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Learning Steps Towards a Sustainable Development Strategy

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Abstract

The paper points at methodological advances of Farming Systems Research (FSR), Indigenous Knowledge Systems (IKS), and Participatory Communication and Extension (PCE).

In this context, it highlights

- *Indigenous* Knowledge Systems Research (IKS), which could strengthen FSR's endeavour to understand the cultural rationality of indigenous knowledge, especially if it does not coincide with the rationale of so-called scientific knowledge.
- Participatory *Communication and Extension (PCE)* shall provide the opportunity and the methods to farmers to reflect their problems in a step-by-step fashion so as to gain a systematic understanding of their situation.

This paper argues that certain postulates and methods of the FSR, IKS, and PCE are complementary to solve a recurrent problem in rural development, namely the gap between researchers' cognition, on the one hand, and farmers' decision-making, on the other. The paper illustrates such a cognitive gap with experiences from three-and-a half year research on high-altitude production systems in Ecuador.

The paper closes with a learning step approach which proposes how agricultural and social scientists, communicators and farmers can better cooperate in designing a sustainable development strategy.

Introduction

It is widely recognised that Farming Systems Researchers were among the first development experts to favour an holistic approach for uncovering and systematising the conditions to rural development (Gardener and Lewis 1996: 120). Recently Professor Doppler stated that the driving force of FSR is to understand the complexity of the social, economic and natural world in which farm families live and make decisions (Doppler 1991). But, respectively, he also pointed at several bottlenecks (Doppler 1996). My presentation is concerned with only one of the mentioned bottlenecks, namely:

- the gap between researchers' cognition and farmers' decision-making.

I will give three examples of cognitive gaps between *us*, an interdisciplinary research team, and *them*, the indigenous farmers who make a living in the uppermost mountain areas in

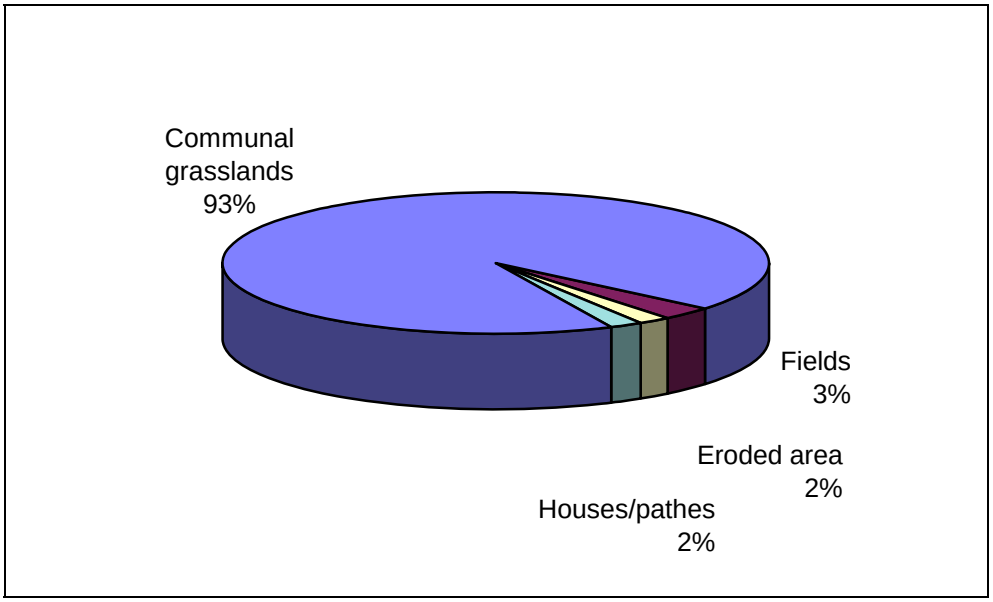
Ecuador, the paramos. Based on these experiences, I will argue that development proposals derived from a problem definition, which is not fully congruent with the farmers' assessment, have little chance to be accepted by the target group. But if our inputs as developers are rejected, we need to think about how to become better service providers. To that end, I suggest a learning step approach towards designing a development strategy with farmers. In this context I will highlight the specific contributions of FSR, IKS, and PCE to foster sustainable development.

Three Examples

My FSR project worked in 6 different agro-ecological zones in Ecuador from 1986 to 1994. Between '89 and '92, I was a coordinating researcher on production systems in the paramo areas (a high-mountain grassland). We surveyed 29 communities before we selected a research area typical for high-altitude production systems. Thus we had gained an overview of different farming situations in paramo areas (Hess 1990, 1992).

First case

We found that the vast stretches of mountain grassland are the largest natural resource for peasants in paramo areas, covering 80 to 98% of their village areas. Crop production in the paramos (located above 3400 m to 3600 m a.s.l.) is a risk-prone enterprise, as the cold climate and low productivity are serious limits to agriculture. To promote crop production at these altitudes did not seem to be advisable from an economic perspective and even less so from an ecological perspective as cultivation accelerates erosion. ***WE*** were hoping to identify ways to improve the economic efficiency of animal production thus making the largest resource, the grasslands, more profitable to the farmers.



Land use in the paramo community of Michacala, Cotopaxi Province

Farmers found the idea to make better economic use of the grasslands appealing. However, they highlighted the importance of cash crops such as onions and garlic for their present income. An analysis of economic data proved the relatively high contribution to the farmer's income by one cash crop. In the community of Michacala, for example, the income generated on less than 1% of the farm land provided double the cash income than animal production on 93% of the entire land!

Even after documenting the relative importance of a single cash crop as source of income, ***we*** continued to emphasise the potential of animal production, and expected a similar stance from the farmers. Indeed, animal production and its derivatives are highly important components in the farmers' economy and livelihood. However, when thinking about increasing cash income, farmers favoured cash crops over animals. ***WE*** could see and hear that opinion but we did not make it the starting point for a development process because the project goals referred only to promoting animal husbandry and because fostering cultivation at these altitudes and slopes seemed ecologically unsound.

Table 1. Average family income in Michacala, 1989

Productive sector	Annual Income (in US$)	Annual Income (in %)
Cropping	195	36
Animal	97	18
Wage labour	164	30
Trade	87	16
Total	543	100

Source: project survey

Second case

We found that farmers in the project area could change their way of breeding guinea pigs. A colleague and specialist in guinea pigs conceived the lack of control of reproduction as a major cause of low productivity and high mortality. He recommended putting up wooden dividers to separate female from male animals. Such a construction needed more space than was available in the cooking huts where guinea pigs usually roam freely. The change of habit and the minor investment have been considered obstacles in following his recommendation. Much to the delight of my colleague, the president of our study community declared himself willing to take part in the experiment. The fact that the president took part in the experiment has been seen as proof that the arguments of my colleague were convincing.

Yet ..

weeks later I was in a conversation with the village president. We were talking about an illness called *sinister person*, which I still had trouble understanding. The president tried to explain to me how animals might suffer from *sinister person*. He mentioned that his guinea-pigs had, until recently, suffered a lot from the sickness, especially since he had become

president of the community. As president, he is frequently visited by villagers complaining to him about an estranged husband, angry relative or envious neighbour. Angry, aggressive villagers easily acquire a sick-making illness (*sinister person)*, and brought it to the president's hut during a visit. The village president actually believed that this illness had killed most of his once numerous guinea-pigs. He pointed out that he had solved this problem with the help of my colleague, by evacuating the guinea-pigs out of his kitchen where those angry visitors usually arrive. He put the guinea pigs into wooden divides in one of his adjacent storage huts, following the instructions of my colleague.

In concluding, the village president did not at all change his way of keeping guinea pigs because he somehow recognised the breeding advantages of what he was told by my colleague, but because the suggestions made sense to him in terms of his own evaluation, in which he tried to protect his guinea pigs from a mortal illness (see Hess 1997: 79-81).

Third case

The last example of a cognitive divide between us and the farmers refers to our opinion that paramos have an important hydrological function. The dense grasscover with its very profound root system serves as a sponge which absorbs the torrential rain falls of the equatorial winter. The root system retains the water during the rainy season and dispenses it slowly into the rivers during the dry season. Ongoing cultivation and the overgrazing of the natural pastures have diminished this water regulating function.

Two examples:

- The Ambato valley is famous for its fruit and vegetable production. Valley agriculture depends on irrigation. Since the high-altitude grasslands have become overgrazed or have been put under cultivation, their water regulating function has been destroyed. Today, if it rains in the high mountains, water comes rushing down the rivers and devastates large valley areas due to inundation. On the other hand, if rain becomes scarce during the summer time, rivers and irrigation channels dry out, too. This has very negative economic consequences for the once most productive mountain valley of Ecuador.
- Soil erosion in the paramos has increased sedimentation of the large rivers which feed the hydroelectric power stations. During 1992, all of Ecuador suffered from electricity shortages during several months, as the turbines could not function due to the sedimented waters. The blow to the national economy has been devastating.

Thus, ***WE*** conceived the erosion of the vegetation cover of the paramo areas to be a big problem to the Ecuadorian economy and society.

When thinking about their paramos, farmers consider another problem of utmost urgency: the lack of farmland for their children. Private landholdings are in general too small to provide the next generation with a subsistence base for agriculture. Therefore, the pressure over communal grasslands gives way to continuously parcelling out small pieces for private cultivation. Though erosion and scarcity of cultivable land are two intimately related problems, it makes a huge difference in designing an environmental strategy with farmers as to which one of the two is postulated as the main problem.

In summary, then, the problem is ..

that if the farmers do not decide on the main problem to be tackled, outsiders will always set a research or action agenda which is not congruent with the farmers' problem perception (Hess 1997). But if the problem perception and definition do not fully represent the farmers' views, ***WE***, the researchers and developers will be hardly able to make them act upon problems as ***WE*** perceive them[17]. Therefore, we must still become better in making our clients decide on the research agenda and development goals and on making them participate in the problem analysis. To achieve both we should draw more on contributions from IK research and PCE.

Indigenous Knowledge Systems

IK research is good at analysing local cognition and it is especially helpful in eliciting causal concepts: for example, the local reasoning behind explaining crop failure, animal disease, or pests (Richards 1985; Inglis 1993; McCorkle 1996; also see *Indigenous Knowledge Monitor*). FSR is much about causal links and rational decision-making but more often within a scientific knowledge system[18] — quite different to local reason.

In a collection of essays edited by Warren, Slikkerveer and Brokensha (1995), an IKS is defined as ´basically local knowledge that is unique to a given culture. It is the information base for a society which facilitates communication and decision-making.´ (Flavier et al, 1995:479). If we take seriously the argument that local knowledge is basic to decision-making and action, this means that local knowledge sets the limits for accepting new knowledge and techniques. It thus puts in doubt what much of Extension tried to do in the past: namely to transfer knowledge to farmers. Maybe, Röling's (1988) argument hits that same nerve when he writes: „Knowledge is not transferable, only information is.“ In other words: the *Transfer of Knowledge* from the scientists to the farmers seems to be similarly hampered as has been the *Transfer of Technology*. There are two reactions possible: one is to offer knowledge and technology which is culturally compatible; a second one is to help generate new knowledge and better technology together with the farmers based on their knowledge repertoire.

Communication Expertise

While IK researchers are good at eliciting causal cognition, participatory extension is competent for facilitating the communication between farmers and researchers. If research and development planning shall be done **with** farmers, rather than **for** them, then good communication across cognitive and social barriers is crucial. Moreover, problem determination, open reflection and decision-making within large groups of farmers requires special communication and facilitation skills. These skills are usually not naturally given but must be acquired.

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[17] Ferguson (1990) and Hoben (1997) argued that it occurs frequently that development needs and goals are not set by the supposed beneficiaries but by outsiders. Many development efforts fail to fulfill the needs of people who should benefit from them.

[18] A FSR training handbook (FAO 1990) makes reference to numerous forms of data collection, but there is not one example of data collection on causal concepts of diseases from an indigenous perspective.

Client-oriented extension, as propagated in Hohenheim, has always been different from top-down extension approaches. It defines the extensionist as a person who helps farmers to identify and reflect on their problems in a structured and organised way. Communication and facilitation skills are needed in aiding farmers to gain self-reflective insights into the nature of their problems and to identify solutions. That way the advisor helps to generate insight and solutions from indigenous knowledge.

Learning Steps Towards Designing a Sustainable Development Strategy

Development is planned action to change a situation which is perceived as deficient by a group of people. Development results from conscious reflection of a problem, from a good understanding of the nature of the problem, from implementing the desired changes, and from evaluating if the problem is solved. In that respect, development is an experiential learning process. Development failure is often due to not following through the learning process of reflection-action-and-evaluation properly with farmers. Too much of the problem analysis and of solution finding is still done without the participation of the affected people, which in the end explains why they do not act on the outsiders' proposals.

From Paulo Freire's *Pedagogy of the Oppressed* (1984) right up to Alan Rogers *Adults learning for Development* (1992), it has been convincingly argued that action of a group of people is always the outcome of good communication, collective reflection and decision-making[19]. The learning steps I propose in the table below simulate a development process during which changes are consciously planned and implemented by the farmers. To reflect and analyse in large groups, farmers need methodological support for structuring the communication process. Such support should be provided by a communication expert[20]. FS and IK researchers should contribute criteria and observations to reflect upon the causes and consequences of the identified problem in a systematic way. The ultimate goal of the learning step approach is to reach an agreement on joint action.

The table illustrates the distinct inputs by FSR, IKS and PCE towards designing a sustainable development strategy.

[19] The stated relation between communication and action, (maybe even revolutionary action) does not stop fascinating people. Ultimately, Habermas' theoretical treatise (1984) causes excitement among social scientists because it elaborates a model in which 4 basic conditions to communication are identified which – if considered -- can spark vigorous action.

[20] It must be kept in mind that effective group communication on complex problem solving is a complicated process which need support by a person who manages group communication techniques, dialogical and participatory methods for decision-making and conflict resolution. Werner (1993: 60) states rightly that dialogue between researchers and farmers may not be confounded with everyday conversation, as the former needs previous training.

Table 2. Learning steps towards designing a sustainable development strategy

Step	Description	Done by Farmers	Inputs by FSR	Inputs by IKS	Facilitation by PCE
1. Perception of problems	farmers' group-wide perception of the problem should be elicited and discussed with methodological support by a facilitator.	●			●
2. Examination of perception	different interpretations, ideas, and observations should be discussed. Inputs of FSR and IKS shall help to enrich the discussion. The facilitator helps to organise communication.	●	●	●	●
3. Definition of problems	farmers shall be supported methodologically in the decision-making process to assure a high degree of legitimacy of the definition.	●			●
4. Analysis of causes and consequences of a problem	thorough analysis is the precondition for finding solutions. The analysis should be done by the farmers but they should receive additional information from FS and IK researchers. The facilitator supports the communication process.	●	●	●	●
5. Setting development objective(s)	farmers are the principle actors and make decision alone. They receive only methodological support by a facilitator	●			●
6. Proposal of options and solutions	farmers, IK and FS researchers should pool their knowledge to discuss different options, and solutions. The facilitator supports the communication process.	●	●	●	●
7. Choice among alternatives	Farmers decide on options and receive methodological support by a facilitator	●			●
8. Identification of outside assistance and support	Farmers, FSR, IKS and facilitators identify sources for assistance or support needed	●	●	●	●
9. Implementation	Farmers implement decisions	●			
10. Assessment	Farmers assess the results and the degree of problem solving with the methodological support of the facilitator	●			●
	Restart at step 1, if problem is not solved satisfactorily, or another problem shall be tackled.				

* The Learning step approach is based on the Hohenheim model -- Stages of systematic problem-solving, cf. Albrecht et al. (1989: 69ff); Hoffmann (1994: 163).

The table shows that all decision-making is left to the farmers. However, we must keep in mind that a participatory process of group-wide decision-making is not easy (Kottak 1995). It is at the level of organising reflection and decision-making within large groups or across

different groups that communication experts are most urgently needed. The important input of FSR could be to complement the local knowledge base by contributing additional information on the problem situation, its causes, and potential solutions. In comparison, IKS people should improve the farmers' causal thinking on relevant issues and thus contribute to a better understanding of the problem by both, FS researchers and farmers.

Farming Systems Research departs from the presupposition that the rural reality can be studied, analysed and described in all its complexity. What is overlooked is that an analysis from the researchers' perspective, however complete and complex, will always deviate from the farmers' analysis. The problem is ***not***, that the analysis either of the FSR or the farmers are somehow wrong or insufficient, but if you want farmers to change their behaviour you need to see the system through their eyes as actors in the system, while avoiding to see the system from outside as a researcher. Clearly, FSR provides a better outsider's look than insider's.

The learning step approach departs from the supposition that there is no outsider's analysis which can be convincing enough to prescribe action to another people. Planned action will only result from conscious and joint problem determination and reflection within a group of people. I propose a division of labour[21] in which the role of IK and FS researchers is to support the farmers learning process, while the facilitator provide the opportunity that scientific and indigenous knowledge systems can inform and stimulate one another (cf. DeWalt 1994:128). Communication experts provide the methods to structure the exchange process and to guide group-wide reflection and decision-making. It is only when we, the researchers and communication experts insert ourselves into the learning process of the farmers, that the gap between outsiders' cognition and farmers' decision-making will vanish.

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[21] Ruthenberg (1980:2) already suggested more co-operation when writing: "Clearly the farm and farming system approach is not the only relevant one. It is more useful to think in terms of a division of labour, ... which facilitates the linking of the farm approach of those concerned with other rural systems.“

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