Reconsidering the Roles of Agriculture in the Century of Sustainable Development: the 21st Century

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ABSTRACT

The speaker will focus on the historical path dependency of agricultural development, mainly because it seems that this important perspective has not been sufficiently considered so far in the discussion of economic development.

We are now living at a time of rapid economic globalization. The competitive market economy system has started to penetrate deeply into all the countries, both the developing and developed ones, through the so-called structural adjustment and reform policies. Today in the early 21st century, the simple principle of market-efficiency has become the most fundamental force of transformation of the world economy.

Is this market efficiency appropriate for sustainable development worldwide in the present century? This is the basic question, we should ask now, especially in reconsidering the roles of agriculture in the pursuit of sustainable development in the world. The speaker's basic concept is that competitive market is of course necessary, but not sufficient for achieving sustainable development in the 21st century.

In every region of the world, agriculture plays its own particular and essential roles depending on the stage of economic development. In many developing countries, agriculture is playing various developmental roles, such as the supply of food, foreign exchange, labor and capital to the national economy. In the developed countries, agriculture has additionally and gradually shifted its roles to the supply of safer food and environmental amenities to the people. At the same time, every type of agriculture in the world plays common roles, such as the realization of sustainable development typically exemplified by the preservation of the local, ecological, social and cultural environments and the identity of each community as a whole. These roles should be shared equally both by the developed and the developing countries.

For the establishment of an economic system, which could be compatible with these vital roles of agriculture in achieving sustainable development, it is indispensable to clearly recognize the core characteristics of agriculture. Everywhere in the world, agriculture is embedded in the region's ecological characteristics and society, which are very different from region to region. And, it varies with the historical course of each country's development. Thus, agricultural development has been basically dependent upon the historical course of technological innovation and social evolution everywhere in the world.

For example, agriculture in East Asia has been developed based upon the monsoon ecology. There, a small-scale family farming system has been developed, having emerged from the communal type ownership of fertile lands. European and American agriculture have been developed under less-humid natural conditions and the individualistic-type of ownership of extensive land. The speaker hardly believes that such a diversity will be overcome in a short term without the considerable sacrifice of the vulnerable groups and environment although many people including some agriculture-related people are attracted to the globalized and borderless economy. In other words, a global level of sustainable development will be achieved only when the diversity of world agriculture is taken seriously into consideration in the establishment and implementation of agricultural development strategies and policies.

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As one of the persons responsible for promoting the sustainable development of the present century, the speaker will attempt to identify an economic system compatible with the coexistence of diverse agricultural systems in the world. For this purpose, he will emphasize the importance of a paradigm shift in agricultural research in the light of integration between real world and scientific research after discussing the economist's perspective, a perspective essential to understanding the coexistence mechanism of diverse types of agricultures. He will insist that agricultural research should go beyond the modernization paradigm focused on intensive agricultural production mainly through monoculture towards the post-modern paradigm supporting the coexistence of diverse types of agricultural systems in the world.

INTRODUCTION

The bust on the banknote pictured below is of Dr. Inazo Nitobe, a pioneer in agricultural science who lived about a century ago in Japan.

As many Japanese well know, he graduated from the Sapporo Agricultural College—formerly the Faculty of Agriculture at Hokkaido University—and wrote a famous book entitled *Bushido*. The book was also published under the title "The Soul of Japan" in the United States in 1899. Yet most Japanese are unaware of another of his important books, *Nogyou Honron*, published about a year earlier. If an English translation of this first book is ever published, it will be entitled something like "The Principles of Agriculture." Nitobe is known as one of Japan's great thinkers. At his university, he eagerly studied agricultural sciences and is said to have read through more than 1,000 books on the subject from countries all around the world. At the end of *Nogyou Honron*, a culmination of his extensive study on world agriculture, Nitobe writes:

Fig. 1. Portrait of Dr. Inazo Nitobe on Japanese 5000 yen banknote

> *Agriculture is like a tortoise that can celebrate a lifetime of 10,000 years, while commerce and industry are like cranes that live only a thousand years. Agriculture is rooted firmly in the land and earth, while commerce and industry fly high and wide above the earth.*

At the conclusion of *Nogyou Honron*, he adds:

> *A national economy can only attain healthy development when a good balance is maintained between agriculture and commerce and industry.*

Throughout the more than 500 pages of his book, Nitobe stresses that the roles of agriculture far exceed the economic functions of supplying food and other commodities to urban and industrial sectors. Sociologically, for example, he holds that they extend to functions such as maintaining tradition and culture in rural communities.

In this century of globalization, a system must be designed for sustainable development. As we strive to solve the crucial issues that face us and design assistance compatible with sustainable development in this century, we should recognize and use the highly diversified roles of agriculture in our economies, ecologies and cultures. This article will cover some of the implications of what Nitobe writes in his 100-year-old book, as they relate to the urgent tasks requisite to achieving sustainable development.

THE ROLES OF AGRICULTURE

The roles of agriculture vary in different regions of the world at different stages of economic development. In many developing countries, agriculture plays developmental roles such as the supply of food, foreign exchange, labor, and capital for national economies. In developed countries, on the other hand, it plays non-developmental roles such as the supply of safer foods and nature-friendly amenities.

Yet agriculture also plays common roles in both developed and developing countries, for example, the realization of sustainable development by preserving ecological environments both locally and regionally. As these roles should be shared equally in the by developed and developing worlds, the multi-functionalities of agriculture now emphasized in the former also have vital importance in the latter. Agriculture and rural society also play roles more diverse than the multi-functionalities implied in the OECD and Japanese government definitions. Though roles such as the supply of food and other raw materials to industrial sectors are internal to a market economy, agriculture also has crucial external economic roles such as environmental preservation. While these are usually included in the concept of the multi-functionalities of agriculture, the roles of agriculture are more important than these usual external economic ones. Besides providing social capital in the national economy, for example, agriculture also plays the very important role of maintaining the traditional cultures of the people by supplying marketable commodities, just as Nitobe writes in *Nogyou Honron*.

The unconventional roles of agriculture are very closely linked with the concept of quality of life. Over the last 30 years of teaching economics at the University of Tokyo, students have often asked me, "Is it enough to measure the quality of life solely in terms of income?" My answer is very simple. "Quality of life," I tell them, "cannot be properly measured using simple indicators such as income. Our analyses of the quality of life should go beyond the dimensions of goods and services in the markets towards the dimensions of function and well being." Professor A.K. Sen has recently published a lucid discussion of the same issue.

The utilization of these diversified roles of agriculture will be very crucial for designing a system for sustainable development in the 21st century.

AGRICULTURAL DEVELOPMENT AND GLOBALIZATION

We are now living in days of very rapid economic globalization. The competitive market economic system has already penetrated into both developed and developing countries through structural adjustments and structural reforms. Today, the simple principle of market efficiency has become the most basic force transforming the world economy. Everything in the world economy, including agriculture, is now being determined by the forces and voices of the global market.

Within this context of globalization, a crucial question arises: Are the simple principles of market economy and market-based efficiency appropriate for designing the sustainable development in this century? This is a question to be addressed as we consider the roles of agriculture in our efforts to achieve sustainable development in today's world.

A very simple hypothesis can be proposed as an answer. While the competitive market is of course necessary for providing incentives to the people of the world, it is not sufficient for sustainable development in this century.

Part of the problem lies in deficiencies in today's global competitive market. The global economy at the beginning of this century remains trapped in a quagmire of deflation. A striking example of global deflation is the downward trend of international real prices of agriculture and primary commodities. Over the last half century, the average price of agriculture commodities has dropped by more than 60%. The situation is very similar to that experienced in the 1930s. Every month, commodities prices rapidly fluctuate in international

markets. This declining trend and serious instability of the primary commodity prices pose serious threats to world agriculture.

Part of the problem stems from the complete absence of inter-governmental agreements regarding primary commodities. Looking back into history, particularly in the middle of the previous century, agreements regulated the trade of primary commodities such as wheat, rubber, tea, coffee, and sugar. Now, with rapid globalization and the strong influence of neoclassical economics, in other words, with the decline of Keynesian economics, inter-governmental agreements have ceased to exist in the world commodity markets.

Before the establishment of the WTO, world trade was governed by the International Trade Organization (ITO) and GATT. At the London Monetary and Economic Conference organized by the League of Nations in 1933, participants stressed the importance of stabilizing the world market for primary commodities in order to ensure the health and stability of the world economy. The signing of the Havana Charter later in the middle of the previous century was probably an outgrowth of this conference. The charter recommended the establishment of the ITO and clearly stressed the conditions necessary for establishing an inter-government agreement on a free market for primary commodities. In keeping with the traditions of John Maynard Keynes and his many proposals against the globalization of the world economy published at that time, discussions must resume on the rebuilding of international commitment to stabilize the world markets for agriculture and primary commodities.

THE DIFFERENT PATHS OF AGRICULTURAL DEVELOPMENT

As Nitobe clearly indicated, agriculture fundamentally differs from non-agricultural sectors such as industry and commerce. Agriculture is embedded in regions, ecologies, and societies, and the forms of being embedded differ according to the historical development of each region or country. All the people of the world live by anchoring into ecologies unique to the various regions in which they live. Human relations within society are highly dependent on the forms and strengths of this anchoring. When the anchoring into ecology is strong and deep, social relations among the people tend to cohere and tighten. When the anchoring is weak and shallow, on the other hand, social relations tend to dissipate and break apart. A comparison of rural societies situated within different ecologies reveals serious differences in the mutual relations between society and ecology. A very famous anthropologist once wrote that rural Japanese society is tightly structured, while that in Thailand is loose. Divergences of this type can be found all over the world.

Agricultural development has basically depended on the historical paths of technological and social revolutions all over the world. Agriculture itself has location-specific characteristics originating from the ecologies and structures of different regions. This is why diverse types of agriculture have existed and will continue exist in the world. The different paths of development in East Asia and the Western world make good examples. Agriculture in East Asia developed based mainly on the monsoon ecology. Small-scale family farming emerged through history from a system of communal ownership of cultivatable land. In Europe and the United States, agriculture developed within slightly dry natural conditions based on an economic system founded on individualism and private ownership. According to the famous historian Macfarlane in his book on the origin of individualism in the United Kingdom, the private ownership system had developed in the United Kingdom by as early as the 12th century. This differs markedly from the path of development in East Asia.

These different paths of agricultural development provided the different types of social capital mentioned earlier. The social structure developed in rural societies provided the basic social capital for the modernization and development of East Asia and the Western world. In East Asia, for example, collectivism developed in the rural sector, just as it did in Japan during the Edo Period or in the Korean Peninsula during

the Li Dynasty, thereby providing institutional foundations for capitalist market economies. In the West, the individualism that developed within the agriculture sectors of rural societies before the industrial revolution, especially in England and Scotland, provided the basic framework for their own brand of capitalism. These examples from the West and East underline the importance of agriculture in providing the basic institutional foundations for the modernization of national economies.

INDUCEMENT HYPOTHESIS OF TECHNOLOGICAL PROGRESS AND INSTITUTIONAL CHANGE

The institutional economies need to be regarded from new perspectives that go beyond the neoclassical inducement hypothesis of technological progress and institutional change. Professors Yujiro Hayami and Vernon Ruttan have already developed this hypothesis quite well in *Agricultural Development: An International Perspective*, their very famous book on agricultural development, essentially affirming the price mechanism in inducing technological and institutional change. While this price mechanism is undoubtedly strong, its malfunctioning should be more carefully considered, particularly its malfunctioning in inducing institutional change.

PATH-DEPENDENCY HYPOTHESIS

As an alternative to the Hayami and Ruttan's perspective, a "path-dependency" hypothesis made up of the following components can also be proposed. First, people incentives are given not only in the market, but also in society. Second, technology and institutions are embodied in natural environments and structures developed in the historical paths of development, as already mentioned. The third and most important component of the path-dependent hypothesis, one that differs markedly from that of the Hayami and Ruttan hypothesis, is that so often the evolved institutions fail to promote efficient market criteria. Many inefficient institutions can be found all over the world in both the past and present. The Hayami and Ruttan hypothesis seems poorly adapted to explain this issue.

The same issue can be discussed from a different angle. Many economists, especially neoclassical economists, maintain that spontaneous contract relations are necessary and sufficient for making economic systems. Though spontaneous contracts are probably necessary, they are not sufficient. To make economic relations stable and fair even in a market economy, the sharing of trust is indispensable among the participating members. However, the type of trust might vary from society to society. The collectivism in East Asia differs quite markedly from the individualism in the West, for example. Though none can be readily claimed to be superior to the other, the types of social capital certainly differ. These kinds of social capital endogenous to each society should be built into the competitive market system. In this way, the economic systems in the world can be found to differ according to the historical paths of the different regions.

PARADIGM SHIFT IN AGRICULTURE RESEARCH

Agricultural research passed through a very important paradigm shift from the 20th century to the 21st century. The research of the 20th century focused on the modernization paradigm, pursuing efficiency and productivity in a market economy. Specialized production through mono-culture was a typical strategy, and almost all of the research adopted methodologies of reductionism and simplification. Now in the 21st

century, this modernization paradigm is moving toward a post-modern paradigm.

LAOS PDR

Over the past three years, I have worked with Professor Tanaka, the director of the Center for East Asian Studies of Kyoto University, in a JICA project entitled the Macroeconomic Policy Support for Socioeconomic Development in Laos PDR. The project focuses on many aspects of socioeconomic development, including monetary reform, fiscal reform, and both industrial and agricultural development. Laotians still practice slash-and-burn agriculture, particularly in the mountainous areas of the north of the country. As an alternative to the Laos government policy of introducing a monoculture for the agricultural development of the region, the project has recommended the introduction of a mixed farming system suitable for the mountain ecology, for example, the planting of fruit trees. Besides further research on this type of mixed farming, a synthesis of specialization in both social sciences and natural sciences with cooperation among economists, sociologists, and natural scientists will be needed.

CONCLUSION

Nitobe was not the only pioneer of agricultural science in modern Japan. Equally important were the contributions of the agronomist Tokiyoshi Yokoi. Yokoi graduated from the Komaba Agriculture College, today the Faculty of Agriculture in the University of Tokyo, and also served as the first director of the Tokyo University of Agriculture, where his statue stands at the main gate.

Yokoi offers a very important warning and piece of advice for those of us considering the types of agricultural research to adopt in this new century:

Even though agricultural research flourishes, agriculture itself perishes

Listen to the rice about rice. Listen to the farmer about agriculture.

Nitobe and Yokoi were the real pioneers of agriculture science in modern Japan, and they insisted on important propositions as early as one century ago. Their statements hold as true as ever in the first days of the 21st century.

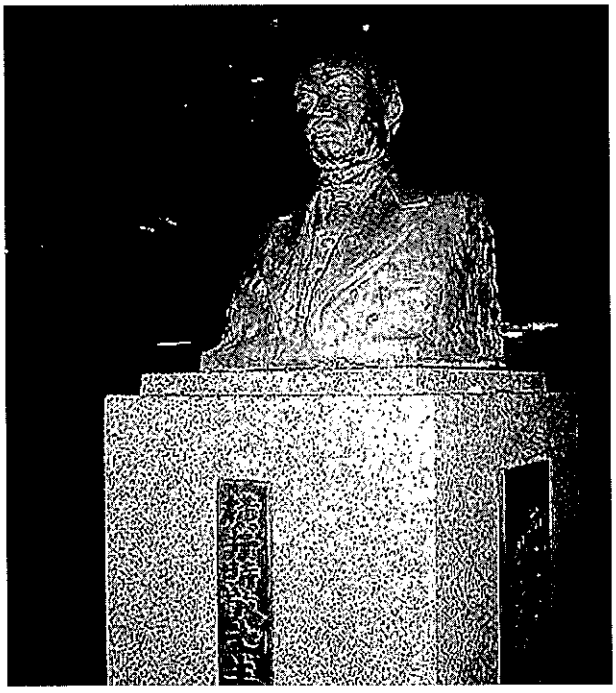

Fig. 2. The bronze stature of Professor Tokiyoshi Yokoi