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Are the Farmers Always Right? Rethinking Assumptions Guiding Agricultural and Environmental Research in Southeast Asia

A. TERRY RAMBO

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SUMMARY Southeast Asia faces enormous challenges in managing its agricultural and environmental resources, from global warming to biodiversity loss. But chances for effectively addressing these issues may be hampered by the wide acceptance of four basic assumptions that guide the way we think about problems of managing agriculture and the environment. These assumptions form an interlinked system of thought that privileges the traditional and local over the modern and cosmopolitan. When taken to an extreme they lead to the view that traditional farmers are always right and that modern science is the cause, rather than a possible cure, of the serious environmental problems associated with agricultural development in Southeast Asia. Although when first proposed these assumptions were a radical alternative to the conventional thinking, in recent years they have themselves become the new conventional wisdom.

Introduction

The challenges facing agricultural and environmental resource management in Southeast Asia are many and far-reaching. Global warming and climate change, deforestation and land degradation, and genetic erosion and biodiversity loss are among the major problems impacting agricultural systems in the region. How to respond to these problems is an ongoing debate, but one that I will not engage in here. Instead, I will focus on some of the key assumptions that underlie our thinking about these problems rather than on the substantive problems themselves. I offer here an analysis of some of the main beliefs, concepts, and assumptions that guide the way we think about problems of managing agricultural resources and the environment.[1]

These assumptions are widely accepted by many scholars and leaders of environmentalist NGOs that greatly influence popular discourse about problems in Southeast Asia

My admittedly impressionistic "ethnographic" methodology draws on my own extended direct experience in research and teaching about agriculture and the environment in Southeast Asia. Since 1966—the year of my first fieldwork in what was then South Vietnam—I have been involved in the region with varying degrees of intensity, and for the past 13 years have been almost continuously active there. During that period, I first served as an East-West Center researcher based in the Center for Natural Resources and Environmental Studies (CRES) of the Vietnam National University, in Hanoi; then as a professor in the Center of Southeast Asian Studies of Kyoto University, where I was a member of the editorial board of *Southeast Asian Studies*; and now as a professor in the Program on System Approaches in Agriculture of Khon Kaen University, in Thailand.

The issue explored in this paper coalesced for me over the course of decades of reading countless research reports, student theses, and articles dealing with management of agricultural resources and the environment in Southeast Asia. These writings have dealt with a great diversity of topics and geographical areas, including coastal zone management in Indonesia, reforestation programs in shifting cultivation areas in Sarawak, social forestry in Thailand, the impact of ethnic minority peoples on forest resources in Vietnam, and improved fallow management in shifting cultivation systems in Laos. Despite this diversity, I have been continually struck by the extent to which many of the authors shared four basic assumptions:

1. Traditional agricultural systems are superior to modern systems because they are sustainable and environmentally benign.
2. Indigenous knowledge about agriculture and the environment is usually correct and valuable.
3. Community-based resource management is the most effective and equitable system for managing resources and protecting the environment.
4. Participatory rural appraisal (PRA) is the best research method for investigating agricultural resources and environmental management.

These assumptions form an interlinked system of thought that privileges the traditional and local over the modern and cosmopolitan. When taken to an extreme they lead to the view that traditional farmers are always right and that modern science is the cause, rather than the cure, of the serious environmental problems associated with agricultural development in Southeast Asia. Although when first proposed these assumptions represented a radical alternative to the conventional thinking that guided national efforts to manage agricultural resources and the environment, in recent years they have themselves become the new conventional wisdom. Recently, some academic researchers have begun to raise questions about their validity and to propose alternative concepts. But the assumptions are still widely accepted—not only by many scholars but, perhaps more importantly, by leaders of environmentalist nongovernmental organizations (NGOs), who exert considerable influence over popular discourse regarding environmental problems in Southeast Asian countries.

Given that these assumptions exert so much influence on current thinking about agricultural

[1] This paper is a revised and updated version of a keynote address presented by A. Terry Rambo at the Third Thai National Symposium on Agricultural Systems held in Chiang Mai, Thailand, November 9–11, 2004. Portions of the PRA section appeared in somewhat different form in Rambo 2007.

development and environmental problems, they merit in-depth scrutiny. Here I examine the content of these assumptions and raise some questions about their universal validity, with the goal of stimulating critical thinking about their strengths and limitations.

Traditional Agricultural Systems: Sustainable and Environmentally Benign?

Until the 1980s, most agricultural scientists and virtually all development policymakers viewed traditional agriculture with scorn. These farming systems were considered unproductive, wasteful of resources, and environmentally destructive. The primary goal of agricultural development programs was to convince farmers to abandon their time-honored practices and adopt modern agricultural technology. The Green Revolution, launched in the 1970s by the International Rice Research Institute, exemplified this strategy of wholly replacing traditional agricultural systems with modernized systems of farming.

Even before the Green Revolution had achieved its initial triumphs, however, anthropologists and ecologists had begun to publish research findings portraying traditional agriculture in a favorable light. These studies revealed that some of these agricultural systems were productive, highly sustainable, and did not cause serious environmental degradation. Even as views of traditional agricultural systems were changing in a favorable direction, questions were being raised as to whether the Green Revolution was actually as successful as initially claimed. The new technology was blamed for favoring wealthier farmers with high-quality land and for being unsuitable for poor farmers on marginal lands. Green Revolution technology was also held responsible for loss of genetic diversity, excessive use of chemical fertilizer and pesticides, and pollution of soil and ground water.

The positive view of traditional agriculture has become an ideological belief, no longer subject to empirical testing

Today, the view that traditional agricultural systems are sustainable and environmentally benign—whereas modern systems are unsustainable and cause serious environmental damage—has become the new orthodoxy. Positive evaluation of traditional agricultural systems has entered the academic mainstream and has even begun to influence policymakers to some extent, largely as the result of its advocacy by environmentalist NGOs that receive wide attention in the local media. One might ask, "What is wrong with that?" Certainly, the former conventional wisdom that viewed traditional agriculture in a wholly negative light needed revision. The problem, however, is that the positive view of traditional agriculture has become transformed into an ideological belief that is no longer subject to empirical testing. Instead, it has become an article of faith: "Traditional is good, modern is bad." In reality, of course, it is not that simple. Swidden agriculture—shifting cultivation or slash-and-burn farming—illustrates this point.

Shifting cultivation in a changing environment. Until recently, scientists and government officials in Southeast Asia shared the view that shifting cultivation was a primitive system that suffered from low productivity and caused immense environmental damage. Beginning with the publication of anthropologist Harold Conklin's detailed research on Hanunoo swidden agriculture on Midoro Island in the Philippines (Conklin 1957), scientists—particularly anthropologists—have radically changed their views. Shifting cultivation is now commonly portrayed as representing the optimum agricultural adaptation to environmental conditions in Southeast Asia's uplands. Indeed, numerous research studies have shown that, when population density is low and forest land abundant, rotational swiddening is highly productive, makes effective use of limited supplies of nutrients, and does little or no long-term damage to the environment. For example, in his analysis of the traditional rotational rice swiddening system practiced by the Montagnard groups of Vietnam's Central Highlands, Bui Minh Dao (2000) showed that, although permanent wet-rice fields in the lowlands gave higher yields per unit of land, the swiddens in the mountains gave a much higher return on labor—an important advantage when population density is low. The system was also quite sustainable. As long as the population density was lower than 15 persons per square kilometer (about 40 persons per square mile), the rotational cycle was sufficiently

long for the forest to fully regenerate between cultivation phases.

Researchers who have studied other traditional rotational swiddening systems in upland areas of Indonesia, Laos, and Thailand all report findings similar to those for Vietnam: Under conditions of low population density and abundant forest land, rotational swiddening is a productive and highly sustainable agricultural system. Indeed, given the very high yields per hour of labor offered by rotational swiddening, farmers would be foolish to abandon this system in favor of permanent wet rice farming (Rambo 1984).

The problem, however, is that the demographic and environmental conditions in the uplands of Southeast Asia have been undergoing very rapid change. Since the early studies that discovered the positive aspects of traditional swidden systems were completed some fifty years ago, human population densities have dramatically increased while the supply of forestland has been shrinking. In Vietnam's Central Highlands, for example, the population grew from 400,000 in 1936 to approximately 2.5 million in 1997. This has resulted in a serious problem of land scarcity. Consequently, farmers have had to extend the period of cropping from only one year to four years and shorten the fallow period from 20 years to four or five years. Under these changed conditions, the productivity and sustainability of swidden systems have both declined dramatically. Moreover, because of the increased length of the cropping period and the greatly shortened fallow period, the forest is no longer able to regenerate and the quality of the soil becomes increasingly degraded until it can no longer be used to grow grain crops. The result for all too many upland farmers is worsening poverty and hunger (Jamieson et al. 1998), although some farmers have adopted alternative land uses, such as growing tree crops (including coffee and rubber) that are more tolerant of degraded soils. Others have simply given up trying to farm their degraded land and migrated elsewhere to find new forest land to clear.

Under growing population pressure the productivity and sustainability of traditional agricultural systems have declined dramatically

Thus, under changed demographic and environmental conditions, an agricultural system that was formerly both productive and sustainable has been transformed into a system that is unproductive and environmentally destructive.

What is true of shifting cultivation systems is true of all traditional agricultural systems: The demographic and environmental contexts in which these systems function are undergoing rapid change. As a consequence, systems that once functioned in a highly sustainable manner may no longer do so under radically different conditions. Thus, rather than romanticize traditional systems and categorically assume that all are sustainable, researchers should empirically assess the extent to which the systems actually perform in a sustainable manner under current environmental conditions. Traditional and modern systems alike have much to teach us, but whether *any* agricultural system is sustainable and environmentally benign must always be regarded as a purely empirical question.

Is Indigenous Knowledge about Agriculture and the Environment Usually Correct and Valuable?

Accompanying the adoption of a positive view of traditional agricultural systems has been an explosive growth of interest in indigenous agroecological knowledge. This marks a truly radical change in our assumptions. It was not so long ago that scientists and government development officers thought they had nothing to learn from farmers who lacked advanced educations. Farmer knowledge was dismissed as a collection of superstitions and erroneous beliefs. It was widely believed that the only way to achieve sustainable agricultural development was for researchers to generate new technology on experiment stations and then extend it to the farmers. Perhaps the greatest achievement of the farming systems research (FSR) movement that spread across Southeast Asia in the 1980s was to get scientists to pay serious attention to finding out what farmers thought. But research on indigenous agroecological knowledge actually began many years before the birth of FSR. Anthropologists first began doing this type of research in the 1950s under the label "ethnoecology."

Initially, ethnoecological research focused on the systems devised by tribal groups to name and classify

plant and animal species. Of particular interest was the discovery that many tropical forest tribal groups had identified and named more species than had scientific taxonomists. Follow-up research frequently revealed that the native peoples were correct and the scientists wrong, demonstrating that those who lived in a particular habitat were likely to have detailed and accurate knowledge of that locale's native plants and animals on which they relied for survival. Subsequently, the scope of ethnoecological research was expanded to include the total range of indigenous biological knowledge—not just the names of plant and animal species but also knowledge about their behavior and uses, especially in the case of medicinal plants and traditional crop varieties. Ethnoecological research also dealt with indigenous knowledge of weather forecasting, prediction of natural disasters, and identification and spatial distribution of resources —sometimes called "mental mapping."

More than 50 years of ethnoecological research and 25 years of FSR, much of it done in Southeast Asia, has clearly demonstrated that local people can possess a vast storehouse of detailed knowledge about virtually every aspect of their agricultural environment. Documenting this information, much of which is at risk of being lost due to social and environmental change, has become a high priority.

In reality, we do not know how accurate and useful indigenous agroecological knowledge is

But the pendulum may have swung too far, with some academic researchers and many individuals working for NGOs now seeming to assume that indigenous knowledge is invariably accurate and useful. Some even suggest that it is superior to scientific knowledge because it is thought to be holistic and not bounded by disciplinary limitations. In reality, we do not know how accurate and useful indigenous agroecological knowledge is because, although much effort has been devoted to recording it, much less attention has been paid to verifying its accuracy and reliability. I suggest that indigenous knowledge represents a complex mixture of information that can be classified into four categories.

1. Knowledge that is empirically valid and generates adaptive behavior by the farmers. Cases of indigenous knowledge in this category are the cases most frequently reported in the literature. One example, according to Hoang Xuan Ty and Le Trong Cuc (1998, summarized in Jamieson et al. 1998), is that the K'ho ethnic minority farmers in the mountains of central Vietnam know that the only successful way to create cinnamon plantations is to plant seedlings in small clearings scattered within the forest. Shade from surrounding trees protects the delicate seedlings from the sun's intense rays and humidity levels are optimal for their survival. Government efforts to establish large plantations of cinnamon in the same area invariably fail because the seedlings cannot survive the hot sun and low humidity in the extensive cleared areas of the state plantations. Ty's example leaves no doubt that these indigenous farmers' knowledge of the agroecology of cinnamon is valuable and accurate, and would likely hold up under scientific scrutiny. Indeed, the farmers seem to have a much better understanding of the ecological requirements of the cinnamon trees than the government agricultural experts.

On Surin Island in southern Thailand, the Moken "sea gypsies," a Malay-speaking indigenous people, escaped destruction by the great tsunami of 2004 because they relied on knowledge handed down from their ancestors, who advised taking immediate refuge on high ground if the sea suddenly retreats from the beach (Sukrung 2005). Scientists, on the other hand, did not even anticipate the risk of a tsunami because none had occurred in the region for hundreds of years. No modern warning system was in place and, as a consequence of this lack of knowledge and preparation, thousands of people were killed when the powerful waves generated by the earthquake destroyed tourist resorts that lined the beaches facing the Indian Ocean.

2. Knowledge that is empirically invalid but still valuable because it generates adaptive behavior by the farmers. There are many accounts of ways in which traditional peoples employ ritual divination to provide guidance in their agricultural activities. Farmers in northeastern Thailand carefully watch the traditional Royal Plowing Ceremony—televised nationally each spring—to see which food a pair of

bulls chooses among several options. If the bulls pick rice, water, or hay, then plentiful rainfall is anticipated; if they opt for maize, mung beans, sesame seeds, or liquor, rainfall will be sparse. Farmers place great importance on these ceremonial indicators when making decisions about their planting strategies —particularly whether to give priority to drought- or flood-tolerant paddy fields. From a scientific standpoint, there is no plausible causal link between the bulls' food choice and the amount of rainfall in the area so this indigenous knowledge cannot possibly be viewed as empirically valid. Nevertheless, if the choice of food by the bulls actually occurs wholly at random, then by basing their decisions on this indicator, the farmers' choice of planting strategies will also be randomized, giving farmers the highest statistical probability of choosing the correct course of action in a climatic zone where rainfall is almost wholly unpredictable.

3. Knowledge that is empirically invalid and generates maladaptive behavior by the farmers. Indigenous knowledge in this category is almost never reported in the literature. This is hardly surprising because when anthropologists first began to study indigenous knowledge their goal was to demonstrate to skeptical conventional scientists that it was of great value. We all looked for dramatic examples of accurate and useful indigenous knowledge, but no one tried to identify examples of misleading or incorrect indigenous knowledge.

We all looked for dramatic examples of accurate and useful indigenous knowledge

Consequently, there is a greatly skewed depiction of indigenous knowledge, one that highlights its positive aspects and obscures its shortcomings and deficiencies. Yet those who work in the field know that many things that local informants assume to be true are of questionable validity. During the French colonial period, for example, impoverished lowland Vietnamese farmers were faced with extreme overpopulation and scarcity of land in their villages in the Red River Delta. But they refused to migrate to make new farms in the nearly empty lands of the nearby Midlands because they feared dying from malarial fevers that they believed were caused by malevolent spirits. Indeed, those lowlanders who attempted to settle in the Midlands had a high mortality rate that confirmed their fears. But, because they misunderstood the cause of malaria, they could not protect themselves. It was only after Vietnam won independence in 1954 and the government made a systematic effort to disseminate science-based knowledge about the causes and cures of malaria that several million people were successfully resettled from the Delta into the Midlands (Le Trong Cuc et al. 1990).

4. Missing knowledge that cannot help the farmers (but may hurt them). Missing knowledge refers to gaps that may exist in indigenous knowledge of the natural world. These gaps are like the "unknown unknowns" that former U.S. Secretary of Defense Donald Rumsfeld referred to as "the things we do not know we don't know" (DoD News Briefing 12 February 2002). For example, small corn farmers in Honduras have detailed knowledge of plants, but know less about insects and even less about plant pathology (Bentley 1989). That traditional farmers lack knowledge of pathogens such as bacteria and viruses is not surprising because such microorganisms are invisible to the naked eye. But in the absence of this knowledge, farmers may employ treatments that are ineffective or even harmful. Of course, missing knowledge is also a problem for modern science as is evidenced by recent discoveries of previously unknown phenomena such as dark matter and dark energy.

Measuring the comprehensiveness, accuracy, and reliability of an indigenous people's complete body of agroecological knowledge could potentially allow us to accurately assign portions of that knowledge to one of the above categories. Undoubtedly, the results would be eye-opening and valuable, but, practically speaking, such data acquisition and evaluation will likely remain elusive. What, for example, would be the standard against which indigenous knowledge is tested? Some scholars have compared indigenous knowledge with scientific knowledge of the same natural phenomena. According to a recent study of the soil quality classification system used by Muong ethnic minority people of Vietnam's northern mountains, "Laboratory results confirmed the validity of indigenous knowledge for identifying and classifying

local indicators of soil fertility, compared to scientific standards for soil fertility" (Nguyen Dai Trung et al. 2008, 27). This approach is flawed, however, because it is based on the questionable assumption that scientific knowledge is always correct and represents the "gold standard" against which indigenous knowledge can be tested. Scientific knowledge about agroecology is neither always complete nor always correct.

Some rural communities have high solidarity and great capacity for collective action to manage resources; others don't

I do not raise these questions to discredit the study of indigenous agroecological knowledge, which is fully deserving of all the attention it is now attracting. Rather, I caution that we should not elevate indigenous agroecological knowledge to a privileged epistemological status that is immune to criticism. Instead, we should remain skeptical of its validity until that is verified by deeper investigations.

Community-Based Natural Resource Management: The Most Effective System?

Since it was first proposed in the 1980s, community-based natural resource management has become popular among NGOs and international development assistance agencies as the best solution to problems of environmental degradation in Southeast Asia (Ford Foundation 1997). This reflects the assumption that local people will usually do a better job of managing resources and protecting the environment than agencies of the state.

Although the concept of community-based management is an appealing one that is in keeping with currently popular ideas about decentralization of government and empowerment of local people, it should not be seen as a panacea (Berkes 2007), particularly because there has been relatively little objective research on how well this approach actually works. Many case studies have been published describing communities that have successfully managed resources, but one cannot generalize from these findings because they are based on a biased sample. Researchers have not studied a random selection of all communities in an area, but instead have focused on those selected precisely because they were known to be successfully employing this management system. Not surprisingly, the results always seem to confirm the initial expectations of the researchers.

It cannot be assumed that all communities have the capability to successfully manage the resources entrusted to them. Whether or not any specific community can effectively manage resources is dependent on its internal characteristics, especially the extent to which it displays social solidarity and possesses adequate amounts of "social capital." But, as Agrawal and Gibson (1999) have pointed out, remarkably little attention has been paid to the question of how the internal social organization of villages constrains their capabilities for effectively managing natural resources. The prevalent assumption seems to be that rural villages are inherently endowed with the institutional capacity to organize successful collective action to use resources in an equitable and sustainable manner. But, as has been repeatedly revealed by empirical investigations of rural villages, social organization is not a constant. Some rural communities have high levels of solidarity and great capacity for collective action to manage resources, but others are characterized by high levels of inter-household competition, pervasive distrust among members of unrelated households, and a near total absence of community solidarity. Indeed, it can be argued that in many rural communities social capital is in shorter supply than financial capital. In such situations, the villagers—whatever their individual intentions and desires—lack the institutional capacity to manage resources for the common good (Rambo and Tran Duc Vien 2001).

Even communities that are cohesive and have adequate social capital to mount effective collective action may not always choose to manage resources in an environmentally responsible way. In some situations, they may decide to maximize the short-term returns they receive from unsustainable exploitation of natural resources. Such resource "mining" is common in frontier settlements. In such circumstances, a higher level authority may have to intervene to ensure that local communities manage resources in a way that takes into account the needs of the larger society.

Whether community-based management is a good thing or not is largely dependent on context. In cases

where communities have the necessary social capabilities to effectively manage resources, such an approach is appropriate. Where communities manifestly lack solidarity, alternative strategies must be considered.

Participatory Rural Appraisal: The Best Method for Investigating Management of Agricultural Resources and the Environment?

Some years ago in Hanoi, I briefed a group of visiting foreign consultants on research that CRES and the EWC had done on development trends in Vietnam's Northern Mountain Region (Le Trong Cuc and Rambo 2001). We had made detailed investigations of five upland communities in order to establish a baseline against which to measure changes in the future. Many different research methods had been employed, including establishment of ecological transects, vegetation mapping using satellite images, interviewing of randomly selected households using standardized survey questionnaires, and semi-structured interviews with community leaders. At the end of the presentation, one of the consultants challenged us on our decision not to use participatory rural appraisal (PRA), implying that we were morally deficient because we had not involved local people in our research by using PRA as the main method. I responded that we were doing an in-depth scientific study, not working with people to design a community development project, but my explanation really didn't satisfy my interrogator, who clearly thought that PRA was the only legitimate method to employ in rural research.

To challenge the assertion that PRAs are effective is to brand oneself as an elitist bent on denying voice to the poor

PRA has caught the fancy of the NGOs and been warmly embraced by the World Bank and other international development assistance agencies. Of course, PRA—with its goal of empowering local residents in the research process—has its place in the researcher's toolkit but, in recent years, too many researchers have relied exclusively on PRA and ignored other methods. In the past five years, perhaps not a single development project in the mountains of Vietnam has been launched without first commissioning a PRA. Such studies have become so common that villagers sometimes refer to them as "the four big things"—meaning the big paper and big pens (used to draw maps and transects), big cars (the researchers' sports utility vehicles), and big projects (Tran Duc Vien pers. comm.). This over reliance on PRA is an unhealthy trend—not because there is anything intrinsically wrong with the method, but because excessive reliance on it may be displacing other valuable types of research. Since the methods researchers use determine, in large part, the kinds of questions they can answer, there is great risk in allowing PRA to become the sole method of choice.

The most serious problem associated with the growing popularity of PRA is that to a considerable degree it has become a substitute for doing long-term, in-depth research. In part, this is because donor agencies must produce research data to justify their development assistance projects, and PRA offers an inexpensive and relatively easy methodology to that end. Sponsoring a three- or four-day PRA exercise costs far less than funding an anthropologist to live in a village for a year, and findings can be ready for publication much sooner. This participatory method also appeals to international development assistance agencies because of its populist packaging. How could anyone attack development plans that claim to be designed on the basis of inputs from the local population? A report published by the World Bank in Vietnam entitled *Vietnam: Voices of the Poor* presents a synthesis of several community-level "Participatory Poverty Assessments" (PPAs). It asserts that,

> the four PPAs have been accepted by local communities and authorities as sound representations of the reality of poor people's lives. This is an important endorsement. If the people who contributed to the study and the people who have lived in these areas all their lives believe that the studies accurately capture the problems and priorities of the poor, then why should critics living elsewhere remain skeptical? (World Bank and DFID, 1999, 4).

To challenge that assertion would be to brand oneself as an elitist bent on denying voice to the poor. Indeed, one reason PRA is viewed in such a positive way is that it is seen as taking power away from the

so-called elitist scientists by giving farmers direct control over the research process. Advocates claim that PRA is a way of empowering poor villagers, giving them "voice," to use the fashionable jargon. As Gordon Conway has written,

> In some ways it has been a revolution: a set of methodologies, an attitude and way of working which has finally challenged the traditional top-down process that has characterized so much development work. Participants from NGOs, government agencies and the research centres rapidly find themselves, usually unexpectedly, listening as much as talking, experiencing close to first hand the conditions of life in poor households and changing their perceptions about the kinds of intervention and research that are required (Conway 1997, 199).

As an anthropologist I am somewhat skeptical of Conway's claims about the special virtues of PRA research. Learning from the people is not a new approach for anthropology, which has employed "participation-observation" for almost a century, experiencing the "conditions of life in poor households" by actually living and working with the people, often for quite extended periods under harsh and difficult conditions. A few days spent talking to villagers in an artificial situation does not offer anything approaching a "close to first hand" experience of their lives. We need to ask whether PRAs accurately capture the complex nature of rural communities. There is not a simple yes or no answer. PRAs are useful for generating certain kinds of information, but unsuitable for eliciting other kinds of data. Participatory methods can be useful in eliciting valuable new insights from local people about their conditions and needs but may conceal more than they reveal about power relations and conflicts within a community.

Too often, community participation is organized by members of the local establishment who assure that researchers meet only their clients and dependents

PRA has two major weaknesses. The first is that local knowledge, even if correctly assessed, may be incomplete or even incorrect. For example, Cao Guangxia and Zhang Lianmin (2007) report that farmers in Yunnan, China, told them that growing rubber involved less labor than cultivating swiddens but that their studies of labor use showed no difference between the two systems. They ask if these findings suggest "deliberate ignorance" on the part of the farmers. Of course, if PRA generated an accurate picture of how upland people perceive their situation—even if those perceptions are imperfect ones—it would still be valuable. It is questionable, however, whether most PRAs as they are actually carried out are successful in enlisting true participation of local people that effectively taps their knowledge and views. Indeed, in some situations, it is very much in the farmers' self-interest to conceal the truth from the researchers. Thus, Peter Hoare and his colleagues, in a report on their study of the planting of *ma kwaen* spice in fallowed swiddens in northern Thailand, state that farmers gave them conflicting information about methods of propagating and maintaining the trees because "the farmers were afraid that their market price would decline if many additional villages started to plant the jungle spice" (Hoare et al. 2007, 618).

The second major weakness of participatory methods is that they are ineffective tools for understanding social organization, particularly in terms of identifying contradictions and conflicts within upland communities. So many PRA reports seem similar, deploying the standard array of transects, maps, and cropping calendars. The descriptions of the communities and their resource management practices are much too neat and orderly to reflect reality. There are no evident contradictions or unanswered questions. And rarely is there mention of conflicts of interest among community members. To the extent that conflict is pointed out, it is invariably between the community and outside institutions, especially state forestry agencies. The PRA technique itself, in which local people are interviewed in a group situation, virtually guarantees that contradictions will be concealed and conflicts hidden beneath the rhetoric of community solidarity.

It is essential to ask the questions: How participatory are PRAs? Who participates in PRAs? Under what social constraints do people participate in PRAs? All too often, community participation is organized by members of the local establishment who make sure that researchers meet only with their clients and

dependents. Once, when doing a rapid appraisal in a village in northern Vietnam, my team of researchers found itself interviewing a woman who was trembling with malaria chills. We later learned that she was the wife of the hamlet head, who had sent us to her so we would not meet with politically less reliable informants. Even if ordinary farmers participate, just how open and honest are they likely to be when faced with questions about inequities in the land allocation system—when the village headman is sipping tea just across the table from them?

These basic assumptions have become the new orthodoxy, and thus deserve critical scrutiny

Though I am singling out PRA for criticism I am not suggesting that it should be abandoned entirely. Rather, like all methods, it should be used selectively and without the illusion that it offers an inexpensive and easy substitute for more intensive methods of data collection. There are no "magic bullets" in research. Shouldn't we be at least as concerned with maintaining diversity in the methodologies we employ to study agricultural systems as we are with maintaining biodiversity in these systems themselves?

Conclusion

I have raised questions about four basic assumptions that have in recent years come to dominate much of our thinking about how to understand problems of management of agricultural resources and the environment in Southeast Asia. These assumptions—that traditional agricultural systems are sustainable, that indigenous agroecological knowledge is usually correct and valuable, that community-based resource management is effective, and that PRA is the best method of research—form a mutually reinforcing set. A researcher who accepts one of these assumptions is likely to accept all of the others as well. Together, they have become the new orthodoxy and are widely encountered in the literature, are incorporated in university teaching curricula, and have been adopted by many official agencies concerned with rural development. For these reasons, they are deserving of critical scrutiny.

So, are the farmers always right? It is clear that they are not—no more so than scientists are always right. But that is not to suggest that we should cease all efforts to try to understand management of agricultural resources and the environment from the perspective of the farmers. Achieving such understanding should remain a central goal of agroecological researchers and finding ways to more effectively integrate this information into scientific understanding of problems of agricultural development in Southeast Asia should be a high priority. But in doing this research we should remain aware of the limitations and potential pitfalls of this approach.

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About the Author

***A. Terry Rambo**, is a special professor in the Program on System Approaches in Agriculture, Khon Kaen University, Thailand, an adjunct fellow of the East-West Center, and a visiting professor at the Hanoi University of Agriculture. In 2004 he retired as professor of the Center for Southeast Asian Studies of Kyoto University. From 1980 until 2000 he was a senior fellow of the East-West Center, where he served as Director of the Program on Environment and the EWC Representative in Vietnam. He has been a lecturer in the Department of Anthropology and Sociology of the University of Malaya and a visiting professor of social science at the Dalat University Graduate School of Politics and Economics in Saigon. An anthropologist by training (PhD, University of Hawaii, 1972), he has conducted extensive field research in Belize, Vietnam, and Malaysia and has published widely on human ecology and agricultural systems in Southeast Asia, Vietnamese culture and society, and the human ecology of the Orang Asli of Malaysia. His most recent book is* Farming with Fire and Water: The Human Ecology of a Composite Swiddening Community in Vietnam's Northern Mountains, co-edited with Tran Duc Vien and Nguyen Thanh Lam *(Kyoto University Press, forthcoming). He can be reached care of the East-West Center.*