

those of the European rationalizing reform and the big bang reform. The main implication of this Chinese model is that transition to a market economy becomes a self-enforcing process once some of the core features of the command system are eliminated. Because the growth of market-based economic activity provides efficiency gains, puts strains on existing institutions, and highlights the areas where potential gains of reforms lie, policymakers have strong incentives to move ahead on the reform path. This is why, after the old system ceases to operate fully on its own, market forces grow by themselves. A corollary is that a comprehensive program, ex-ante coordination, or even consensus on the general goal among policymakers is not a prerequisite to successful transition. Indeed, many deviations from the first-best transition regime do not affect the end result. These imperfections instead consume extra time and additional resources associated with sub-optimal resource allocation during this time. In other words, the length of the transition process depends on the extent of imperfections in the reform strategy and implementation. China's experience, by Naughton's interpretation, indicates that gradual reform is feasible and may serve as a good alternative to the other two models. Above all, the dual-track approach does away with ex-ante coordination of the reform process under the European rationalizing reform and high short-run adjustment costs under the big bang reform.

This book is somewhat short on the dark side of China's reforms. A by-product of the gradualist reform has been the rise of rent-seeking activities. Widespread corruption and abuses associated with perverse incentives accompanying the dual-track approach and opportunistic behavior by local governments following the adoption of piecemeal empowerment measures are two subjects that merit more attention. Naughton points out the delays in institutional development as the major shortcoming of the reform process. The most pressing tasks are specifying property rights and assigning full accountability in the investment system (pp. 322–33). This reviewer, however, accepts the main arguments of the Chinese reform model and thinks that these drawbacks will not block China's path towards a well-functioning market economy.

(Hiroyuki Imai)

*Ecology and Practical Technology: Peasant Farming Systems in Thailand* by Shigeharu Tanabe, Bangkok, White Lotus, 1994, xx + 300pp.

The purpose of the present book is to explain how the Thai rural population acts upon particular physical environments, and vice versa, from the perspectives of ecology and socioeconomic relations. Whenever attempting to analyze societies composed of people engaged in the occupation of agriculture, it is necessary to take into consideration the determinative nature of the surrounding physical environment, thus creating a set of assumptions not necessary in the study of, say, urban society. Conversely, assuming that agriculture is a socioeconomic activity, it follows that any study that does not discuss interaction between people and nature in relation to social conditions would be meaningless. The author, who is fully aware of the above two assumptions, uses the concept of "practical technology" in an

intermediary role between the two determining elements of physical environment and social relationships.

By offering an alternative to the methodology which creates a dichotomy between environment (nature) and man, then attempts to understand the former as merely the object of use by the latter, the author outlines a very effective methodology called the ecological approach (p. 3), in which nature and man mutually affect and influence each other. Nevertheless, according to the author, the proponents of this latter approach have mistakenly attempted to explain very complex social processes exclusively in terms of ecological conditions (pp. 3–8). In response, he argues that the focus should be on ecological inquiry concerning “the close and inevitable functional relationship between environmental relations and social processes” (p. 7). He proceeds to define practical technology as “a body of practical knowledge which enables communication and negotiation between people and the environment, and even between human agents” (p. 9) and depicts farming systems as one way of organizing practical technology. He thus makes it possible to understand farming systems as reflections of the production process and relations of production in peasant cultivation, in terms of ecological conditions and socioeconomic relationships. Here, in order to specify these two determinative elements clearly, he carries out a comparison between two villages with contrasting ecologies and socioeconomic conditions.

Chapters 2 through 4 describe these villages, and the ecological and socioeconomic conditions characterizing the localities in which they are situated. The community, called Chiang Mai village, which is located in the intermontane basin of northern Thailand, has a farming system that is determined by irrigation via streams flowing out of the surrounding ravines, water which is possible to control artificially. Since the amount of land cultivated by each household is small, the transplanting method is used in an attempt to reap the maximum yield per unit of land. Because market economy was still not developed there yet at the time of field survey, the production activities of the peasantry were organized basically for subsistence.

The other community, called Ayutthaya village, is located in Chao Phraya Delta region. The farming system there depends on irrigation by inundation and involves planting by the energy saving method of broadcast-sowing. Land management is much larger in scale than in Chiang Mai village, and the market economy are highly developed.

Chapters 5 through 7 make up the most important part of the book, since they contain an analysis of how the peasantries in these two villages has responded to their respective environments. Chapter 5 is a detailed analysis of the response in terms of irrigation. In Chiang Mai village, cultivators have formed traditional irrigation organizations, through which the author describes how they capture and control water. Such a method of irrigation water control would be impossible in Ayutthaya village, where its cultivators depend on large government irrigation projects for their water. For this reason, maintenance of the canals which run through the latter community is left up to public utility authorities, and organizational group activity among village residents is almost nonexistent.

In Chapter 6, we find a detailed description of wet-rice growing methods. What basically determines the different methods employed in the two villages is their differing irrigation systems, and, more directly, the differences in how rice is planted (p. 171). Chiang Mai village, by employing the transplanting method, must prepare its paddy and seedlings with

a great amount of care and precision prior to planting, and thus must intensify its labor supply during both the planting and harvesting seasons, necessitating dependence on manpower from sources outside the family. Ayutthaya village, on the other hand, is characterized by the labor-saving use of tractors / power tillers, broadcast-sowing, and chemical weed-killing agents. Mobilization of extra-family labor is necessary only during its one peak season, the harvest.

Chapter 7 describes the labor utilization systems in the two communities. While labor utilization is decided according to the production process, which is determined by ecological conditions, at the same time socioeconomic conditions come into play. That is to say, such factors as the level of labor intensification and the seasonal distribution of labor inputs are greatly determined by the rice-growing complex. Whether to hire workers to supplement family labor or depend on reciprocal labor agreements with one's neighbors is mainly dependent on socioeconomic relations. Looking at the two communities under study, Chiang Mai village depends heavily on reciprocal labor relationships, while such relationships have all but disappeared from Ayutthaya village, which depends much more on available hired hands. This contrast rises from the difference between the two communities in terms of to what extent the traditional social relationships of villagers have broken down through the penetration of market economy. In the case of cooperative labor practices, there are two different types determined by social relationships between farmers: one based on equality between households, the other involving households of different socioeconomic status.

In the above discussion, the author explains the features characterizing each village from the standpoint of ecological conditions and socioeconomic relationships. His analysis is especially convincing with respect to the question of how ecological conditions determine "practical technology." In addition, it should be noted that the discussion is not limited exclusively within the geographic boundaries of each village, but is rather designed to compare the broader geographical and socioeconomic conditions in which each community is located regionally. In Chapters 2 and 3, in particular, geographical zoning characterized by ecology and the history of land development is carried out for northern Thailand and the Chao Phraya Delta respectively, offering information on what can be called guidelines for researchers in rural Thailand. In addition, the description of agricultural technology is very detailed and represents a valuable source material for studying the state of the farming systems in the two areas during 1974-75. What enabled the author to present such a rich body of data was his resolution to avoid both the pitfalls of ecological determinism and the narrow path of functionalism, which attempts to explain phenomenon in single variable cause and effect relationships (pp. 7, 12). Because the content of *Ecology and Practical Technology* was originally submitted by the author in 1981 to the University of London as his doctoral dissertation, experts in the field of Thai village studies may find many already-known facts in this book. We should not criticize this point, since such knowledge has come to us through his research over the past two decades.

Nevertheless, from the rich body of data that the author has presented, it is still difficult to grasp exactly in what manner ecological conditions and socioeconomic relations *mutually* determine practical technology and farming systems. For example, take the irrigation system of the two villages in question. The differences between them are explained almost

entirely in terms of differences in ecological conditions. Irrigation organization among the residents of Chiang Mai village is founded on the basis of the actual cultivators, not landownership relations; and despite growing social stratification within the village, this organization maintains strict equalitarian norms. This cooperation has been organized because the natural water flow in the geographical conditions of this area makes collective water management possible and indispensable. As proof of this, before the penetration of market economy into the village, the irrigation system of the two villages stood in marked contrast, which indicates that the ecological systems play the dominant role in determining irrigation systems. Similarly, with respect to the wet-rice cultivation system and its most important procedure, planting, it is possible to explain inter-village differences in fundamentally ecological terms.

On the other hand, the methods for supplementing family labor during peak seasons—that is, whether to hire workers or set up reciprocal relations with one's neighbors—can probably be explained in terms of socioeconomic relations between villagers, which are determined more by social factors than ecological conditions. Even in Ayutthaya village, there was a time when labor reciprocity existed; and the fact that this practice is now on the decline in Chiang Mai village suggests that the choice of method has a lot to do with the degree to which market economy has permeated the community. If so, then ecology ceases to be a variable when explaining differences in human behavior.

From the methodological perspective offered by the author, one would expect some attempt to deal with farming systems being affected simultaneously by both ecological and social variables. And if so, it would become necessary to indicate how the two variables are interrelated. However, because the two villages selected by the author contrast both in ecology and stage of market economy, it becomes difficult to identify which variable is at work and in what manner it is affecting the situation. If there were a village ecologically similar to Ayutthaya village, but not as developed in terms of market economy, or a village ecologically similar to Chiang Mai village, but more developed in terms of market economy, a comparison of such communities would enable the investigator to clarify the interrelationship between the two variables. One more possibility would be to introduce a time series analysis into the comparison between Ayutthaya and Chiang Mai villages, diachronically aligning the two communities at a point where their farming systems are operating at similar stages of market economy.

Speaking of time, it is also unfortunate that the author has not been able to update what changes have taken place in the two villages since the time of his fieldwork there during the 1970s. For example, in the vicinity of Ayutthaya village, the 1970s saw attempts to introduce the transplantation method, but it seems that many such cases have reverted back to broadcast-sowing. Turning to Chiang Mai village, in recent years the rapid spread of market economy in the region has been short of amazing, and we are now observing changes in labor reciprocity practices. If such phenomena could have been taken up by the author, he certainly could have done a great deal to clarify the mutual affects of ecological and socioeconomic conditions.

On second thought, maybe we should understand such problems as issues left by the author for us to investigate and solve. Indeed, the subject matter and methodology as discussed in *Ecology and Practical Technology* forms a solid foundation on which to study

both Thailand's rural society and the question of how natural environment and society interact in determining human behavior. (Shin'ichi Shigetomi)