Geographical Thought in Agronomical Books of Early Modern Japan

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Abstract

In this paper the author examines the conceptualization of man-nature relationships and the spatial differences expressed in agronomical manuals (nosho) of Early Modern Japan, from the sixteenth to the first half of the nineteenth century. While in agronomical books up till the middle of the eighteenth century, authors of manuals fundamentally placed emphasis on self-subsistence based on rice cultivation, resulting in the affirmation of ecological sustainability, many authors of manuals after the middle of the eighteenth century, represented by Okura Nagatsune, encouraged the introduction of cash crops such as cotton, indigo and so on, in recognition of what they believed to be the utilitarianism of the peasantry. The author also considers the fact that, at least on a local level, the agricultural technology asserted by these authors was only a step away from the unsustainable practices of the modern period, such as the heating of glass or vinyl houses or the huge input of chemical fertilizers and insecticides.

I. Definition and background of nosho in Early Modern Japan

In Japanese history the Early Modern period is notable for, among other things, the achievement of the unification of the country at the hands of Oda Nobunaga, Toyotomi Hideyoshi and Tokugawa Ieyasu. This took place at the end of the sixteenth century, ushering in the age of continued stabilization of centralized power which lasted for more than 260 years until 1868, the year of the Meiji Restoration. During this period a great many books and manuals on agricultural technology and agronomical methods were written and published. These are generally referred to as nosho, literally ‘agronomical books’. Agronomical books in the broader sense of the term already existed in ancient China such as Hsia Hsiao Cheng or Lesser Annuary of the Hsia (Bray 1984) in the Chou dynasty in the third century B.C., and in the Graeco-Roman classical period such as the works of Pliny The Elder in the first century A.D. Given the economic importance of agricultural activities from earliest times in any one country, the existence of agronomical books of these kinds in ancient and medieval periods, as explained by Furushima (Furushima 1946), is readily understandable; but in the case of Japan, where written works were concerned, agricultural knowledge was accorded only perfunctory treatment in what were primarily biographical manuscript works on the doings of local lords, or in writings on herbal medicines. It was not until the seventeenth century that agronomical books in the true sense of the term began to appear. The conspicuous absence of agronomical books in early times in Japan, where agriculture was the basis of the economy, is accounted for by the fact that traditional social relationships decreed that agricultural technology be maintained and handed down in the form of collective customary practices which did not require to be spelt out in written form. Moreover, in any case, till the sixteenth century, very few people were literate, and differently from artisans’ trades and other commercial activities which were often conducted according to methods that were closely guarded family secrets, agriculture was an outdoor affair, by its very nature open to the inspection of anyone who wanted to make a study of it.

Salient to the socio-economic background of the growing number of nosho appearing after the seventeenth century was the establishment of territorial rule, extending over vast areas, by the daimyo or feudal lords. Though subject to the central rulers or Tokugawa Shogunate, the daimyo endeavoured on their own to strengthen the economic power of their respective fiefdoms by extending the arable portions of their lands, thus

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increasing agricultural productivity. Hence the diffusion of new agricultural technology and of intensification technology, in areas out of reach of direct observation, became crucial considerations for fiefdom rulers and administrators (Oishi 1977). Until the sixteenth century most of the landlords or warrior class living in the countryside directly controlled the peasantry. Under the Tokugawa regime, however, the warriors were compelled to take up residence in castle towns, thus becoming distanced in the physical sense from their countryside fiefs and the control of the peasants living and working therein. Consequently it became necessary for the fiefdom governments to acquire a firmer knowledge of agronomy in order to maintain control from afar and, most important, to supervise the local people placed in charge of collecting tribute from the peasantry. The tribute collectors were generally low-ranking officers employed for that purpose by the fiefdom government concerned, or sometimes they were village headmen or men of influence and social standing at the level of village squire.

On the peasants’ side, there were good reasons for them to read nosho as they needed to learn new agricultural techniques; if, as was often the case, they were unable to read, they sought out the aid of village leaders who could and did read the nosho. Moreover, the peasants, who continued to be under the strict control of both the shogunate and fiefdom governments, were not only preoccupied with farming per se but were also concerned with raising crops in sufficient quantity to meet the tribute that they were duty bound to pay the daimyo or shogunate whose land they cultivated. The amount of tribute in kind, that is, rice, was determined, at least throughout the seventeenth century, by the cadastral and land estimation surveys made at the end of the sixteenth or the beginning of the seventeenth century. Consequently, the peasants were strongly motivated to increase agricultural productivity so as to reduce the proportion of tributes in relation to the harvest.

According to studies in economic history, in medieval Japan through till the middle of the sixteenth century, the extension of agricultural land was limited to the small basins and plains areas; the greater part of the vast alluvial lands along the main rivers was little more than wasteland. Only after the second half of the sixteenth century, with the advancement of flood control techniques and irrigation works promoted by the fiefdom governments and shogunate, were the hitherto wastelands transformed into paddy fields. The subsequent increase in acreage of agricultural land between 1560 and 1660 is generally estimated as having been threefold. At the end of the sixteenth century the terms of the tributary system were re-defined by Toyotomi Hideyoshi and designated as the rokko shimin, which decreed that 60 per cent of the rice harvest comprised the tribute due to the government and 40 per cent remained to the peasants. But in fact, the government’s share actually reached 70 per cent due to Hideyoshi’s need to cover the huge expenses incurred by his military operations in Korea and his wasteful spending habits. Later on, at the beginning of the eighteenth century, however, Arai Hakuseki, Confucian scholar and high-ranking official of the Tokugawa Shogunate, wrote that the percentage of the tributary burden borne by the peasantry had been reduced by about half during the preceding hundred years, calculating the average for the country as a whole as 28.9 per cent in kind (Arai ca. 1720; Oishi 1999). Arai’s calculations were such that they were no more than an indication of the state of affairs, but certainly afforded proof enough that the tributary burden of the Japanese peasantry showed a remarkable decrease during the seventeenth century.

In medieval Japan the situation of the Japanese peasant was little more than one of slavery, but by the end of the seventeenth century, even in the most backward rural areas, agriculture came to be conducted by family units. Iron farming tools were rare in the medieval age — even the hoe was made of wood. However, by the close of the seventeenth century, hoes as well as some other tools had come to be made of iron. The nosho of Early Modern Japan were written keeping in mind practitioners of agricultural activities, the latter being those engaged in self-sustaining family management, possessing the fundamental means of production: housing, farming implements and sometimes cattle. In the seventeenth century, though in every rural community there were always a small number of people who could read and write, most peasants were illiterate. But after the end of the eighteenth century private schools (terakoya) operated by Buddhist temples became increasingly widespread, and more and more peasants acquired the ability to read the nosho on their own.

Since the ancient period, Japanese learning had invariably come under the strong influence of
Chinese writings. In the case of agricultural manuals, however, though many writings of this sort existed from earliest times in China, their influence on Japanese agronomical books was minimal due to the fact that agricultural practices in Japan differed considerably from those in China. Miyazaki Yasusada’s Nogyo zensho (Complete Writings on Agriculture) of 1697, to be discussed later, might at first be considered an exception as it is generally considered to be greatly influenced by Chinese agronomic books, especially Hsu Kuang-Chhi’s Nung Cheng Chhüian Shu (Complete Treatise on Agricultural Administration) published in 1639 (Bray, 1984); these influences did not, however, extend to the contents but only to the structural arrangement of chapters and items. As for the contents, Miyazaki was guilty of numerous misunderstandings of Chinese agronomy as depicted in the Chinese manuals. As Arizono pointed out, Miyazaki emphasized the practicality of small-scale intensive farm management, based on family labour, reasoning that if the acreage of a paddy field were over-extended, the task of weeding the field would be excessively heavy; and he added that he had reached this conclusion from his study of Chinese works on agronomy. While it was true that Chinese agronomical books did not encourage the extension of farmland acreage, the reason for this lay in the difficulties encountered in irrigation work. Miyazaki failed to understand that the climatic conditions for farming in China were much drier than in Japan (Arizono 1986). This misunderstanding with regard to Chinese manuals on the part of Miyazaki paradoxically demonstrates that, from the beginning, Japanese nosho were fundamentally based on the practical experiences of the Japanese peasantry.

During the second half of the eighteenth century, the considerable influence of the Western sciences was very much in evidence in the fields of engineering and the mathematical sciences, including cartography, and of medicine. Understandably, this was not the case in the fields of Japanese agricultural science or traditional agricultural practices which differed completely from those of the West. It was only after the 1870s and only in Hokkaido that the Japanese began to introduce Western agricultural techniques under American consultancy, though it cannot be said that the Japanese settlers paid a great deal of attention to their American advisers. Nosho in early modern Japan always took on the character of practical knowledge based on the agricultural practices of the Japanese peasants, practices which, moreover, often differed from region to region. Accordingly, most of the nosho, practical manuals though they were, were respectively applicable to very limited areas, while most of the Chinese and Western agronomical manuals were written for the usage of far larger areas and hence were inevitably somewhat general in nature.

II. Significance of nosho

The authors of the nosho of Early Modern Japan were almost invariably village headmen or members of the squire caste. In a good number of cases they were former samurai settled in rural areas, or their descendants. Very often they were tribute collectors or local administrators assigned to those posts by fiefdom governments or, in the case of territories under the direct rule of the shogunate, by the shogunate. After the end of the seventeenth century some nosho appeared in woodcut-print form. A large number of manuscript copies of nosho remain in existence, however, indicating that the nosho were widely read, even in cases where they were not printed. The contents of the nosho were based on the experiences of exemplary farmers who were eager to acquire knowledge of hitherto unknown agronomical methods. Apart from imparting practical knowledge, moreover, the general intention of the nosho was to teach ordinary peasants diligence, and foster in them an innovative spirit, in order to improve the quality of their lives. But at the same time the nosho authors were more or less committed to, or were involved directly or indirectly in, administration at the levels of the village or neighbourhood community, as agents of the fiefdom governments or the shogunate. In this sense their position was somewhat ambivalent; in the interests of the peasantry they were concerned with ways and means of decreasing the tributary burden and increasing the real income of the peasants; whilst as administrators in direct contact with the peasantry, they had to interest themselves in the reassessment of agricultural productivity in order to increase the amount of tribute payable to the daimyo or shogunate.

In several senses, the nosho of the Early Modern period constitute important source materials in comprehending the Japanese geographical thought of that period. While it was patently true that agricultural activities were always under the influence of nature, at the same time they
involved the transformation of nature or the creation of man-made nature. In this particular sense, nosho, in their capacity of manuals of agriculture, invariably contained the Japanese view on nature or the physical environment. Though Japan is a small country, because of the big environmental differences between its northern and southern parts, between its mountainous areas and plains, and between the Pacific Ocean side and the Japan Sea side, which is covered with heavy snow in winter, the agriculture systems or methods adopted for each of these areas greatly differed according to area.

The main crop everywhere in Japan was rice, but apart from this, besides the huge spatial variety of environmental conditions, there existed differences in agricultural productivity levels and also in the degree of development of a monetary economy or commodity production, according to area. Throughout the whole of the Early Modern period, and even as late as the middle of the twentieth century, the southwestern part of Japan was considered an advanced area with regard to land productivity and also to the development of commodity production in the shape of sundry vegetables, cotton, indigo and other industrial crops. In due course, nosho came to reflect the spatial differences in agricultural activities, hence they are the legitimate expression of the geographical thought of Early Modern Japan with regard to regional differentiation in agricultural activities and regional differences in man-environment relationships.

Numerous nosho, written and read at local levels, were not printed but circulated in the form of manuscript copies. Fortunately, over the past decades large numbers of those nosho manuscript copies have been discovered and printed, some of them being translated into modern Japanese. This was partly stimulated by the increasing number of compilations of the history of municipalities and prefectures by local governments over the past forty years, but also owes to the general reappraisal of traditional indigenous agriculture over the past several decades in Japan, prompted by the general failure of agricultural policies after World War II. Labour productivity in Japanese agriculture has definitely increased owing to mechanization and heavy input in the forms of chemical products and installations such as vinyl and glass houses; all this resulted, however, in the over-investment of capital and hence in the lowering of profit rates and the high prices of most agricultural products, much higher than international price levels, sometimes, as in the case of rice, several times higher. The larger part of agricultural activities are now conducted by part-time farmers or elderly persons and many crops, beginning with rice, are marketed only under the protection of a very high tariff barrier. Notwithstanding, Japanese agriculture supplies less than 40 per cent of the total calories of the food consumption of the Japanese. Moreover, severe problems of environmental pollution caused by agricultural activities exist. This is, to say the least, a problematic matter, and in the process of doing something about it, nosho are now being reappraised in a movement devoted to finding an alternative way of modernizing Japanese agriculture. At present more than 400 nosho are available in printed form, many of which are annotated in detail or are translated into modern Japanese and from which my present studies have greatly benefited.

III. Nosho of the seventeenth century

Written around 1640, volume 7 of Seiryoki, the biography of a local lord, one Doi Kiyoyoshi residing in Shikoku, is considered to be the first nosho. This work dealt with his encouragement policies involving agriculture, referring to the cultivation methods of various crops and providing a detailed agricultural calendar. In the second half of the seventeenth century, in various parts of Japan, several kinds of nosho appeared such as the Aizu nosho, written in the 1670s in what is now Fukushima Prefecture, and the Hyakusho denki, literally meaning 'stories heard from peasants', a fifteen-volume agricultural manual appearing around 1680, and including writings on countermeasures for floods, for present-day Aichi and Shizuoka Prefectures. Back in the seventeenth century, nosho for the purpose of diffusing the commodity production techniques of advanced areas amongst backward areas were not yet written; in other words, nosho in the time under discussion were necessarily written for only fixed areas, not for the whole of Japan.

The first woodcut-printed nosho was the ten-volume Nogyo zensho by the above-mentioned Miyazaki Yasusada, published in 1697. The author was of samurai-class origin but chose to settle in the rural areas of what is now Fukuoka Prefecture, Kyushu, in order to practice agriculture. Whilst based there, he however travelled fairly extensively in various parts of Japan, especially the Kyoto and Osaka areas and other ad-
vanced agricultural areas. His book was based on his forty years of experience as a farmer and on his observations in advanced agricultural areas. The systematic structure of the book was undoubtedly put together under the influence of Chinese agronomical books, but in difference from the latter which were generally written from the viewpoint of the ruler or local land agent, Miyazaki’s book was written with the aim of teaching the peasants a rational method of agriculture. The book contains a large number of illustrations, some of which are of plants, others of country scenes and people going about their daily lives, all of which form a valuable source of information on agricultural practices of the time. Though Miyazaki lived in an advanced agricultural area where a variety of commodity crops were cultivated, he himself did not unconditionally recommend the introduction of commodity crops, the farming of which was always accompanied by risks involving fluctuations in market prices and vulnerability due to physical conditions. Instead he gave priority to the establishment of self-sustenance on the basis of rice production. Fundamentally, he insisted on the increase of agricultural productivity by means of labour intensification, which was the guiding principle of the Early Modern agriculture of Japan based on rice cultivation. The book was read throughout Japan and several editions were printed not only in the Early Modern period but also in later years even after the Meiji Restoration. Many subsequent nosho written or published in the eighteenth or nineteenth century were directly or indirectly influenced by Miyazaki’s work.

As the universal ethics of peasants, he advocated economizing and saving, a way of thinking that generally prevailed at all levels of society throughout the Early Modern period. On the basis of this conception, he advocated a form of re-cycling, or sustainability in present-day ecological terms, under the heading of ‘manure’. Apropos of this he also called for the preservation of used bath water and kitchen slops and the collection of night soil. With regard to the latter, he recommended the collection of human waste from the towns, which according to him, was richer in quality than human waste from the country areas, since the townspeople ate better. All of this was put to use as manure. Manure always constituted an important item in Miyazaki’s nosho, but he never suggested the buying of manure, which he considered readily available at home. In the nosho of later periods, however, there are often recommendations to buy dried sardines, or oil cakes and so on for use as manure. As mentioned before, he attached primary importance to rice cultivation, but many pages in his books are dedicated to the raising of barley, wheat, sorghum, soybeans and numerous species of vegetables. He also mentions the cultivation methods pertaining to sweet potatoes and sugar cane which had recently been introduced in Japan. All of these crops came to be much discussed in nosho of later periods.

In a certain sense his work constituted a summarization of seventeenth century nosho, as well as being a pioneering work heralding trends in the nosho of the eighteenth and nineteenth centuries. Regarding the man-nature relationship, his belief was that agriculture must obey the logic of nature, a conception commonly be found in seventeenth century nosho. This was different from the nosho of later periods, exemplified by the works of Okura Nagatsune at the end of the eighteenth and the beginning of the nineteenth century. Okura laid emphasis on economic efficiency, advocating in this sense, as will be discussed later, the liberation from or overcoming of physical restrictions. In volume 1 of his work Miyazaki wrote, ‘That which created crops is heaven and that which grows the crops is the earth, and man, who is the intermediary between the two, endeavours to cultivate crops, obeying the climate and milieu and following the seasons. If man does not follow these precepts the power of growing crops which heaven and the earth properly possess cannot be realized’. In this quotation ‘heavens’ and ‘earth’ mean nature to which man must conform in the practice of agricultural activities.

VI. Characteristics of nosho after the middle of the 18th century

We can point out three characteristics of nosho after the middle of the eighteenth century. First, a number of nosho authors of peasant origin emerged who wrote their books on the basis of their own practical experiences as farmers. Following are two examples of works of this nature: Noka gyoji (The story of agricultural management) written between 1793 and 1818 by Kojima Josui and Kojima Tokushige, both of whom lived in present-day Shiga Prefecture, and the Nogyo yowa (Comments on agriculture) of Konishi Atsuyoshi of present-day Osaka Prefecture, written in 1827. Both books are based on farmers’ experiences in advanced commodity crop produc-
tion areas and are marked by detailed explanations of agricultural management calculations in farm households. The second characteristic was that many nosho were written with the intention of diffusing advanced agricultural techniques and farm management among backward areas.

The third characteristic was the emergence of the advocacy of a technology which emphasized the overcoming of nature rather than conforming to it. According to some nosho of the seventeenth century, farmers attempted to prevent the onslaught of locusts and other insects preying on the crops by resorting to the beating of drums or the brandishing of pine torches and so on, but none of these methods were effective. Nosho after the middle of the eighteenth century, however, advised the farmers to pour whale oil into the rice paddies, and drive the locusts into the paddies where they would be trapped in the oily water and perish. This, according to the nosho of the time, proved an effective method of destroying a large quantity of the pests. With regard to sericulture, around the end of the eighteenth century, some farmers discovered that humidity and temperature control were important factors in the rearing of silkworms and wrote a number of manuals explaining that it was best to use charcoal and pine-wood as fuel, in order to achieve and maintain the needed humidity and temperature control.

The most representative nosho author in the latter part of the Early Modern period was the afore-mentioned Okura Nagatsune, born in 1768. The exact date of his demise is unknown, but in 1856 he was known to be still alive at the age of eighty-eight. In the beginning he was engaged in cotton-growing. After 1796 he lived in Osaka, Edo and other areas, sometimes serving as con-

Figure: Illustration of the method of destroying locusts in Okura Nagatsune's Jokoroku (Manual for the destruction of locusts).
sultant to daimyo in agricultural affairs, but living mainly on his earnings from the publication of nosho. In fact, in his lifetime, he published thirty titles, totalling seventy volumes. He advocated the cultivation of industrial crops such as cotton and rapeseed, and also highly recommended the fostering of sericulture and laver farming in sea water. His 1826 book Jokoroku (Manual for the destruction of locusts), containing advice on how to dispose of crop-eating pests, was the most comprehensive work on the subject and also provided detailed illustrations (see Figure). While many nosho were written as manuals applicable to limited areas, Okura published books aimed at a market covering the whole of Japan, so he was necessarily very sensitive of the spatial differences in physical conditions and socio-economic conditions in agriculture. His last work, Koeki kokusankō (Considerations on specialized crops of each province benefiting a broad strata of society), published in 1859, was a systematization of his ideas on agriculture. It was a type of work that could not have been written by any other than an actual practitioner of farming; for instance, he relates the peculiar difficulties encountered in peeling the bark from the cinnamon tree, a consideration that would hardly occur to non-farming people.

He lamented the conservative attitude of certain local administrators who were reluctant to admit new crops or new forms of technology. He wanted to appeal to the innate utilitarianism of the peasantry, and optimistically believed that if the fiefdom governments and local administrators left matters entirely to the peasants’ initiative, with the ensuing increased commodity production, fiefdom economy could only prosper. In fact the finances of fiefdom governments did become prosperous with their monopolization of some industrial crops such as sugar cane in Satsuma, the present-day Kagoshima Prefecture, and indigo in Awa in present-day Tokushima Prefecture. The prosperity of the fiefdom economy in effect resulted in the decrease of the economic and political power of the shogunate. At the same time, the introduction of commodity crops did not necessarily result in the prosperity of the peasant economy; for very often the fiefdom governments, in order to strengthen their economy, raised the amount of tribute exacted from the peasantry. As a result the latter were sometimes unwilling to introduce new industrial crops, since the more they produced, the more would be taken from them. The failure of Okura as consultant to the fiefdom of Tahara, in today’s Aichi Prefecture, was caused by the reluctance of the peasants to incorporate new technology into their farming. Okura lacked the insight to understand this aspect of the economic and socio-political mechanism of Japanese society in the first half of the nineteenth century.

We should note, however, that the rationalism and utilitarianism of Okura Nagatsune in a sense heralded the spirit of Meiji period modernization which was based on the economic rationalism and utilitarianism first formed in the latter part of the Early Modern period. Meiji Japan accepted unresistingly the technology and material culture of the West. Needless to say, in Early Modern Japan, chemical products or fossil fuels in aid of agriculture were as yet unknown and agriculture itself was what in present-day terms would be defined as ecologically sustainable. But the economic rationalism advocated in the nosho of the latter part of the Early Modern period was but one short step away from the introduction of petrol or chemical insecticides, for example, instead of whale oil or rapeseed oil or a step away from the heated glass or vinyl houses instead of silkworm-raising rooms.

From the contemporary viewpoint there is much to learn from the nosho of the Early Modern period with their emphasis on the spontaneous thought of the peasantry regarding the improvement of agricultural management or the increase of agricultural productivity. But at the same time it should be noted that, in the latter part of the Edo era or in the first half of the nineteenth century, certain nosho authors gave priority to an economic rationalism rather than to ecological sustainability, the latter being a concept which, in any case, did not exist at that period. It should be pointed out, moreover, that from the viewpoint of the history of geographical thought, the origin of the ecological unsustainability of modern Japanese agriculture, in actual fact, dates as far back as the nosho of the late Early Modern period.

Notes

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