and techniques. The amalgamation of experiential and scientific knowledge in farmer's experiments promises an increase of quantity and quality of creative outputs and innovative farmers. (Interview 153, senior researcher, male, Can Tho, 6.10.2010)

We highly respect farmers who manage to do experimental research and praiseworthily many of them have shown great achievements. Despite low formal educational attainment, they are smart and experienced: They prove their capacities not only in plant breeding but many other areas. What is more appreciated is that these farmers are effective knowledge brokers towards other farmers inside and outside their community. There are several initiatives and innovations farmers pioneer and which are still unknown to scientists. (Interview with CLRRRI Director, data taken from TIEN TRINH 2011c)

To avoid local romanticism or romantic localism, it is crucial that academic should take a lead to create the foundation of partnership. Participatory rice variety selection and breeding projects by CTU or CLRRRI are good example to start up a network of innovative farmers. These question of maintaining such a network which is growing increasingly complex requires academic-farmer cooperative mechanisms, in both formal and informal modi, taking into account the farming community as a whole despite a priority of 'advanced' farmers. The culture of interaction between academics and farmers with interchanging roles-taking (of knowledge producers, brokers and users) is turned into an epistemic culture of agricultural and rural development. Only when this culture is nourished could the extended metaphor be re-written: "vivid water and lively fish".

## **6. CONCLUSIONS**

To summarise, the paper has analysed different modi of farmers-academics interactions in the Vietnam's Mekong Delta. While formal and informal modi are distinguished by their more closed or open boundaries, knowledge fluid blurs the distinction between formal and informal spheres. Indeed, academic and farmers interact in a space of integrated forms of interaction, multiple roles and relations and uninterrupted chains of questions and answers stimulated by academics' "out-of-the-real-time" research and "in- the-real-time" daily production activities of farmers.

The four processes of formal and informal knowledge interweavement and interplay have been described. Expert's knowledge receiving processes by farmers can be the formalisation of informal contacts and conversations, or informalisation of formal communication modi in everyday life and situations, even relativisation of interactions by the development of a closer relationship. Partnerisation is a process to put the academic-farmer interactions to a new high. Where local knowledge is valued and partnership cultivated, farmers are taking new roles in knowledge brokering and generation and new knowledge is co-produced.

The discussion has illustrated knowledge-based interactions between academics and farmers involve in on three kinds of actions: technical, pragmatic and ethical as described by IMMANUEL KANT (elaborate discussion by MÜLLER-MERBACH 2006). The interactions are not technically to fulfil research or knowledge transfer activities or solve farmers' practical problems, but pragmatically they are related to rural community development, especially the development of the poor and disadvantaged, the hidden rural population prevented from knowledge and resource rich project. Ethical action includes the compliance of ethical requirements in research as well as determination of science-based justifications in knowledge diffusion impacted by different interests and policies. As such, a success of an individual knowledge diffusion transaction or a more sophisticated project should include a trisection of knowledge for technical, pragmatic and ethical action.

The research highlights fluid and multidirectional processes of knowledge generation and diffusion for agricultural and rural development in which agricultural scholars and producers involve. It challenges the culture of knowledge creation for rural development rooted in the dichotomy between academics as knowledge producers and development experts and farmers as passive knowledge receivers for development. Instead, the culture in which knowledge-based procedures, processes and practices are interferentially transmitted, hybridised and adopted between knowledge worlds is turned into an epistemic culture of development, which nourishes interactive and generative global-local, science-everyday and source-recipient knowledge(s).



## ACKNOWLEDGEMENTS

This paper is based upon and part of a PhD research undertaken within the WISDOM Project / Knowledge Management Work Package by the Centre for Development Research (ZEF), University of Bonn. The author is grateful to Prof. Dr. Hans-Dieter Evers, Prof. Dr. Solvay Gerke and Dr. Gabi Waibel for academic supervision and support. Useful comments by Ngoc-Khanh-Van Nguyen are gratefully acknowledged.

## BIBLIOGRAPHY

- BAO VAN. 2011. Nhung Chuyen Gia “Chan Dat” - Ky 4: Xuat Ngoai Trinh Dien Lai Tao Lua (“Barefoot” Experts – Series 4: Going Abroad for Rice Breeding Demonstration). Thanh Nien Newspaper [Online]. Available: <http://www.thanhvien.com.vn/pages/20110819/nhung-chuyen-gia-chan-dat-xuat-ngoai-trinh-dien-lai-tao-lua.aspx> [Accessed 04.04.2012].
- BAUER, T. 2011. *The Challenge of Knowledge Sharing: Practices of Vietnamese Science Community in Ho Chi Minh City and the Mekong Delta*, Berlin, Lit Verlag.
- EPPERSON, C. K. 2010. An Analysis of the Community College Concept in the Socialist Republic of Viet Nam. PhD, University of Missouri- St. Louis.
- ESCOBAR, A. 2011. Sustainability: Design for the Pluriverse. *Development*, 54, 137-140.
- ETZKOWITZ, H. 2008. *The Triple Helix: University-Industry-Government Innovation in Action*, New York and London, Routledge.
- EVERS, H.-D., KAISE, M. & MÜLLER, C. 2009. Knowledge in Development: Epistemic Machineries in a Global Context. *International Social Science Journal*, 195, 55-68.
- EVERS, H.-D. 2005. Global Knowledge: The Epistemic Culture of Development. In: Hassan, R. (ed.) *Local and Global: Social Transformation in Southeast Asia*. Leiden and Boston: Brill.
- GÖRANSSON, B. & BRUNDENIUS, C. 2011. Background and Introduction. In: GÖRANSSON, B. & BRUNDENIUS, C. (eds.) *Universities in Transition: The Changing Role and Challenges for Academic Institutions*. Ottawa: Springer.
- HEONG, K. L., ESCALADA, M. M., N. H. HUAN & V. MAI. 1998. Use of Communication Media in Changing Rice Farmers’ Pest Management in the Mekong Delta, Vietnam. *Crop Protection*, 17, 413-425.
- HEONG, K. L., ESCALADA, M. M., N. H. HUAN, V. H. KY BA, P. V. QUYNH, L. V. THIET & H. V. CHIEN. 2008. Entertainment-Education and Rice Pest Management: A Radio Soap Opera in Vietnam. *Crop Protection*, 27, 1392-1397.
- HO, V. C. & ESCALADA, M. M. 2011. Ecological Engineering TV Series in Vinh Long, Vietnam. Available: <http://ricehoppers.net/2011/02/ecological-engineering-tv-series-in-vinh-long-vietnam/> [Accessed 01 April 2012].
- KNORR-CETINA, K. 1998. *Epistemic Cultures: How the Sciences Make Knowledge*, Cambridge and London, Harvard University Press.
- MÜLLER-MERBACH, H. 2006. Three Kinds of Knowledge, Reflecting Kant’s Three Kinds of Action. *Knowledge Management Research & Practice*, 4, 73-74.
- NGUYEN, N. D. 2006. *Farmers, Agriculture and Rural Development in the Mekong Delta of Viet Nam*, Hanoi, Education Publishing House.

- NGUYEN, Q. H. & EVERS, H.-D. 2011. Farmers as Knowledge Brokers: Analysing Three Cases from Vietnam's Mekong Delta. *ZEF Working Paper Series 86*. Bonn.
- NGUYEN, Q. H. & NGUYEN, N. K. V. The Common Good for the Few: Double Marginalisation in Ethnic Minorities in Vietnam. Conference on International Research on Food Security, Natural Resource Management and Rural Development, 2011, Bonn.
- NGUYEN, Q. H. Everyday Threshold Concepts: Implications for Sustainable Agriculture Education in Vietnam's Mekong Delta. The 6th International Technology, Education and Development Conference, 2012, Valencia.
- NGUYEN, T. B. 2008. Development of Agricultural Extension in the Mekong Delta of Vietnam. Master, Ghent University.
- TIEN TRINH. 2011a. Nhung Chuyen Gia "Chan Dat" - Ky 1: Nguoi Nong Dan So 1 ("Barefoot" Experts – Series 1: The No. 1 Farmer). *Thanh Nien Newspaper* [Online]. Available: <http://www.thanhvien.com.vn/pages/20110817/nhung-chuyen-gia-chan-dat.aspx> [Accessed 04.04.2012].
- TIEN TRINH. 2011b. Nhung Chuyen Gia "Chan Dat" - Ky 5: Nguoi Sua Lua ("Barefoot" Experts – Series 5: The Rice Repairer). *Thanh Nien Newspaper* [Online]. Available: <http://www.thanhvien.com.vn/pages/20110821/nhung-chuyen-gia-chan-dat-nguoi-sua-lua.aspx> [Accessed 04.04.2012].
- TIEN TRINH. 2011c. Nhung Chuyen Gia "Chan Dat" - Ky 8: Do la Nhung Nguoi Tien Phong ("Barefoot" Experts – Series 8: They are Pioneers). *Thanh Nien Newspaper* [Online]. Available: <http://www.thanhvien.com.vn/pages/20110824/nhung-chuyen-gia-chan-dat-ky-8-do-la-nhung-nguoi-tien-phong.aspx> [Accessed 04.04.2012].
- TRAN, N. C. & NGUYEN, V. H. 2011. Vietnam: Current Debates on the Transformation of Academic Institutions. In: GÖRANSSON, B. & BRUNDENIUS, C. (eds.) *Universities in Transition: The Changing Role and Challenges for Academic Institutions*. Ottawa: Springer.
- TRAN, N. T. Tinh Cach Van Hoa Nguoi Nam Bo Nhu Mot He Thong (Cultural Characters of Vietnamese Southerners as a System). Southern Vietnam in The Modern Time Workshop (Nam Bo Thoi Ky Can Dai) Organised by Vietnam Ministry of Science and Technology & Association of History Science, 2008, Can Tho.
- TRAN, T. P. 2011. Nhung Chuyen Gia "Chan Dat" - Ky 3: Ong Tam Lua Giong ("Barefoot" Experts – Series 3: Mr. Tam The Rice Breeder). *Thanh Nien Newspaper* [Online]. Available: <http://www.thanhvien.com.vn/pages/20110819/nhung-chuyen-gia-chan-dat-ong-tam-lua-giong.aspx> [Accessed 04.04.2012].
- WALL, C. 2008. *Agrorods of Western Uzbekistan: Knowledge Control and Agriculture in Khorezm*, Berlin, Lit Verlag.
- ZHOU, C. 2008. Emergence of the Entrepreneurial University in Evolution of the Triple Helix: The Case of Northeastern University in China. *Journal of Technology Management in China*, 3, 109-126.