SEEDS DEFERRED: JAPANESE AGRARIAN DEVELOPMENT, RŌNŌ AND THE TRANSFORMATION UNDER INDUSTRIALISM

A THESIS SUBMITTED TO THE GRADUATE DIVISION OF THE UNIVERSITY OF HAWAI‘I AT MĀNOA IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER OF ARTS

IN

HISTORY

AUGUST 2011

By

A. P. J. Witten

Thesis Committee:

Yuma Totani, Chairperson
Jerry Bentley
Peter Hoffenberg
Table of Contents:

List of Tables...........................................................................................................iii

Introduction: Rōnō and an Alternative Agriculture ..............................................1

Chapter 1: Villages, Agricultural Pioneers and the Foundation .....................18
  for a Rural, Commercial, Agrarian Order

Chapter 2: Industrialization, the Colonization of Hokkaidō .........................62
  and Institutional Agriculture

Conclusion: A Reconsideration of Japanese Agriculture ..............................111

Bibliography.............................................................................................................114
List of Tables

Table 1: Changes in the Ratio of Tenanted Land………………………………77
The ultimate goal of farming is not the growing of crops, but the cultivation and perfection of human beings.

-Fukuoka Masanobu,
One Straw Revolution

What happens to a dream deferred?

Does it dry up
like a raisin in the sun?
Or fester like a sore--
And then run?
Does it stink like rotten meat?
Or crust and sugar over--
like a syrupy sweet?

Maybe it just sags
like a heavy load.

Or does it explode?

--Langston Hughes
Introduction: Rōnō and an Alternative Agriculture

Between the closing years of the Tokugawa era (1603-1868) and the early decades of the Meiji period (1868-1912), Japanese agriculture underwent significant alterations in production, processing, distribution and consumption. While these changes occurred in connection with the creation of a national government that endorsed industrialism, they required the participation and contributions of Japanese farmers, particularly the rōnō.

Although there is some disagreement concerning their definition, rōnō are generally defined as farmers who had mastery of local and regional agricultural and processing techniques. Overwhelmingly, they were agriculturalists who excelled in cultivation. But some also operated side businesses that could prove quite lucrative, soy sauce and sake brewing among them.

During the first decades of the Meiji era, rōnō served in technological and institutional roles. Through lecture tours, publications and experimental plots, they disseminated information and provided instruction. In conjunction with recently established agricultural research centers, they offered the earliest material for testing then circulated the results. Yet no matter their potential importance, rōnō have rarely been included in English-language accounts of Japanese agrarian history.

Among many social, economic and technological histories of Japan, Thomas C. Smith’s Native Sources of Japanese Industrialization provides the most detailed discussion of rōnō, without ever referring to them by that name. Smith emphasizes a group he calls the “technologists.” These ‘technologists’ were “mostly obscure men – farmers, merchants, and small manufacturers – who never held high office and generally lived out their lives in
villages and small towns.” They were educated; they were concerned with material problems, especially the finances of agricultural households; and they expressed that interest through attentive studies of particular processes of manufacture and production. ‘Technologists’ wrote in a plain, straightforward style; they attacked religion and fatalism when attached to farming, claiming that the most important matter was always skill. Lastly, they were empiricists, writing based on observations instead of relying on the written accounts of others, especially those of Chinese sources. From Smith’s definition it is clear that the “technologists” were a group of farmers whose goal was essentially the application of rational processes to commercial ventures, what some might call ‘applied scientists’.

Smith’s definition is worthy of consideration. The group that he selected included some of the most distinguished agriculturalists of the late Tokugawa era, farmers like Ōkura Nagatsune (1768-1856?), whose focus on maximizing family income through attention to production was well known. But what are we to make of this specific group in comparison to broader categories of agricultural experts? Smith’s focus on those of particular skills, whose propensities for experiment drove their practices and publications, rightly stresses the significance of technology, technique and application. However, it may also detract from the historical context that gave rise to the rōnō, generally, and the ‘technologists’, specifically.

In Japanese-language historiography, scholars have defined and grouped rōnō in ways that are not necessarily compatible with each other, or Smith. According to Oka Mitsuo’s overview in Nihon Nōgyō Gijutsushi (The History of Japanese Agricultural Techniques), there are two ways that Japanese historians have represented the rōnō. On the one hand scholars like Ōnishi Goichi, Sakurai Takeo and Ōshima Kiyoshi accentuated their prominent side-

---

2 Ibid., 173-194.
businesses, as well as their reliance on servants and laborers. For these historians, the rōnō were rich, landed farmers with tendencies towards the management of agricultural affairs rather than production. Against this articulation, Inoue Harumaru defined rōnō as farmers who worked a portion of their own land and rented out the rest, the petite landlord as opposed to the operator-manager of a large estate. In terms of these classifications, technology and practice were not the basis for division; instead, the primary issue concerned the size of land holding as well as labor relations.3

These categories of Japanese scholarship accentuate facets of rural life that are intimately connected with Marxist analysis. The focus on the factors of production and access to and control over labor allow for the study of rōnō to become bound with conversations of class, exploitation and capitalism, either its reality or its emergence. While there is not necessarily anything incorrect with this view, Oka did not find it to be a satisfactory representation of the rōnō themselves.

Instead, Oka ventured a chronological division, suggesting a split between rōnō of the early Tokugawa period, large landowners, and those of the nineteenth century, small-scale, independent cultivators.4 While Oka did not attempt to explain the transition, he did not believe that the large landowner disappeared. Instead, small landholders gained influence in agricultural matters after the large landowner, increasingly concerned with agrarian management, shifted towards rural entrepreneurialism. Thus small holders replaced previous local elites in terms of agrarian leadership.5

Oka’s definition suggests an adjustment in rōnō intentions. Whether the issue of class is central or otherwise, the individual goals of agrarian leadership, and the practices and

---

4 Ibid., 271-272.
5 Ibid.
techniques emphasized within the periods, point to the individual concerns of farmers as well as the potential economic benefits of the times. This is an important clarification within Japanese agrarian studies as it acknowledges the role of choice embedded in agricultural production.

Oka’s definition also facilitates a gradient of rōnō identities. As landowner-culturators, they participated in a selection of village organizations and networks. But as authors, they were integrated into regional and national counterparts. Their agricultural treatises (nōsho) ranged from technical manuals, poetry and song (in relation to agriculture) to diaries, records and commonplace books. These publications were largely expressions of local and regional experience, very rarely did they attempt to articulate or recommend practices for the entirety of Japan. Nōsho are therefore the expression of a particular outlook on agriculture, that of a specific region within the greater setting of Tokugawa agricultural practices and East Asian referents.

The nōsho are as variegated as their authors. Furthermore they, like the rōnō themselves, can be divided chronologically in terms of their contents and approach. Manuals of the first period were largely scholastic.6 They synthesized the findings of particular texts with the conclusions and opinions of a given scholar. These early works became the classics of Japanese agronomy; but they were not as scientific as the texts associated with the second phase of rōnō development. Because of their focus on application, income and yields, latter rōnō stressed separate values, outcomes and processes from previous agricultural texts and their authors.

Together Oka’s chronological division and Smith’s emphasis on technology point to alternate means of conceptionalizing rōnō, outside of the dominant modes within Japanese

---

6 Ibid., 278.
scholarship. Both acknowledge that land holding and labor relations are not the only ways to typify rōnō; and they suggest that other demarcations are more historically beneficial for, in Smith’s case, explaining Japanese modernization or, for Oka, in understanding Japanese agriculture and its practices. Moreover, their break from other models proposes that there may yet be other ways to study and define the rōnō.

In trying to understand their individual ways of thinking, it becomes clear that Oka’s and Smith’s definitions overlap to some extent. “Technologists” can be placed within Oka’s second phase of rōnō development. As a reaction to particular practices, and perhaps even the excesses of the earlier rōnō, they are a movement away from previous behaviors and outlooks. However this does not mean that the second phase of the rōnō and the “technologists” are in complete harmony.

Rōnō of the second period maintained the broad dynamics of agrarian development carried out under the first phase, perpetuating many earlier practices through similar, if not identical, modes of dissemination and communication. As a subset of that group, “technologists” were experts who valued select practices. It is unlikely that, in valuing a unique set of behaviors and values, the “technologists” were a complete break from other rōnō or that they had divorced themselves from a broad agricultural community.

It is that broad agricultural community that requires additional attention. As the source of the rōnō and the focus of the rōnō themselves, that community contains within it the demarcations that have been made and can be made. Therefore a brief history of the agrarian order with attention to the technologies that supported it may reveal a wider context from which the rōnō may take on wider definition.

Although connected to long-term technological changes that began in the third century C.E., the rōnō developed as a definable group following the Warring States era (1467-
1603), when political challenges gave way to social and economic issues within a commercializing, technologically stable agrarian order. It is the Warring States era that contextualizes their emergence and helps to explain the focuses and stresses of the rōnō as oppositional and/or developmental in comparison to the ideals and policies of samurai, merchants and village elites.

It was the Warring States period when powerful local warriors amassed large bands of followers and allocated the resources of their land holdings towards the establishment of secure bases and the success of future campaigns. These developments required expanded access to and power over resources within these lands. The tendency to attract followers and maintain a base of operations eventually led to the construction of castle-towns. Beyond requiring a great deal of construction materials and labor, as cities dominated by a “warrior elite” they required constant supply. In place of the aristocratic capitals of earlier years, castle-towns facilitated agricultural and commercial development by concentrating local resources on local cities. And daimyō took advantage of this. They encouraged trade, welcomed merchants and knocked down, if not completely removed, taxes on commercial interactions. These steps coalesced into a “command economy” where the domain was the unit through which agricultural, handicraft, trade, travel, and war were organized, operated and understood.

To secure their territory, warring-states daimyō removed barriers to trade and travel within their domains by building roads within but not between polities. They also strengthened controls by erecting checkpoints and barriers at their borders. In this way, peasants, artisans and merchants were incentivized to develop associations within a different

---

9 Ibid. 33.
socio-political geography and were penalized for transgressing new, clearly defined borders. When daimyō came to issue their own currency, standardize weights and measures, and define permissible and prohibited commercial zones, they began a process of intensifying central control over local dynamics which penetrated local economies. There is no better example of this than the general prohibition of trade outside of the daimyō’s castle – so that trade could be seen and regulated directly before the seat of government and not in various places, at various times, without a sufficient level of control.

To encourage the development of their domains, and therefore their access to resources and wealth, daimyō exempted markets founded in new villages from tax obligations. For such a policy to be in place means that commercial expansion went hand in hand with agricultural growth. If peasants had an impetus to claim and develop more lands, in currently unsettled places, and merchants and artisans had reasons to follow and to assist the supply and transfer of village products to larger urban markets, daimyō were doing more than developing their domains, they were encouraging the stimulation of regional economies, population growth, and immediate commercial integration. Even with border controls that attempted to prevent the flow of goods across borders, to increase cultivation and resource extraction from the land was to proliferate the social networks that surrounded these processes.

This intensification of central authority permeated agrarian society as a whole, especially through attempts to understand rural resources, humans among them. Although the process was gradual, for it was done continuously after the initial series of 1583-1593,

---

10 Ibid.
11 Ibid. 48.
land surveys became a measurement for evaluating a village’s productive potential. The first cadastral surveys aimed to record human and natural resources. They conceived of the standardized unit at the local level as the village and assessed each village with a particular expected annual yield of rice. Then this figure was used to allocate taxes and labor as well as to assign daimyō their domains and samurai their stipends. In this manner a defined and expected amount of produce was built into the system and the economy of the elites revolved around its dependable production and collection. In time, daimyō began to require that surveyors not only recorded information about land and population but topographical features, animal population and the amount of processed and manufactured goods for each village. Eventually this information found its way into almanacs and country-wide inventories categorized by province.

Between 1580 and 1610 at least 25 major towns were founded, all of them needing construction materials, markets and provisioning. The outgrowth of markets and transportation networks therefore came to focus on these cities instead of between and among agrarian communities. The swift and dramatic growth of these towns held such socio-economic force that Japan’s urban population continued to increase well into the 17th century, with urban population likely reaching 15% by the 18th century. High levels of urbanization could theoretically refashion entire economies, especially when it came to production.

---

15 Ibid. 81.
16 Ibid. 158.
18 Ibid., 11-12.
For Japan, the “heavy demand for consumer goods in the cities stimulated both local specialization and provincial differentiation of work and production.”¹⁹ Local specialization required allocating labor and resources in a more malleable way than the extended family system of Japan (the *iemon* system) allowed. In the *iemon* system the main family (*bonke*) was recognized as the landholding lineage and was responsible for the branch families’ (*bunke*) access to these lands.²⁰ In this association the branch family was dependent and was not provided a voice in village politics. Typically, the branches did not possess their own tools, supplies, or capital. Thus agriculture was viewed as a multi-family project where such processes as rice transplanting, the maintenance of irrigation works, harvesting, processing and other large-scale tasks were collective responsibilities. When it came time for these ventures the head family’s lands received priority and branch families were not permitted to work their own lands until the head family’s had been addressed.²¹

Commercialization gradually reworked this. Peasants came to rely on the market and rural entrepreneurs for their supplies, as well as alternative sources of income, including wages. The commercialization of products and the commercialization of labor came hand in hand; and with this, a branch family’s reliance on the head family mattered less than the ability of the branch family’s members to gain access to work, wages, and income outside of direct agricultural production. In commercialization and proto-industrialization the branch family could apply its labor elsewhere and to its own benefit without having to supply the head family.²² As a result, commercialization interfered in intra-village structure and began to erode the relationships that not only kept villages together but maintained agricultural production at the center of village life.

---

¹⁹ Yazaki Takeo. *Social Change and the City in Japan*, 244.
²⁰ Ibid. 243.
²² Yazaki Takeo. *Social Change and the City in Japan*, 248.
While there were many causes for commercial intensification and the penetration of money economy, likely the more important was the alternate attendance system (*sankin kōtai*). Growing out of the non-compulsory tradition of *daimyō* visiting the shogun at Edo, in 1635 the *bakufu* instituted the alternate attendance system as a requirement. In short, it mandated *daimyō* to spend every other year in Edo. But this system was not only about regulating *daimyō* whereabouts and movement. Through its antecedent hostage system, which had been formalized in 1610, *daimyō* wives, children, and in some instances parents, were forced to remain in the capital, in order to constrain future rebellion.

The intent of alternate attendance was as an economic burden that would keep *daimyō* from having funds to allocate towards anti-*bakufu* intents. The process of moving from a domain capital to Edo, the upkeep of multiple residences and maintaining retainers in all possible pomp “resulted in the chronic bankruptcy of the *daimyō* and the progressive impoverishment of the entire feudal class.” As *daimyō* debts intensified, efforts to restrict subordinates’ salaries and in some instances downsize retainers and staff prompted the polarization of the samurai class between those higher-ups, who held the sway to counteract their debts by forcing loan forgiveness, and those too poor to view their samurai status as much else than consignment to high-status poverty.

Alternate attendance did make significant contributions to social and economic change. For Edo and the surrounding environs, concentration of the political and social elite in one center created demand and stimulus for trade, communication and industry. Along each of the main five highways post-stations were erected which maintained facilities large

25 Ibid. 81.
enough for daimyō and their retinues to rest or stay.\textsuperscript{28} The result was the development of communications and freight\textsuperscript{29} and a level of agricultural and commercial specialization that made entire swaths of Japan dependent on long-distance trade.

For the domains, daimyō debt led to the improvement of agriculture and industry. On the one hand, domain monopolies over particular products, such as indigo, paper, lacquer, salt or textiles, resulted in the improvement of techniques as well as attempts to make production and distribution more efficient. In other instances, daimyō recruited and employed technicians from other domains to improve sericulture, to teach farmers more productive methods of cultivation, and to increase mining and processing operations.\textsuperscript{30} And in the case of Akita, economic pressure was one major component for the development of sustainable forestry.\textsuperscript{31}

The transformations of Tokugawa economy did not alter the nature of samurai debt. In an effort to pursue additional revenues, domains levied taxes on everything peasants made\textsuperscript{32} while seeking, through policies of shokusan kōgyō (develop products and promote enterprise), to have more to tax.\textsuperscript{33} As each domain was its own political unit and each daimyō had the right to assign taxes to his liking, command economies were the underlying political organization of the Tokugawa period. Even in the midst of commercialization, a daimyō could mandate particular policies, assign monopoly rights or require that currently successful merchants or producers provide money or products without compensation. Beyond these autocratic measures, daimyō used their position to develop their domains in part to compete

\textsuperscript{28} Toyoda Takeshi. \textit{A History of Pre-Meiji Commerce in Japan}, 52.
\textsuperscript{29} Ibid. 51.
\textsuperscript{31} Conrad Totman. \textit{The Lumber Industry in Early Modern Japan}. (Honolulu: University of Hawai‘i Press, 1995), 20.
\textsuperscript{33} Tessa Morris-Suzuki. \textit{The Technological Transformation of Japan}, 28.
with others. The result was technological and economic competition that developed particular processes and products.

Domain economies and policies of development reinforced the trends of commercialization at large. Moreover, by playing to one’s strengths in production, domains made use of specific climatological and geographical features. Competition between domains, especially those that shared similar resource limitations, placed greater emphasis on practice and technique. It was this milieu that undergirded the place and then the prominence of rōnō in agrarian society.

The environment of gradually intensifying market-driven production informed rōnō practice and behavior. Regions that succeeded had the opportunity to devote greater capital resources while areas that were underperforming or nonperforming provided opportunities for investment, as well as the application of alternative techniques. Rōnō knowledge could be inserted, applied and tested in these various situations, to increase already stable incomes, to further develop lands and resources or to rehabilitate villages and regions that had experienced decline.

These commercial connections are vital in contextualizing rōnō in Japanese agrarian history. To understand the meaning of the rōnō is to comprehend the intersection of various classes surrounding Tokugawa economy and the centrality of agricultural production. Whether employed by daimyō and samurai seeking to increase their personal incomes or by domains for the greater assurance of tax assessments, rōnō could and did serve as intermediaries for various political elites and/or provided the texts utilized during government intervention. As entrepreneurs they lead investment and development. As agrarian experts, they acted as consultants and teachers. And as humanitarians, they directed
village rehabilitation programs that aimed to increase local agricultural production and better the livelihood of villagers.

The rōnō came into being around the Tokugawa era because it was the Tokugawa period when agricultural technology finally fused with commercial development to provide a strong base for an agrarian order. As before the shōen system agrarian technology had been too fragile to support continuous cultivation, the changes in production that occurred from the shōen period through the early decades of the Tokugawa allowed technological development, commercial integration and political order to harmonize. The social and economic issues attached to these developments then encouraged farmers to invest more labor and capital in increasing the products of their lands. Regardless of the size of their holdings, the rōnō aimed to facilitate continued technological development.

In this context, the Rōnō can be thought of as Japanese farmers who refined and advocated specific sets of practices within their regional mode of agricultural production. These practices, among them composting, transplantation, multi-cropping, crop rotation, and dry-island fields, were elements of an agrarian technological order that had been emerging for quite some time within East Asia, but bore unique characteristics within Japan. These developments were conducted and reinforced by the everyday behaviors and applications of Japanese farmers, as a whole. It was these farmers who solidified a rice-based agrarian order through the gradual expansion and modification of relevant techniques, while also highlighting the regional variations that made universal applications of pre-industrial methods rather difficult. Because it was farmers who performed these actions, rōnō must be a subset of farmers, not the best agriculturalists but the more active and vocal contributors to agricultural development. From this perspective Rōnō can be viewed as participants and
inheritors of long-term technological changes within an agrarian plurality, one active group among many others.

The remainder of this thesis is an examination of the contents of the Japanese agrarian order, with particular attention to the transformations that occurred socially and economically under the Meiji state. It was the Meiji era when the rōnō became employees of a national government, involved in the creation of homogenized agricultural practices and facilitated the formation and solidification of institutional agriculture. In these roles, Meiji era rōnō may have taken on ‘new’, bureaucratic and technical roles; but they were still practitioners of Tokugawa era agriculture.

But to be clear, these periods were not an ideal past. Rather, I will argue that the agricultural complex of that time, as a set of practices and techniques as well as an approach or mentality concerning humanity’s place in the natural world, is worthy of replication, at least in part.

To substantiate these claims this thesis proposes that the study of Japanese agrarian history, especially over the long term, accentuates the underlying conflict between central and local authorities, which was not resolved until the creation of a national, bureaucratic state. This tension, as the principal cause of agrarian unrest, intensified in the Meiji period when farmer interests and political and national aims were not immediately compatible. Although rural unrest and disorder were one outcome, the loss of local autonomy, both over politics and agriculture, was another. But while weakened local self-determination did not necessitate that the interconnections between agricultural practices, agricultural products and human health would attenuate, the shift towards industrial agriculture’s paradigms did.

Values foreign to the logic of Japanese agricultural production, especially the focus on labor and labor savings, established goals and stresses that reworked the state’s view of
agriculture and agriculturalists. Once agricultural societies and the state’s Ministry of Agriculture came to promulgate national policies of production, local variation and local technical differentiation were undermined. National policies and national prescriptions required homogenized practices and standardized results.

If agriculture had been an art, if it had been a task where the cultivator came to understand a particular area of land, the specifics of a given set of crops and the nuances of local weather patterns, the Meiji state was not interested. Rōnō, however, were. For this reason the practices recorded by the rōnō, especially those contained within their agricultural manuals, are more than a record of pre-industrial Japanese agricultural techniques, they are a means of regaining an outlook towards cultivation and nature that seems to have fallen away in contemporary societies. Rōnō practices are therefore one more model of agricultural production, one more alternative.

In 1951, Langston Hughes questioned the outcome of dreams deferred. In his mind such dreams held limited options: they could wither, rot, become noxious, droop or explode. And all these negative outcomes call for our attention. The possibility that put-off dreams will never deliver positive results is more than a source of anxiety; it implies that what is thought of but not accomplished will waste away; and in terms of history, it suggests that memories of these dreams may become too painful, that they may be forgotten, intentionally or otherwise. Yet dreams that may have been at one point central to a people should not be revised away so that their great sagging weight no longer reminds us of choices that were made.

Between a seed and a dream there is much similarity. Both are encapsulations of potential. In the case of seed, a life with its many blossoms and fruits are contained within one husk, waiting for appropriate conditions before a single shoot uses up the entirety. If
that sprout wastes away so goes the core. In the case of a dream, from one mind comes hope and aspiration. And like the seed, once the shoots desiccate there is not much that remains.

The narrative of the rōnō is one of deferred seeds and dreams delayed. For the rōnō there was an opportunity to revise Japan’s industrial future, to incorporate pre-industrial Japanese agriculture and to continue the development of indigenous agricultural practices. In place of the dependency on technological, chemical and mechanical inputs, which came with the Meiji era, there was a chance to make use of local resources, knowledge and techniques. When rōnō were called upon to contribute to the formation of institutional agriculture, a formal program that lasted from 1880-1895,34 that dream was formed. But by the end of the period, the rōnō were auxiliary to the agricultural testing centers, government bureaus and Western-trained specialists who now dominated the production of agricultural knowledge and the articulation of government policy. The industrial vision of the Meiji state had replaced the hope of some of Japan’s most prominent farmers.

Not to disagree with Hughes, for the average dream once lost does not amount to much good, the dreams and seeds left behind by the rōnō still possess some vitality. Although largely relegated to pre-modern obscurity, their ideas, values and practices can be revived and applied. In today’s milieu of organic, natural, local, sustainable and slow foods, people are coming to question particular facets of food production, such as the use of chemicals, agriculture’s connection with environmental pollution and the suffering produced within and by industrial processes. Depending on what metaphors and historical referents these questions take on, various pre-industrial agricultural systems may once more be applied. In this way the dream of the rōnō looks neither lost nor invalidated. For within the deferred

seeds of local production (where resource limitations are always in mind) and the careful attention to changes within the natural order, there is still hope.
Chapter 1: Villages, Agricultural Pioneers and the Foundation for a Rural, Commercial, Agrarian Order

Japanese agriculture experienced a similar trajectory as Japanese silviculture, an arc that presents the limitations and capacities for pre-industrial management and technique. Wood being a principal pre-industrial energy source, its applications and available supplies dictated agricultural, commercial and family or village production and consumption capabilities. With sufficient tree stocks, processes and habits reliant on wood and charcoal could be plentiful while a lack of forest supplies triggered price escalations, shortages and, at certain thresholds, decreased quality of life.

Beyond the matter of building materials, tree scarcity meant that warming the home and preparing meals came into conflict with the application of green manures, generally one of the more popular, inexpensive and necessary fertilizers. In terms of individual farming households, competition between daily needs and nourished crops was an issue of scarcity now or scarcity later, forgoing heating for a heavier yield or taking immediate warmth but lower harvests. On an ecological scale, if forests became too sparse, erosion, land degradation, increased flooding and heavier siltation along subordinate gradients of the water table could undermine agricultural production, engendering localized and regional famines.

Available forest supplies therefore dictated potential agrarian practices. And through this interconnection the history of Japanese silviculture can reveal when tensions between available forest resources and the demands of Japan’s human population required attention, intervention that would affect agricultural production and forest exploitation.

Tokugawa lumbering and silviculture can be presented in two phases: the building boom of 1570-1650 and the maintenance phase from 1650-1868. In the first period, the conclusion of the Warring States era brought forth large-scale construction projects. These
palaces, mansions, shrines and temples required massive quantities of wood. As local stocks could not necessarily provide for the needs and wants of urban areas, much lumber had to be selected, processed and transported. To accomplish this, trees belonging to the domain or a proprietor supplied a particular project or supplemented government revenue while entrepreneurs developed or were contracted into lumbering for the market.35

While the largest volume of wood was consumed by villages to meet fuel, construction and fertilizer needs,36 peasants could purchase both firewood and charcoal from lumbering agents. Should local stocks become depleted or demand exceed supply, the market was capable of redistributing forest resources. Yet unlike small-scale commercial wood products and byproducts, entrepreneurial lumbering was the backbone for the lumber market itself. Because of the scale of construction, lumbering required a great deal of initial capital in order to first cull and then process large quantities of specific species. Moreover, with wages owned to laborers at the time of service, whereas payment for the lumber was made in installments over time, the enterprise was risky. Large-scale cutting and plantation projects also required investment and time, which increased the likelihood of default, as well as damage by weather, fire or theft.37

By the maintenance phase of 1650, when deforestation was prevalent, provisioning and management - all local-rural tasks - structured the context for future lumbering.38 In Akita, a domain home to one of the three major forests of Japan, overcutting triggered lumber and fuel shortages. Initial domain policies that aimed to protect and conserve forest resources did not prevent further deterioration. Scarcity continued into the 1710s. Following

36 Ibid., 20.
37 Ibid., 30-46.
38 Ibid., 100-102.
widespread crop failures in the 1770s and 1780s, intensified afforestation practices came to yield positive results. Tighter control over forest access, and programs that sponsored tree planting, incentivized peasant-led sowing projects, which were sometimes subsidized. These measures stabilized resource levels and enabled increased timber production by the 1850s.39

For Akita, the general curve of deforestation, resource scarcity and afforestation is important not only for its length but its chronology and duration. Resource depletion occurred in step with first the Warring States period and then the early decades of Tokugawa economic expansion. Large-scale building quickly consumed forest products and there was little done to ensure forest stands would be in place for future use. However, it was not until a hundred years later, when human populations were challenged by the effects of deforestation, principally famine, that there was enough cause to invest money, time and labor in re-forestation. Once this goal was established, in less than two generations policies of afforestation and greater control of forest resources enabled wider use and dependable quantities of timber.

The chronology for Japanese silviculture, its failures and eventual success, is nearly identical to that of Tokugawa agriculture. As with deforestation, significant change did not come to agrarian policies until the agricultural order was itself challenged by three large-scale 18th century famines. These famines led to significant reform, both on behalf of governments but most importantly by and for the peasants themselves. Informally leading and informing these reforms were the rōnō. To understand their role, we turn to village organization so that local hierarchies as well as networks for the production and exchange of knowledge and commodities can contextualize their programs, recommendations and results.

Villages and Local Hierarchy

In the Tokugawa period there were over 270 domains.\(^{40}\) Within these polities lived nearly 30 million people, 80% of whom were farmers.\(^{41}\) By the latter half of the Tokugawa era, agriculturalists lived in nearly 63,000 villages which averaged 400 people and a 400 koku rice assessment.\(^{42}\) These villages regulated their own water and drainage systems and assigned access and duties based on a prescribed hierarchy of households.\(^{43}\) Over time, villages became home to the rural poor as well as successful farmers, merchants and entrepreneurs who had access not only to wealth and status but education.\(^{44}\)

With the rise of some, the accumulation of debts, the transfer of property and the disruption of rural relations was the aftermath of commercialization in the countryside.\(^{45}\) In spite of laws that aimed to prevent peasants from leaving the land – or from anyone becoming a large landowner – tenantry rose steadily throughout the Tokugawa period and accelerated in the first years of the Meiji.\(^{46}\) But it was not only that rural tenancy was increasing in the latter Tokugawa period; rates of urban homeownership also declined.\(^{47}\) This indicates that land concentration was a dynamic of the economy at large rather than merely an agrarian phenomenon.

From the late shōen period through the beginning decades of the Tokugawa, the area of cultivated land doubled; and did so again over the course of the Edo era. As cultivated


\(^{43}\) Ibid. 223-225.

\(^{44}\) Ibid. 230.


land extended so too did irrigation. By the mid-19th century one half to three-fourths of the irrigation facilities that are in place today were constructed.\footnote{J. Mark Ramseyer. \textit{Odd Markets in Japanese History, Law and Economic Growth.} (Cambridge: Cambridge University Press, 1996), 27.}

Between land reclamation and the growth of irrigation, not only was more land under cultivation but dry-land was increasingly converted to paddy and existing paddy came to be double cropped.\footnote{Ibid.} Gains in agricultural production could therefore come from both the expansion of arable land and land improvement, neither of which were carried out to full capacity within the Tokugawa period.

Although more land came to be cultivated, and population increase provided more people to cultivate it, less came to own the land. While population growth ensured that intensive agricultural methods would be practiced there was no assurance that land tenure would be egalitarian. And commercialization, excess capital, and village social structure guaranteed this. In the end, those with means acquired the land and those without became either tenant-farmers or wage laborers. From one perspective, this dynamic was responsible for the creation of a rural and urban “working class.”\footnote{Gary P. Leupp. \textit{Servants, Shophands, and Laborers in the Cities of Tokugawa Japan.} (Princeton, NJ: Princeton University Press, 1992).} More importantly, it is evidence of capital accumulation in a time of economic expansion.

Even if as a gross generality, the typical villager possessed a residential plot, a work shed and the tools necessary for cultivating one cho of land.\footnote{Satô Tsuneo. “Tokugawa Villages and Agriculture,” 46.} This villager participated in several village associations, the most important being the gonin-gumi (five family association) – an instrument for controlling the rural population through breaking down the village into groups of five households who were then responsible for the mutual supervision and control
of all members.\textsuperscript{52} Other associations and organizations included irrigation societies (belonging to multiple organizations where rights of water access overlapped) and mutual aid societies; societies dedicated to a variety of purposes, including the needs of mothers and children, financing pilgrimage or as communal check on famine and disease.\textsuperscript{53} For these organizations status within the village was insignificant.

Among these variegated organizations, \textit{daimyō} only arbitrated to the village level,\textsuperscript{54} leaving the village to function as an autonomous unit. In the absence of central control, villages crafted their own formal systems for maintaining the peace – because their individual autonomy was contingent upon a rural countryside that did not require the domain or \textit{bakufu}'s intervention.\textsuperscript{55}

One such system was that of village contracts. Although these contracts were not binding in the sense of notarized documents upheld in court,\textsuperscript{56} their uses indicate that they were agreements fashioned within the context of a community connected through interactions of mutual dependence. Contracts were used to finance social welfare, to establish relief measures, to declare and oversee fixed boundaries, to define official obligations and duties, to delineate transport, stipulate access to commons as well as to allocate tax payments and the village budget.\textsuperscript{57} As communal documents, breach of contract became a collective affair, regulated by the community itself.\textsuperscript{58}

\textsuperscript{53}Ibid. 58-59.
\textsuperscript{55}Herman Ooms. \textit{Tokugawa Village Practice, Class, Status, Power, Law}. (Berkeley: University of California Press, 1996), 103.
\textsuperscript{56}Dan Fenno Henderson. \textit{Village “Contracts” in Tokugawa Japan}, 16.
\textsuperscript{57}Ibid. 14.
\textsuperscript{58}Ibid. 17-19.
As records of conflicts they extend beyond the mundane to illustrate how and what villages regulated. The contracts reveal a variety of modern concerns, from pre-nuptial agreements, like that of Kojima Ryōemon who pledged, if he divorced his soon-to-be wife, he would provide her with 1000 ryō,⁵⁹ to home owner agreements, attempts to waylay future conflict by setting clear boundaries for future complaint between neighbors.⁶⁰ Other contracts offer opportunities to understand the minutiae of rural society. One contract details the manner of land sale, including a diagram with measurements.⁶¹ Another outlines a way that villages were able to work around domain and bakufu prohibitions on the direct sale and purchase of land – through the use of land as collateral for a loan that would never be repaid.⁶² The contracts also provide some levity. A wonderfully titled pact, an “agreement to forgive a debt until the debtor succeeds in life,” conveys how munificence could be contractually represented among villagers when they agreed that the debtor would not be liable for his debts until he had flourished in future affairs.⁶³

This example aside, contracts were not typically a source of humor. In many cases they describe situations of extreme poverty. Such was the case in Sonezaki Shinchī village of Settsu province, from 1859 through 1861, when a family who first initiated a “certificate for adoption without contact [with real parents] for life” gave Hisa, their 19 year old daughter, to Akashiya Yoshihei. The certificate, signed by Hisa’s Uncle, Aunt, Father, two guarantors and Hisa, established that the girl was not a Christian (in important matter because of the country-wide prohibition on that faith). It also stated that should the girl experience sickness,

⁵⁹ Ibid. 147.
⁶⁰ Ibid. 80.
⁶¹ Ibid. 59.
⁶² Ibid. 51.
⁶³ Ibid. 129-130.
accident or death her family need not be notified. This initial certificate was followed by the following statement:

we understand that from this point onward you may, of course, transfer her as an adopted female to another house, and needless to say you may at your discretion also indenture her to serve for wages borrowed in advance. In such events, without any notice to us, you may attach this document to facilitate your transaction anywhere (sic) and regardless of the parties, and there will not be a word of protest from us.64

In this way, Hisa’s family pledged more than the complete break indicated by the first document’s title. In this instance they absolved themselves of any of her future earnings, or her potential value.

In exchange for Hisa her family received 70 ryo. Their seemingly final paperwork concluding with the phrase: “Moreover, we will never do such a thing as to beg or ask for further aid.”65 However the matter did not conclude there. A year and a half later Hisa’s family required an additional 1 ryo 2 bu to pay supplementary debts. And while this seems to have been the end of Hisa’s natal family’s problems, several months later her adoptive father, Yoshibei, must have run into some trouble because he was forced to take a loan of 30 ryo, for which Hisa was the collateral.

Yoshibei’s debt contract used similar language as the paperwork for the initial adoption stating, “In case we delay or cannot repay the above money you may grant her as a servant at any place and we will at such time impress the parents’ seal for the new master without protest.”66 It seems, without further village documentation, that the matter ended there – either with Yoshibei making good on his debt or with Hisa changing families at least once more.

---

64 Ibid. 152.
65 Ibid. 153.
66 Ibid. 156-157.
What is important about this exchange is the way that the poorest of the involved families did not appear to draw upon someone who had enough money to assure Hisa’s long-term well-being. Instead, Hisa’s family was able to adopt her to someone who was slightly better off – but not well off enough. Thus Hisa’s family’s pledge that she might be re-contracted, and that they will never see her, contact her or complain was not a linguistic formality but an actuality of practice. Hisa could not only be removed from the village through wage labor, she could be readopted, her name and Buddhist sect changed, her identity transformed.

While these documents do not indicate the cause they well establish the reality of debt. Rural poverty, just as urban poverty, obviously reached extremes where family members became sources of income – someone who possessed commercial value either due to particular skills or their capacity for wage labor – while removing them from the family not only provided that income but decreased the daily cost of living. However, from a separate vantage point, this also decreased daily income and the amount of work a household could accomplish collectively. One less mouth to feed was also one less pair of hands to work. In the case of Hisa, the 19-year-old girl would not have been an unproductive member of a household unless she was physically incapable – which the documents do not imply. If the people continued to own or tenant paddy land her labor would have been necessary to their survival.

Hisa’s family mirrors the narrative of family planning and management that Thomas Smith presented in his study of the village of Nakahara. According to Smith’s analysis, the families of Nakahara regardless of their wealth, in times of plenty and in times of poverty, practiced infanticide to keep their family size proportional to their land holding. Thus

---

families grew as land holding increased and families shrank as land holding diminished. But when land holding was reduced family size did not decrease slowly – a rapid adjustment was made. In this way the economic burden of the family was not only directly linked to the amount of exploitable land but family size was dependent on it.\textsuperscript{68} Because land ownership, or land circulation, was continuously changing throughout the Tokugawa period, families had to compensate for perpetually changing dynamics within the village. In Nakahara, by 1788, land ownership had become concentrated;\textsuperscript{69} in this situation families with less land were forced to downsize. Hisa and her family’s experience seem related to this.

Rural Poverty and its Responses

As one response to high levels of commercial demand was for rich farmers and merchants to increase their holdings of productive lands, the price of paddy land continued to rise in regions nearest to cities. The resulting transformation of the medium and small-scale owner-cultivator into tenants assured high rents and cheap labor – conditions complementary with absentee landlordism, as well as rural craft manufacture. But this was the case for regions close to urban centers. The farther away a community was from these commercializing factors the less access it had to forms of capital that facilitated the development of handicrafts or the expansion of market-bound agriculture. These peripheries saw an increase in abandoned lands, a turn towards dry-land cultivation and a good deal of depopulation.

Understanding rural poverty requires differentiating between individual households that suffered from insufficiency and a community at large; individual households had a chance to rely on other branch families, the head family, village organizations, charity from

\footnotesize{\textsuperscript{68} Ibid., 130-147.}

\footnotesize{\textsuperscript{69} Ibid., 118.}
local well-to-do or temple and shrine funds; however, when an entire community was destitute those safety nets could not function as communal resources were insufficient. Therefore, while in every village there was certainly a spectrum of income and worth, it is important to recognize that there were also entire villages, and regions, where poverty was pervasive, agricultural methods far from best-practice, yields low, debts high and land uncultivated.

Commercialization has been cited as a leading cause for regional underdevelopment. The Wild Boar Famine, a localized famine in 1749, helps to make this connection clear. In Hachinohe, south of present-day Aomori prefecture, in the 17th and 18th centuries, the domain elected to specialize in fish-based fertilizers and soybeans in response to merchant and official demand. As a result, the once self-supportive agricultural economy of Hachinohe quickly came to center on soybean export, produced primarily through slash-and-burn dry-land farming. Yet regardless of whatever gains were made, because the domain did not develop into a finished-goods processor, Hachinohe was vulnerable to fluctuations in economy as well as weather. When the Neo-Boral arrived in the mid-18th century it significantly delaying soybean germination and resulted in wide-scale crop failure. Without a good deal of acreage devoted to secondary crops, 10% of the rural population of Hachinohe died. This was largely due to the commercial aims of the domain economy but agricultural practices, which encouraged growth in the boar and deer populations, played their part.\(^70\)

Regional specialization and development also meant regional specialization and underdevelopment. Although the Tokugawa era is largely mentioned for its rapid land reclamation projects and the expansion of irrigation networks, by the 18th century there was

also a trend in field abandonment. In response, the bakufu and domains initiated the shibō, or village rehabilitation project. These programs aimed to bring cultivatable fields back into use so as to increase tax revenues. It is important to note that while this may have been done in the name of bettering peasant livelihood the state’s involvement was self-serving. Typically, a government was involved only in prompting and facilitating migration as well as negotiating tax breaks during development. It is obvious that while governments may have provided limited tools, training, labor or money the main objective was to re-populate particular villages. There does not appear to have been a government organ for the continued maintenance of these regions, nor for shibō oversight. Village rehabilitation programs were therefore subsidized programs where farmers could address social and technical problems with cultivation. And the actual articulation and management of the shibō was but one of the projects overseen by rōnō.

Ninomiya Kinjiro (1787-1856) is likely the best known leader of Tokugawa era shibō. Although born into a family of some means, he was of peasant origins. Due to a severe flood, the cost of medical treatment for his sick father, and the eventual loss of both parents, he was orphaned and landless by 15. Separated from his two younger brothers, he went to live with his uncle, Manbei, where he came to develop the personal characteristics he would be known for: discipline, economy, industry, sincerity and service.

When his uncle scolded him for wasting oil to read at night, Ninomiya reclaimed some land, grew his own oil-bearing seed, had it pressed and began to read using his own resources; when his uncle rebuked him for wasting his time and efforts, instead of the oil,

---

73 Ibid. viii.
Ninomiya came to see limits of learning in comparison to the necessities and rewards of action.\textsuperscript{74} He was so convinced of this that he was quoted later, in teaching his students, as saying that “learning is an art aimed at making men of small avarice into those of great avarice.”\textsuperscript{75}

In time Ninomiya, through continuing reclamation efforts, produced enough rice to not only repay his uncle but to regain his natal property – land still ruined from the flood that occurred when he was five. By the time he had the fields once more productive and the house in good condition, he was well-known; his reputation for industry and discipline attracted the region’s daimyō who assigned Ninomiya the task of rectifying a shogunal retainer’s debt. Over the course of five years, Ninomiya not only led the retainer to pay off his debt but left him with a surplus.\textsuperscript{76}

Because of this success, the daimyō assigned Ninomiya the rehabilitation of Sakuramachi, a network of three villages that produced less than one-third of the rice for which the land surveys held them accountable.\textsuperscript{77} When Ninomiya arrived he found the villagers had largely abandoned rice cultivation for dry-land agriculture, leaving 162 chō, more than half the irrigable land, unused. At the rate of 10 chō per year, Ninomiya led crews that reclaimed the land, improved their quality and returned them to rice cultivation. The process was not quick. It was 26 years before the villages had regained a level of production that matched the tax rolls.\textsuperscript{78}

After his achievement at Sakuramachi, the bakufu appointed Ninomiya a government official and assigned him to a reclamation project near Nikkō, where he worked until he died

\textsuperscript{74} Ibid. 7-11
\textsuperscript{75} Ninomiya Sontoku His Life and “Evening Talks.” Ed. Tadaatsu Ishiguro. (Tokyo: Kenkyusha, 1955), 91.
\textsuperscript{76} A Peasant Sage of Japan: The Life and Work of Sontoku Ninomiya, 17-26.
\textsuperscript{77} Eiji Takemura. The Perception of Work in Tokugawa Japan: A Study of Ishida Baigan and Ninomiya Sontoku, 143.
in 1856. That rehabilitation assignment would not be completed for 12 more years, when Ninomiya’s disciples and son finished the task.  

Ninomiya’s land reclamation program differs from the village rehabilitation programs initiated by domain and bakufu authorities. Ninomiya insisted that the villages rehabilitate themselves without the use of outside money, whether as funds or loans. He believed that charity prevented development and that local resources and local labor were the only means of teaching villagers how to farm and manage their products. Ninomiya therefore devised a program with four essential features: 1) invest all available capital, whether financial, land, or other idle resources, to productive ends; 2) incentivize and train labor; 3) improve technology; and, 4) make provisions for social welfare.  

To accomplish these, Ninomiya created an award system to acknowledge and reward performance; he purchased tools, fertilizers, plants and seeds in bulk and sold them at lower costs; and he maintained contact with technological experts, among them Ōkura Nagatsune. It is important to note that many of Ninomiya’s methods would be utilized by the Meiji government to incentivize and reward agriculture several decades later. 

Ninomiya’s program was not a paradigm that, once created, was to be applied evenly to all villages and all circumstances. Ninomiya devised the components of his project after examining historical records for the region. He sought to understand how the area had declined, how quickly this had occurred and what could be done about these causes. In the case of Sakuramachi, he found that rice production had reduced, and fiscal income with it, over 100 years when peasants increasingly turned to dry-land crops and market production

---

81. Ibid., 161-162.  
to compensate for gradual depopulation. It was because of these conclusions that Ninomiya planned to reclaim wet-fields while stimulating commercial production on dry-land fields. By perpetuating the village’s source of income, no matter how small, while restoring the original, ideological function of the village, Ninomiya assured that the village would not starve and that increases in production would be both measurable and visible. The genius of his system was that any surplus that the villages produced would not be immediately consumed but would be used to fill an interest-free loan fund for the continuing rehabilitation of the land.

Ninomiya’s reputation continued to swell after his passing primarily through the workings of the Hōtoku (repaying virtue with virtue) Society, formalized between 1830 and 1843. The Hōtoku society was formed by Ninomiya’s disciple, Fukuzumi Masae, who defined the organization as “Men who wish to render thanks to Heaven by benefiting mankind as much as they can; men who wish to reform villages in order to help the poor; men who wish to sow the seeds of goodness that they may enjoy the lovely flowers and noble fruit.” Fukuzumi’s typification of the society not only continued Ninomiya’s principal ideology but formed the core for the Hōtoku Society’s financial structure and aims.

By 1912, branch societies made up of many poor individuals who paid nominal fees pooled resources to provide interest-free loans for the development of enterprises, trade and industry. On top of these membership dues, a fund called “Seed-of-Goodness Money” was utilized for projects of charity and public benefit. In intent and operation, the Hōtoku Society was a well-organized cooperative that extended from the works and ideas of

---

83 Ibid., 132.
84 Ibid., 133.
88 Ibid., 573.
Ninomiya but was not limited to only village rehabilitation projects. Indeed, the Hōtoku Society was so active in the early decades of the 20th century that it inspired a Canadian missionary living in Japan, Robert Cornell Armstrong, to have the Hōtokuki (a compilation of Ninomiya’s life and work written in 1857) translated into English from which Armstrong composed Ninomiya’s first English-language biography, in 1912.

While the circumstances surrounding Ninomiya’s reputation and legacy are exceptional, the underlying problems that his life centered on were anything but. Land increasingly fell into disuse in areas that became underdeveloped because of the pushes and pulls of commercialization. The pull of ‘urban opportunity’ could remove labor from the countryside while the increasing costs of fertilizers made continuous rice cultivation impossible for the lesser-off.

Contemporaries were well aware of the interrelation between money economy and rural deprivation. Kumazawa Banzan (1619-1691), a leading proponent of Wang Yangming’s ideas in Japan, when asked by a student why in good times people suffered and in bad times people starved, noted “the use of unhulled grain as a medium of exchange has gradually declined. When gold, silver, and copper are predominately used, commodities gradually become expensive, and the gold and silver of the realm gradually go into the hands of the merchants, and those of great and small estate alike do not have enough for their use.” While Banzan went on to explain how this was the chief cause of conflict in times of scarcity, his emphasis on the ills of precious metal as currency was not his alone.

Miura Baien (1723-1789) a philosopher and educator who discussed the fundamental importance of agriculture in his 1773 work Kagen (On the Origin of Price) felt that the use of

---

89 A Peasant Sage of Japan: The Life and Work of Sontoku Ninomiya , xv.
gold and silver currency was “unenlightened fiscal policy.”

Instead he recommended the use of iron, which he saw as plentiful, cheap and useful, in order to prevent the speculation and price instability he felt unnecessarily hurt peasants. Baien, however, did not feel that commentary was enough – he founded a cooperative in the aftermath of periodic famines in the 1750s that continued to operate into the Meiji era.

Those who pinpointed money economy as a source of suffering were not necessarily wrong. However, they chose to emphasize the material conditions of commerce rather than the material conditions of production and distribution – where other, systematic problems were more important than the flow of currency. In no particular order, the growth of wage labor, the development of rural manufacture, land concentration (and tenancy), peasant mobility and the increasing poverty of the samurai class were all factors that contributed to undermining the social order in its entirety. These factors combined to decenter samurai status and replace it with merchant and landlord wealth while negating small-landholders’ obligations to remain a member of the community and therefore contribute to communal responsibilities. It was the simultaneous movement of peasants into wage labor and away from farming as well as the transition from owner to tenant that resulted in taxes, which had been stable, becoming increasingly onerous for some – and this was not solely because the rates themselves were increasing.

Yet being disposed of land and moving into rural industries did not necessarily constitute a loss. Wholesalers who lent to farmers in exchange for a given commodity also tended to develop rural centers of manufacture, providing machines and supplies. Whether

---

92 Ibid., 94-95.
94 Yazaki Takeo. *Social Change and the City in Japan*, 249.
payment was per-item or by wage, this was a new relation of dependency that did not center on rice, or on agriculture. The wholesaler’s role in investing capital, whether in agriculture, fishing or construction, was in part responsible for land concentration. But as the best investment was rice-land because rents were high, a contradiction in Confucian ideology came to exist. Here were peasants, who by definition were to work the fields, who did not own land and could not necessarily afford to do so.

Peasants who had been tenants and paid oppressively high rents could therefore escape the burden of their position by moving into rural manufacture or supplementing agricultural production with handicrafts or piece-meal consignment. The investment of merchants, money lenders and “emerging rural capitalists” played a critical role in dividing peasants into at least seven groups: the rural wage/piece-meal workers, the tenant, the partial tenant-wage laborer, the owner-cultivator, the owner-cultivator landlord, the non-cultivating but supervising landlord and the absentee landlord.

Competition for limited agricultural lands had already produced tension between small, medium and large landholders, which was regulated within the village. But external pressures via the market and investment further divided the peasantry, siphoning labor into industry and manufacture and renegotiating the land to labor ratio. However, as outside investors bought up available land, they further interfered in the village order. Before, according to Smith’s analysis, land had circulated within the village. Now, “strangers” – village outsiders - were involved and small land-holders became the tenants of people with whom they were unfamiliar. Absentee landlordism changed the nature of village

96 R. P. Dore. Land Reform in Japan, 12.
relationships, producing new tensions that could not necessarily be addressed within existing village hierarchies.

Evidence of rural discord and the disintegration of the village system are evident in Tokugawa law. As village hierarchy became unable to cope with internal problems, or to reach agreement through consensus between villages, peasant upset came to be voiced either through petition and or protest. In the case of petition and legal inquiry, appeals and questions centered on rights of access for woodland, pasture, dyke effluent, communal wasteland, hillside commons, reservoirs, fishing rights, riverbanks, water mills, village boundaries and district boundaries. However, it is the question of tenant rights that defines the record. One representative case, submitted by Ōnuki Jiemon poses the following case:

A farmer falls into destitution, and pledges a parcel of cultivated land in his possession. Then he continues to tenant the land as "direct cropping," but on expiration of the term of the pledge, he is found to be unable to redeem the land, and the land is foreclosed. However, he continues to tenant the land as hitherto, till later the new landowner falls into financial difficulties, and the land is again pledged by him to another person, and later foreclosed.

This second creditor is a small farmer, and the crops he raises from the land in his possession are not enough for him, so he desires to tenant the aforesaid, newly-foreclosed land by himself. Then the original and first landowner, now the tenant of the land, complains, alleging that he has been tenanting the land for dozens of years, and if the present landowner is to evict him at this time, it will cause him great distress. But if the present landowner asserts that he desires to tenant the land for himself, is the present tenant to be evicted from the land, even though he has been tenanting one and the same plot for 20 or 30 years?298

In a world of increasing land centralization whereby the once petty landlord becomes a tenant, Jiemon’s inquiry aims to define whether tenants have rights to cultivation in spite of changes in the land’s ownership. Indicative of the place of the tenant in the social hierarchy, but particularly bad for the maintenance of an agrarian order, the official found that: “even though he [Ōnuki] has been tenanting the land for more than 20 or 30 years, [there is no reason why it should continue in that way] if the two parties do not agree to continue in the

present arrangement.”99 Therefore the tenant faced a double horror – having first lost her/his own land s/he could be dispossessed once more if the landlord should fall into arrears.

To have peasants who did not own land, and could not access land, pushed into other sectors was a paradox of Tokugawa era law, economy and politics. It violated agrarian society by weakening the farming base; it allowed for the accumulation of property, and wealth, outside of the samurai class, and it engendered anger among the peasantry – but anger that was directed at restoring the agrarian order rather than abolishing samurai hegemony.

Peasant protest did not take the form of revolution. Their aims were to assure, in many cases, lower taxes through a reevaluation of taxable lands, the redistribution of fields, and the rebalancing of communal obligations to compensate for the great disparity between rich and poor. Although it is true that the general trajectory of the latter Tokugawa period was one of increasing agricultural productivity and rising standards of living100 it cannot be said that a rising tide lifted all ships. As we began to trace earlier, this was not due solely to increasing exploitation from the samurai. While it is true that land taxes, as of 1687, were as high as 50% in some places,101 the bakufu came to gradually reduce rates after 1765.102 Data utilized by the Meiji government to create equitable tax rates nationwide found that the

99 Ibid., 109.
range varied greatly depending on locality in the closing years of the Tokugawa period, and in some cases was quite far from the 50% estimate.

Aside from land taxes, scholars of peasant protest have cited the miscellaneous taxes, corvée, supplementary rice tax, the service and repair of dykes, roads and bridges as other causes of peasant hardship. However, it is too much to conclude that all peasant protest comes down to an issue of poverty and class. Certainly, peasant protest, especially when it centered on issues of tenancy and “parasitic landlordism,” was connected to economic realities; but the essential matter in peasant protest was power over rural relations and village authority. This becomes all the more clear when one realizes that the times of greatest unrest were linked not only to dearth – when the poorest starved by the millions – but also with the most reform.

The three greatest famines of the Tokugawa period occurred in 1732-1733, 1783-1788 and 1832-1836. Following each, the bakufu issued regulations that increasingly sought to repress peasant activism. In 1741 shogunal edicts declared that punishments would be meted out to peasants who forwarded appeals. Additionally, leaders of mass assemblies (tōtō) would be killed. To further forestall peasant efforts, the communities that these appeals and assemblies came from would have their tax obligations increased. In 1744 the bakufu attempted to turn peasants on themselves, promising rewards and the right to wear swords

---

103 Yamamura Kozo. “The Meiji Land Tax Reform and its Effect,” in Japan in Transition: From Tokugawa to Meiji. Ed. Marius B. Jansen and Gilbert Rozman. (Princeton: Princeton University Press, 1986). Compare table 14.2 (390) with table 14.3 (395), which show the post-Reform mean effective tax rate and the change in tax rate, respectively. The data shows that where Fukuoka had its tax rate reduced by nearly 27% Iwate saw a roughly 38% increase in order to bring the mean effective tax rate to between 24-26% nationwide.


106 Selcuk Esenbul. Even the Gods Rebel, the Peasants of Takaino and the 1871 Nakano Uprising in Japan, 16.


to those who seized farmers during an uprising and refused to join them. In 1750 farmers were forbidden to form groups; in 1797 the shogunate declared that during times of revolt daimyō in neighboring domains could join to suppress uprisings; and the true peak of government intolerance came in 1839, when the Tokugawa authorized the use of guns and swords in ending peasant revolts.109

The escalation of bakufu repression demonstrates the fragility of the Tokugawa regime as much as it expresses the capacity of peasant movements. While Tokugawa peasant unrest was not as violent as other peasant movements in Japanese history,110 the violence articulated by the peasantry challenged the samurai class’ monopoly over violence. Although peasants sought to utilize these demonstrations to earn attention and redress, the ruling class did not view the peasant’s problems from this perspective. Thus, even though the goals of protest were to renegotiate specific conditions – and not to form a new order – when peasants sought alternatives to their much ignored petitions, samurai saw challenges to the political order. Village headmen were stuck between these vantage points, forced to choose between upset villagers and the concerns of the distant socio-political center.111

In understanding the frequency of peasant uprisings it is important to note that figures vary based upon the kinds of protest included in the statistics. Euro-American scholars are in disagreement over these numbers and categorize the figures from the same 1971 study in different and conflicting ways. Roger Bowen quotes 6889 uprisings (ikki) for all of the Tokugawa period;112 Stephen Vlastos lists 3000;113 and Selcuk Esenbul claims 3,212 uprisings, 488 city riots and 3,189 intravillage disputes.114

111 Ibid., 3-7, 42-45.
114 Selcuk Esenbul. Even the G-de Rebel, the Peasants of Takaino and the 1871 Nakano Uprising in Japan, 4-5.
No matter the differences in categorization, what is clear from these numbers is that Tokugawa era protests were frequent and variegated. These studies also imply that government efforts to prevent peasant uprising failed. Because the government did not address the underlying causes of rural unrest, villagers were forced to address problems outside of the legal system of the village and the state. This forms a significant continuity for the Tokugawa and Meiji periods, as peasant dissatisfaction continued to manifest in frequent protest.\textsuperscript{115}

Peasant protest was not the only means of addressing changes in the agrarian order. Villages and peasants developed systems for communal maintenance, social welfare and even recreation. Broadly, these associations are called \textit{kō}, translated as ‘mutual aid societies’ and ‘cooperatives’;\textsuperscript{116} as they came to operate as financial institutions somewhat like credit unions, there is some good in these renditions. However, the term should not be thought of only as an instrument for community finance for they, like the state’s repressive reforms, were a product of 18\textsuperscript{th} century famines, a means of ensuring the survival and stability of the village.

These \textit{kō} went by many names but their most common were \textit{tanomoshi kō} (trust like that between mother and child), \textit{mujin kō} (inexhaustible compassion) and \textit{jōrei} (regular payment of gratitude).\textsuperscript{117} Beyond in name, as the community’s “recognition that disasters were unavoidable and inevitable”\textsuperscript{118} they stood to create regularity even in troubling times. As a “counterstrategy” to famine\textsuperscript{119} but also as a means of financing communal medical attention even in times of plenty, providing for home repair and the purchase of

\textsuperscript{115} Ibid.
\textsuperscript{118} Ibid., 74.
\textsuperscript{119} Ibid., 87.
livestock,\textsuperscript{120} kō were organizations that meant “to relieve individuals of having to bear the entire burden of a crisis.”\textsuperscript{121}

Kō existed for the survival of the community. They therefore defined that community. The relationship between members was one of region but was based on an economic foundation – the payment of dues in kind or cash – and kō were typically financial institutions with localized goals, a village insurance system.\textsuperscript{122} As was the case with Ninomiya’s Hōtoku Society, or with particular large and powerful religious sects that manifested themselves as kō, the mobilization of large-scale aid could be carried out in great quantities over enormous distances. One such case occurred in 1847 when 1023 koku of seed-rice was disbursed to 2047 people living in the Kantō using donations provided from Nagasaki, Osaka, Nagoya, Shinano, Mikka, Tōnoe, Suruga and the Kantō itself.\textsuperscript{123}

This does not mean, however, that all kō were social welfare programs. They also existed towards recreational ends – one of the most significant being travel. Peasants utilized kō to plan and fund organized travel groups that ventured across great distances, many times during the agricultural main season, for durations of two to three months, though there were cases of six month excursions.\textsuperscript{124} Such an activity would not only require a good deal of money but it necessitated that members of the community would be available to maintain the fields as well as village obligations in their absence.

Agricultural Manuals and their Authors

Outside of formal programs for intervention, development or maintenance, the circulation of books was another means for the amelioration of agricultural practices.

\textsuperscript{120} Satō Tsuneo. “Tokugawa Villages and Agriculture,” 58.
\textsuperscript{121} Tetsuo Najita. \textit{Ordinary Economies in Japan, A Historical Perspective, 1750-1950}, 100.
\textsuperscript{123} Oka Mitsuo. \textit{Nihon Nōgyō Gijutsushi: Kinsei kara Kindai e}, 282.
\textsuperscript{124} Constantine Nomikos Vapories. \textit{Breaking Barriers, Travel and the State in Early Modern Japan}, 218.
Tokugawa era *nōsho* (agricultural manual) documented and circulated information regarding technology, implements, seed varieties and fertilizers. They enabled the ideas, recommendations and effective applications of one location to spread among literate and experimental farmers of another. Over time, the dissemination of these practices allowed for the articulation of core agrarian knowledge as well as best-practices. Together these contents reveal facets of rural living as well as form the basis of what can be approached as Tokugawa era farming.

In addition to *nōsho*, derivative farm books composed entirely of citations from the original manuals, contributed to the diffusion of agricultural information and technology by providing a “best-of” for agrarian treatises.\(^{125}\) They, like their originals, made use of pictures that illustrated the most important information of the manual; these images, which are highly detailed pieces, express more than satisfactorily the directions of the text itself.

Pictures were not the only way of diversifying agrarian knowledge. Poetry and song made instruction a part of folk culture, allowing those that were and were not literate another mode for memory and application. One very good, and thorough, collection of this style of *nōsho* is the *Aizu Uta* (Songs of Aizu) which provides thousands of poems and songs describing important information and the principle steps of cultivation. Whether detailing seasonal variation, when to plant or harvest, and how to go about doing so, these verses are a window into Tokugawa village life.

The songs are themselves not intended to rival haiku, *waka* or *tanka* poetry but in line with the aesthetic for Japanese participatory arts they convey a pleasant matter-of-factness.

Seed rice over a year old comes alive

It is the two year old ones that you don’t plant

The two year old stuff if you soak it, those seeds

\(^{125}\) Satō Tsuneo. “Tokugawa Villages and Agriculture,” 76.

By presenting the information clearly, the poem delivers a lesson on seed fertility in a convenient, easily accessible package. And flipping through the collection of songs, one can easily imagine how countless, short yet potent lyrics would inform and enrich a full day’s labors.

As primary sources, though, songs like the one above explain details of peasant livelihood, like the short shelf life of seed rice, a dilemma that in part clarifies the situation of farmers of that region. Because seed rice could not last for long durations, rice had to be continuously planted. A bad harvest, a crop failure, a particularly humid season could all challenge the viability of the following year’s harvest. Of course, loans of rice seed from other farmers, villages and regions were not impossible; but the challenge to Aizu’s rice self-sufficiency is clear. Aizu farmers were perpetually at risk of having their rice economy undermined through the combination of their seed storage, the weather and climate. The one thing they could control, their mindfulness of that dynamic, was something they committed to song.

In addition to published manuals, and the agricultural oral tradition sometimes recorded through them, farm books maintained records of local events, developments, and practical techniques. \footnote{Satō Tsuneo. “Tokugawa Villages and Agriculture,” 77.} Some of these works chronicle tours of other regions and the advice of local experts. \footnote{Ibid. 79.} Lastly, *nōsho* were also used as advertisement. Tapped into in order to exploit literate farmers and make use of their wealth, in the 1820s, the work of Hirata Atsutane, a well-known scholar of national learning (*kokugaku*), was integrated into
agricultural manuals. Once Atsutane “realized that these manuals could serve as effective tools for the spread of [his] teachings in the countryside,”\textsuperscript{129} he utilized nōsho by conjoining his cosmology with the practice of gendering plants and seeds. In doing this, Atsutane reached a wider audience, made enough money to cover his debts and attracted students who in turn supported the expansion of his academy. That a scholar such as Atsutane was able to utilize nōsho as a vehicle of recruitment\textsuperscript{130} establishes to what extent nōsho had become integrated pieces of peasant society, not to mention the peasantry’s desire to gain education in itself.

The contents of the nōsho grew over time, diversifying their presentation, objects of study and theme. What is believed to be the first nōsho composed in Japan, the Shinmin Kangetsu Shū (A Collection of Monthly Agrarian Instructions for a New People) is but one chapter in the Seiryōki, a 16th century war tale. Scholars believe, because of its reference to crops that are thought not to have arrived in Japan until the mid-17\textsuperscript{th} century, that the chapter might be a belated addition.\textsuperscript{131}

The chapter is, as with other early agricultural manuals, a local document, presenting the practices for Iyo county, Ehime prefecture. Nonetheless, it is an aperture into the earliest known recorded agricultural thinking of Japan. It prescribed that peasants locate their homes carefully in relation to irrigation systems, encouraged application of fertilizer twice during planting, recorded the use of livestock and noted that the primary concern for rulers had been the reduction of farmers who cultivated extensively and the increase of those that worked intensively.\textsuperscript{132} While this document reveals that Iyo was in a process of agricultural


\textsuperscript{130} Ibid. 200.


\textsuperscript{132} Ibid. 226.
transition, its contents demonstrate “a more sophisticated, “scientific” attitude toward agrarian activities than was evident” in earlier times.\footnote{Ibid. 227.}

Not much later, Miyazaki Yasusada (1624-1697) wrote the first work entirely dedicated to agriculture. Although little is known about him, what is clear from the historian Ōnishi Goichi’s brief biography is that he was a samurai who moved to the countryside in his 30s. After 40 years of observing and participating in peasant practices, he composed the \textit{Nōgyō Zensho} (The Complete Collection of Agriculture).

Considered the classical Japanese agronomical text, it has been reproduced so many times that Ōnishi found it difficult to provide an accurate summary of its re-publication. Originally released in the year of Yasusada’s death, the first edition was 11 volumes and written entirely in hiragana, an assurance that peasants would be able to read it. The work contains diagrams for all of the most important practices and devotes chapters to individual categories of cultivars, with attention to grains, vegetables, mountain vegetables, grasses, trees, fruits, nuts and livestock. A printing in 1722 published extracts of the most essential details, to be used as an introductory text. An 1882 edition nearly reprinted the work in its entirety, but revised and updated portions to be used as an educational tract. These revisions included reviewing and shortening the content, simplifying and updating the language, the use of katakana instead of hiragana, and the translation of the lunar into the solar calendar. Another printing in 1895 republished the entire work in a bulky, though cheap, mass market paperback. Miyazaki’s work was issued again, in its entirety, in 1912. Then, in 1927, it was contained within a collection titled, “The Great Lineage of Industrial Resources of Japan,” where it served as Chapter 2.\footnote{Ōnishi Goichi. \textit{Nihon Rōnōden}, 255-264.}
From its seemingly perpetual re-release, it is obvious that Miyazaki’s work has been identified as a part of Japan’s cultural and scientific heritage. Yet what is worthy of consideration are the attempts to make the work more approachable, which ultimately were abandoned. While the simplification of the text might imply an effort to expand its readership, and the familiarity of the Japanese people with it, that these alterations fell away conveys to what extent the text was not unapproachable in itself.

Yasusada’s work has been described as an “empirical fact gathering” enterprise.135 Through a compilation of over 145 crops and material for their cultivation, it is viewed as a systematic attempt to make what had been formerly private information into accessible, public knowledge.136 Because he understood agriculture to be commercial,137 Miyazaki typified cultivation not as a stand-alone complex but practices that occurred in a specific economic context. For this reason, while noting that fields needed time to recover their fertility, he recommended perpetual cultivation via a crop rotation that utilized sardines and oil cakes to prevent soil infertility. To facilitate intensive methods, he introduced and described particular mechanisms, such as pumping devices and pulley networks, as well as a liquid insecticide made from various herbs. His goal was to combine numerous improvements with new, commercially available goods in order to reduce labor inputs and ensure a higher harvest. Perhaps most importantly, Miyazaki also warned his reader about particular peculiarities in farming, that beans and cotton should not be planted on the same land repeatedly, in order to prevent his readers from experiencing repeated crop failure.138

Miyazaki’s work is emblematic of the first phase of rōnō in Oka Mitsuo’s framework. The Nōgyō Zensho is a synthesis of scholastic interests, personal experience and application.

135 Elizabeth Berry. Japan in Print, 19.
136 Ibid. 1, 18.
138 Ibid. 37-38
Miyazaki, who was a samurai, had access to land and the time necessary to observe and record his findings. While not much is known about the size of his holding, or whether he employed laborers and to what extent he was occupied in side-businesses, the nosho itself differs in content and presentation from the second phase of the rōnō.

Representative of the latter group, and the foremost example of Smith’s “technologists,” is Ōkura Nagatsune (1768-1856?). A teen during the Tenmei famine (1783-1787), many have supposed it was this experience which led him to focus on bettering the economic position of peasants. His first work, Nōka Eki (Benefit to Farmers) was published in 1802 in 3 volumes; it proposed that wastelands could be used to grow wax trees, effectively increasing family income without the loss of arable land. Later works, including the Nōgu Benri Ron (On Useful Farm Tools), published in 1822, aimed to introduce effective farm tools, increase their use, decrease necessary labor requirements and better yields. His study of cotton, the Menpo Yōmu (1833), improved on then available cultivation information, including corrections to Miyazaki Yasusada’s work.139 But it was with Kōeki Kokusan Kō (On Increasing Profits and Productivity), written from 1842 to 1859, that Ōkura issued what is considered to be his most important work. The Kōeki postulated that the wellbeing of individual peasant households was completely and entirely connected to Japan as a whole; therefore, the planting of cash crops, the improvement of techniques and amelioration of the soil were necessary; in making this point he differed greatly from other agronomists of his time.140

Ōkura also diverged from other nosho authors through his journalism. In the Seiyū Roku (On Oil Manufacturing), published in 1836, the author included methods he hoped

---

would increase the profits of the oil trade, although he admitted to having tested none of
them.\textsuperscript{141} Instead, the book was a work of research and investigation, a careful study of oil
pressers with meticulous comments on the steps and outcomes of those processes.

The manual abounds with precise details that are intended to aid production.
Okura’s examination of differences in return, i.e. sesame and rapeseed yield 17-26% of their
weight but perilla only 15-20%,\textsuperscript{142} is that of the rational observer. His attention to scale
shows him to be the seeker of profit and not a romantic who has attached particular values
to one style of manufacture over another. These kinds of conclusions are consistent with the
theme of his other works, for they address the underlying economic position of the producer.
It is therefore notable that in 1890, using the original wooden blocks, the \textit{Seiyü Roku} was
reprinted as a portion of the ‘Series for the Encouragement of Agriculture,’\textsuperscript{143} demonstrating
to what extent Tokugawa methods were still practiced and advocated in the early decades of
the Meiji era.

Within Okura Nagatsune’s lifetime his works were excerpted for use in domain
agricultural development plans. One such instance occurred in Hiroshima domain in 1809
when officials had selections of the \textit{Benefit of the Farming Household}, only seven years after its
original publication, utilized in the dissemination of lacquer trees. The village headmen
received a notice from the rural intendant that stated, “we are giving you a section of this
book that concerns these trees so that if you are successful in growing them and increasing
their production then the book and the trees may be circulated amongst the villagers.”\textsuperscript{144}
The intendant’s plan was to target the elite members of the village so that, should they be

\begin{footnotes}
\item[\textsuperscript{141}] Okura Nagatsune. \textit{Seiyü Roku: On Oil Manufacturing}, 64.
\item[\textsuperscript{142}] Ibid., 14.
\item[\textsuperscript{143}] Ibid., 78.
\item[\textsuperscript{144}] Oka Mitsuo. \textit{Nihon Nōgyō Gijutsushi: Kinsei kara Kindai e}, 280.
\end{footnotes}
successful, the other villagers would not only have a model to follow but would benefit from their experience.

This approach was not of the officials’ design, for it too was Ōkura’s. At that time officials tended to collect peasants, have their edicts and wills read aloud, and then leave the matter at that. However, many found that peasants did not change their ways from this form of instruction. Ōkura, like many other rōnō, preferred to demonstrate superior techniques, tools, etc. through designating a particular plot in the village so that all could see and likely compare the yield of that section to their own. Emulation was therefore the largest, most significant means of converting peasants away from customary practices towards “best practice.”

The case of Hiroshima was not an isolated event. In 1817 in Fukui domain a selection from the Nōkagyoji (The Business of Agriculture) coauthored by Dōtoku Shige and Kojima Josui, was mass produced for transmission to the villages so that, when a high official made his rounds, villagers could pose questions directly to him. This high official even noted in his correspondence with the villages that, should people be afraid to approach him directly, he would leave a copy of the excerpt with each five-family association along with his letter so they could be distributed together.

What these examples show is not limited to the nature of official correspondence between villages and domains but demonstrates the ways that agricultural manuals of both periods, either written by samurai familiar with agriculture or by peasants, came to be involved in variegated, non-localized interactions concerning agrarian society. While some officials undoubtedly utilized nōsho as a means to expand and develop agricultural production to their own benefit, that officials did so through the circulation of texts demonstrates to

what extent Japanese peasant society was not ‘pre-modern.’ Moreover, these were texts composed for the primary purpose of benefiting peasants; their application, regardless of from what social stratum they were ultimately disseminated from, accomplished that goal.

It therefore seems necessary to ask, what role did the rōnō play in the expansion of agriculture? By advocating and refining the previous centuries’ technical improvements rōnō were perpetuating the underlying changes in the agrarian order that began with commercialization in the shōen system. The expansion of irrigation channels which allowed more fields to be converted to paddy, the spread and increasing commonality of double cropping, the use of better tools and more fertilizer, deeper tillage, treadmills to raise water to higher fields, the use of mechanical devices to save time in grain processing, the wider cultivation of cash crops such as tea, mulberry, paper mulberry, lacquer, hemp, safflower, indigo, cotton, rapeseed and tobacco, the development and greater use of early, middle and late rice varieties and the application of whale oil and other insecticides to limit crop damage were developments that not only continued to stabilize Japanese agriculture but were the platform for the material gains that rōnō promoted.

Beyond benefitting from these developments, in terms of per household production, peasants may have also seen gains from the expansion of arable land. As land surveys were not updated regularly to include newly-made fields, farmers were able to keep more of their yields. As side businesses grew, stimulating demand for cash crops, many cultivars came to be more valuable than rice. One such crop was cotton, which in some regions, particularly the Kinai, was so profitable that farmers grew rice only to meet their tax obligations. Of course, this also meant that some farmers stopped growing rice altogether. Although some,

---

149 Ibid., 120.
like Anne Walthall, have interpreted this as a possible cause underlying peasant poverty and protest, it is possible that some peasants made additional gains by relying on the market to supply rice for use as taxes when they sold their own crops at greater profit.

With the expansion of rural industry, those large landowners who have been associated with the first rōnō phase drifted away from direct cultivation. As their wills express, they, like the major urban trading houses, began to view agriculture as business. A will issued to the oldest child of the Kawashima family in 1705 stated,

For you, the foremost job is to take seriously the family business of agriculture. Every morning get up at 5 or 6 and open the gate yourself. Then, afterwards, wake up the servants and tell them the plan of work for the day. On the days you employ day laborers, go out to the fields as many as 3 or 5 times and observe and direct them. Even on the days when you rest, be sure to go to the fields at least once and look around.

For rural elite the representation of agriculture as a business and the management of a household like the management of a company was a movement away from both the ideological position of peasants in Confucian, Tokugawa society and one more pillar knocked out from the base of a stable village social structure. The shift from communal responsibility and obligation to personal, privatized property and processes was not one compatible with the Tokugawa village network.

Common intra-village disputes reveal conflict and dissatisfaction early in the Tokugawa era. Because of cases of embezzlement, regulations were passed by the bakufu in 1642 and 1644 to ensure that tax obligations were public information. An additional

directive, in 1713, clarified that village expenses must also be made public.\(^{154}\) The sum total of these government policies was to, at least on paper, ensure that peasants had the right to view the village’s financial information. That the bakufu passed these reforms demonstrates to what extent village elites had taken advantage of their positions. Whether this appeared in an unequal distribution of taxes, interest charged on village expenses or the collection of more than was necessary to meet the requirements of domain and bakufu, the state did not feel obligated to install oversight and/or control. Thus, even in instances where the state sought to exercise more power over village practices – especially those underlying rural unrest – the state was still not willing to expand the bureaucracy in order to exercise that control or to ensure that government policies were true in practice as they were in writ.

The underlying meaning of these “reforms” is twofold. 1) Tokugawa society did not rectify a lack of protection for middle level and lower level peasants with stable rural society. To do so would have required that samurai-bureaucrats held rural positions or made regular village observations, policies and practices that would have strongly disagreed with the strategies of Hideyoshi and Tokugawa at the end of the Warring States era.\(^ {155}\) 2) Without controls in place, the corporate village became the private corporation of rural elites. In this way, the misappropriating policies of some local elites were no different than the exploitation of the aristocracy or the warrior class. For peasants walking the often typified ‘thin line’ between subsistence and desperation, illegal appropriations or unequal corvée and tax obligations would be ruinous.

In this context Oka’s latter phase of the rōnō would be something akin to peasant economic and commercial heroes. In opposition to peasant protests aimed at returning village hierarchy and society to its intended forms, rōnō promoted, indeed embraced,

\(^{154}\) Ibid. 119
commercial agriculture and its changes. By advocating the acceptance of new techniques that placed farmers ever more into market relations, the hope was that new and better practices would yield more money for the peasant household. Rōnō were therefore a “new” specialization within commercial economy, a group of people dedicated to teasing out the best methods of making money on as little labor as possible using the latest and best technology and the most profitable crops.

More than the landlords who had integrated with the merchant and ruling classes, rōnō were concerned with production itself. As production was a decreasingly urban endeavor, their existence in and attention to the countryside was not some form of “pre-modern” “backwardness” but was the reality of Japanese pre-industrial economy. It was an attempt to make small holders competitive with the capital and financial resources of landed elites who continued to buy land from those who could not make due.

The methods of the rōnō were not the last ditch efforts of an agrarian technocracy. Rather, they were practices that aimed to produce more when extensive methods of production had reached their limits. It is therefore helpful to see rōnō not as responding to negative indicators but to positive potential; for in doing so, it negates the application of resource ceilings or a “high level equilibrium trap,” which promote images of involution, stagnation, and decline, in order to represent Japanese peasants, the rōnō foremost among them, as people striving to test the supposed limits of production. It is through the rōnō that we can fully apprehend that “pre-modern” technological and commercial potential outside of “the West” had not been realized.

---

Commercial Connections

The Tokugawa commercial network included exports and imports that continued to develop and refine local Japanese economies and scales of production. David Howell’s study of the Hokkaido fishery system provides one such example. By delineating how the expansion of a domestic cotton industry required massive inputs of fertilizer, Hokkaido’s fisheries expanded to provide for the needs of continual, intensive cultivation. The result was high volume fishing as well as the evolution of capitalistic labor and commodity relations.¹⁵⁷

Howell’s observations are contextualized by a Tokugawa commercial revolution. Similar to that of England’s in the 18th century, when individuals turned to the market for their needs, interests, hobbies and professions and their consumption drove invention, advertising and production,¹⁵⁸ the Tokugawa era was a time when a greater quantity of goods could be purchased via the market and more people could afford to do so. Penelope Francks’ recent study of ‘the Japanese consumer’ details this development for Japan. First, she clarifies that the Japanese diet was not entirely rice-based – something that did not occur until the Meiji period when the grain was packaged as a “civilized” food and production had increased to the point where the product was affordable.¹⁵⁹ Instead, the typical Tokugawa rural diet included a home-grown grain with soy as the primary source of protein, supplemented with the rare chicken, the not-so-rare egg and meat gathered via hunting. Commercially available food, such as dried and salted fish, confectionary, store-bought miso and tofu, tea, tobacco, soy sauce and sake rounded out the peasant’s typical victuals.¹⁶⁰

Peasants even came to cease weaving and sewing their own clothes as the expansion of the

¹⁶⁰ Ibid., 55-58.
cotton industry allowed the purchase of new and second-hand clothes at prices cheap enough that devoting one’s own land to cotton cultivation was disadvantageous to growing another cash crop.\footnote{Ibid., 60-62.}

In Francks’ estimation the Japanese consumer not only came to rely more on the market but because of these changes came to eat more foods, own more clothes, purchase a great variety of ceramic and lacquer-wares as well as other durable commodities.\footnote{Ibid., 63-67.} It was because of the expansion in Japanese consumer society that the markets, and site of production, shifted back to the countryside, deviating higher volumes of goods away from and around the former distribution center of Osaka.\footnote{Ibid., 67.}

Within this commercial boom, objects that had been discarded or thought of as lowly came to operate as commodities; and there is no greater example than the case of human fecal matter. As sardines and other fish-based fertilizers became more expensive and less available, more farmers turned to nightsoil. In or near Edo this translated into agreements between landlords and farmers for access to city toilets. In some cases, landlords charged nothing where others requested a nominal fee. Yet in some instances human waste was an out-and-out commodity. Competition for access between farmers drove the price up such that, from 1789-1792, there was a collective movement to reduce nightsoil prices. The Edo magistrate issued regulations in 1792 that attempted to curb competition and to limit how much landlords could try to barter prices upwards. Nevertheless, in 1841 the enormous sum of 25,490 ryō was paid for nightsoil in Edo alone.\footnote{Anne Walthal. “Village Networks, Sodai and the Sale of Edo Nightsoil,” Monuments Nipponica, 43: 3 (Autumn, 1988), http://www.jstor.org/stable/2385051 (accessed December 3, 2009), 295-300.} It was not until around 1918 when

\begin{thebibliography}{99}
\item \footnote{Ibid., 60-62.}{Ibid., 60-62.}
\item \footnote{Ibid., 63-67.}{Ibid., 63-67.}
\item \footnote{Ibid., 67.}{Ibid., 67.}
\end{thebibliography}
Tokyo landlords were finally forced, because supply had outstripped demand, to pay to have their human manure collected and removed.¹⁶⁵

Human leavings were invaluable in an economy based on resource-limited agriculture. It is not astounding to discover that conflict over collection was common. In Osaka, rivals tampered with collecting vessels, set up illegal containers and in one instance siphoned off urine.¹⁶⁶ But as Miyazaki Yasusada put it, “the superior farmer values shit as he values gold”¹⁶⁷ and we must therefore remind ourselves that it is only rather recently that industrial societies have been enabled to discard as waste a nutrient-rich resource.

For Tokugawa farmers the use of nightsoil was one of the preeminent soil ameliorants. It was included by Satō Nobuhiro, a rōnō, as the best of the thirty-six types of fertilizer.¹⁶⁸ And Ōkura Nagatsune noted that the urine of the poor, because it was so concentrated, was a great source of fertilizer for vegetables like eggplant, green onion and watermelon¹⁶⁹ - once diluted. Nightsoil and urine were valuable because fertilizers and their application were the center of continuous, intensive Japanese agricultural systems. For this reason the topic of fertilizer (biryō) is one common throughout the agricultural manuals.

In Ōkura Nagatsune’s work on cotton, the Menhoyōmu [綿圃要務] (1833), detailed prescriptions for the treatment and application of added nutrients come alongside cultivation techniques. After stating that cotton grown on dry-land and dry paddy bear no difference in quality¹⁷⁰ – a statement intended to clarify that cotton can be grown by anyone - he noted that the first application of fertilizer should occur when the sprout bears 2 leaves. At this

¹⁶⁶ Ibid., 22.
¹⁶⁷ Ibid., 6.
¹⁶⁸ Ibid., 13.
¹⁶⁹ Ibid., 14.
time fertilizer should be applied into a hole dug beneath the plant’s roots (notice the application per plant, not per row, per field or per acre). Then, roughly two weeks after that, diluted urine, 4 parts water to 1 part urine, should be given.\textsuperscript{171} Afterwards, fertilizer should be added three times going into summer; the first using sediment, the second with dried sardines and the third using any fertilizer other than the previous too. In all instances, it is best to water the crops at dusk or in the night and not during the day.\textsuperscript{172} Concluding his examination of the generalities of cotton fertilization, he provides an outline for the kinds of fertilizers that should be used, per region, based on the soil quality of that zone.\textsuperscript{173}

The \textit{Kagyōden} [On Household Production] (1843) by Kinoshita Seizaemon (1817-1863) handles fertilization with the same level of specificity but with much more zeal. Kinoshita not only explained the principles of application but detailed the odor, texture, tint and taste of most commercially available products in order to provide his reader with a detailed sense of top quality and poor quality products. For instance, Kinoshita recommends herrings and sardines that are golden in color, faintly sweet or salty but fragrant in odor\textsuperscript{174} and good rapeseed cake is yellow in color but is very finely ground with a good smell.\textsuperscript{175} He also notes that the remnants from sake brewing do not have a great effect and that the dregs of soy sauce manufacture tend to be too saline for seed germination but do work with mature plants.\textsuperscript{176} Kinoshita also states that human feces are a powerful additive but it is human hair that is the most effective stabilizer for plants struggling to take root.\textsuperscript{177}

Beyond explaining the varieties of fertilizers, Kinoshita offers advice for application and maintenance. He describes methods for the collection and protection of fertilizers from

\textsuperscript{171} Ibid., 362, 367.
\textsuperscript{172} Ibid., 362.
\textsuperscript{173} Ibid., 367.
\textsuperscript{174} Kinoshita Seizaemon and Oka Mitsuo. \textit{Kagyōden}. (Tokyo: Nōsangyosan Bunka Kyokai, 1978), 120.
\textsuperscript{175} Ibid., 122.
\textsuperscript{176} Ibid.
\textsuperscript{177} Ibid., 122-123.
moisture. Because water degrades the quality of fertilizers, it is important to keep contact with water limited to the fields. This in part explains the benefit of applying fertilizers to paddy rather than to dry-land, which he prescribes, as rice plants are able to absorb more of the nutrients that would otherwise be washed away. Another very noteworthy recommendation is to, much like the addition of water to a strong soup stock or sauce provides more volume and consistent flavor, lengthen animal manure by combining it with straw and urine.

Kinoshita notes that the application of urine to the soil eliminates “the soil’s harmful bacteria” (tsuchi no byokin), an added benefit. His overall examination of fertilizers concludes with an explanation for the best commercially available fertilizers and where they come from. In regards to fish-based fertilizers, herring meal from Karafuto, Kunashiri, Mashike, Rishiri and Atsuta are of lower quality than the dried bonito and herring meal from Nemuro. In essence, commercially available fertilizers whether as collected human waste or mountain and forest products, played as vital a role in Tokugawa economy as they were variegated themselves.

While fertilizer was needed by any field in Japan the particularities of application and the kinds of products that peasants required differed based on the village and the region. Villages came in three kinds, agricultural, mountain and fishing. When the cadastral surveys were compiled they regulated communal lands so as to delineate rights of access. One of those rights, the right to whale, was granted by the domain and although whaling had been practiced to some extent prior, active whaling took on a more concrete form as late as 1600.

178 Ibid. 121.
179 Ibid., 126.
180 Ibid., 123.
181 Ibid., 133-134.
182 Satō Tsuneo, “Tokugawa Villages and Agriculture,” 38.
183 Arne Kalland. Fishing Villages in Tokugawa Japan, 185.
Dolphins and whales were valued for their oil, and their corpses attracted large crowds who bid for meat, bones and baleen. The bones were crushed to produce oil, as were the entrails, while the blubber was boiled – all this for the sake of producing a highly demanded, commercially available, insecticide. In addition, discards were marketed as fertilizer. Whaling was a vital linkage between sea-side subsistence and the needs of agriculture. It was also a primary source of initial conflict between the Japanese and ‘the West.’

The first verifiable account of a whaling ship in operation in the Pacific dates to 1795, off the coast of California. But it was beginning with the 1820s, when American and European whalers expanded into the North Pacific, that Western ships came into direct contact and indirect conflict with the Japanese. The whaling fleet grew quickly and a major portion of what would become the Pacific whaling fleet was already in operation by the end of the decade. Yet because of Japan’s restricted policies on contact with foreigners, whalers were unable to make landfall. This was the case with the earliest reported whale ship to enter a Japanese port, the Aurora, which in 1824, sought to return Japanese shipwrecked fishermen to their homes.

Even without access to Japanese ports, because of high whale densities more and more ships came to operate in Japanese waters, leaving with a typical harvest of 800-1400 barrels of oil per vessel. At this time whales were so common that they were seen daily, for

---

184 Ibid. 183.
185 Ibid. 188-89.
188 David A. Henderson. Men & Whales at Scammon’s Lagoon., 221
190 Ibid. 316.
weeks on end. But after 1845, the whalers had culled so many that the ocean mammals no longer approached Japanese coasts, meaning that Japanese whaling, which was shore based, no longer bore significant yields. With 300 US whaling ships in operation near Japan in 1846, and whaling expanding in the 1850s and 1860s, pre-industrial Japanese whaling was smothered.

By the time that Commodore Perry arrived in 1853 to allegedly “open” Japan, American and British whalers had already severely impacted Japanese coastal villages and Tokugawa agricultural economy. The over-whaling of the Pacific was not a mere conflict over marine resources – it was the first moment of competition between pre-industrial and industrial resource needs in Japan. Whale oil was a principle agricultural product – an insecticide – that peasants depended on, especially in the rich, double-cropping regions, to ensure limited crop damage. Its absence not only left farmers without the customary commercial product for insect control it left a vacancy to be filled with “new and improved” chemical insecticides once they were made accessible. Thus Japanese needs not only came into conflict with foreign industrial needs much before the issue of “opening Japan” but the resulting opening in pre-industrial commercial products left a gap that was not filled with products we today refer to as natural or organic. Thus it was with competition over whaling that Japan began its transition towards “modern” industrial agriculture.

The Tokugawa Agricultural System

In surveying Japanese rural society, the role of the rōnō becomes clear. Not only as ‘technologists,’ landlords or entrepreneurs but as authors and humanitarians, they were

---

involved in multiple tiers of agricultural development and reform. As producers and consumers of agrarian knowledge, they were responsible for the dispersion of the best practices of one location to another. As economists and historians, they taught thrift in combination with investment. As agriculturalists, they sometimes sought labor savings but more often focused on increasing yields, maintaining or improving the quality of the land and bettering the livelihood of farming households. As a totality, rōnō occupied themselves with ameliorating rural, agrarian life.

In doing these things, rōnō contributed to the solidification of an agrarian order. By the end of the era, when Tokugawa governance may have been on the verge of collapse, agricultural society was not. Agriculture had amassed the capital and technology, along with a system for regional and country-wide communication, whereby development could be perpetuated. The move to re-develop areas that had stagnated through the diffusion of better technology, and the investment of local resources to local needs, may have led to the creation of an even greater agricultural system than what was in place at the time of the Meiji Restoration. It was those tendencies toward internal development that would carry the Meiji state’s early tax burden and national mechanization program. It was those farmers who would carry not only the burden of taxes but the task of modernization.

Potentials and capacities aside, the problem of poverty in rural Japan was very much a reality; but programs to grow, rehabilitate, and replace practices, institutions, villages and people were mounting from within. Rōnō were the figureheads of such a movement. Their prescriptions and projects were a means of redistributing the gains of commercial economy by changing production itself. Their methods were an experiment with a mode of economy Japan had not yet seen, an ethic of discipline, production and practice that was not permitted to reach fruition.
Chapter 2: Industry, the Colonization of Hokkaidō and Institutional Agriculture.

Speaking before the Agricultural section of the Royal Society on June 11th 1918, Professor Koide, who had not been prepared to lecture at length, delivered a paper that detailed not only Japan’s geography and climate but offered some general impressions on common techniques of cultivation and manuring, including Japanese methods for planting rice, potatoes, tea, fruits, and mulberry. Through constant analogy to England and Scotland, Koide made it quite clear that while several similarities existed between the island-nations, they were quite different in terms of their resources, climate and arable land. What is most striking about Koide’s explication of Japanese agriculture was his dedication to explaining and justifying the practice of intensive agricultural methods and, because of them, the careful attention to and heavy use of fertilizers.

In his examination, he projected an agricultural methodology where no strip of land was wasted, anything that could be used as manure served that purpose and the multiplicity of hand-tools and hand-techniques were not inefficient anachronisms but implements that facilitated the decay and absorption of nutrients at greater rates than animal-drawn or mechanized devices. 195 And after a careful study of the many ways that Japanese peasants conserve resources or craft a plethora of fertilizers, he concluded his speech with an important sentiment: “the large consumption of fertilisers in Japan and the skill shown in their application may possibly be considered to do some good over some parts of Asia, if not over the world.” 196

While presenting Japanese agriculture to a community already familiar with agrarian practices, Koide was sure to introduce, detail and then justify the ways that Japanese farmers

195 Professor Koide. “Agriculture in Japan: a paper read by Professor Koide before the Agricultural Section of the Royal Society, 11th June, 1918.” (Sydney: Pratten Bros., 1918), 6-8.
196 Ibid. 23.
operated. He was also clear in stipulating why these behaviors were practiced – because of specific climatological factors as well as resource limitations. In this way Professor Koide defended a system of agriculture that was becoming progressively “backward” in a world increasingly prone to fantasizing over economic models unconstrained by limited quantities of raw materials.

More importantly, Koide’s articulation avoided stating and discussing openly the principal conflict of Meiji Japanese agriculture, the ongoing quasi-dialectical interaction between pre-industrial practices and technologies and a growing body of scientifically, Western-trained specialists and institutions that favored machines, chemical inputs and Euro-American farming methods. Instead, Koide’s presentation allowed for the gradual acceptance of new inputs and technologies should they permit Japanese agriculture to exceed the restrictions of climate and resource availability.

Yet the way the professor concluded his speech indicates the true emphasis of his presentation. More than the world changing Japanese agriculture, Japanese agriculture could change the world. Koide’s examination situates Japanese agriculture in an impactful context – especially considering the time of his address – as both an example in conservation and production as well as an alternative, potentially amenable set of practices for replication.

Nevertheless, the Japanese state did not view its own agriculture in the same manner. Beyond the fact that agricultural techniques neither operated in relation to a particular norm – practices varied by region, by wealth, by access to new technologies and knowledge – and Western techniques did not penetrate the nation’s agriculture uniformly, the state had embarked on a campaign of systematic, structural and institutional agricultural revision. Government policies and regulations, educational campaigns, mandatory membership in agricultural associations and economic and commercial factors associated with first unequal
treaties, as well as an obsession with industrial machinery, emphasized the agricultural sector only to finance and ensure the development of the industrial. The result was the gradual yet overwhelming rejection, and in some ways derision, of the Japanese agricultural past for the promised, prospective glory of a mechanized future.

The actualities of Meiji policies made what Koide said before the Royal Society an idealization. But that does not mean he was mistaken about the potentialities of Japanese agriculture for the world. The year after Koide’s speech was the first year in Japanese history that agriculture was out-produced by industry. From the time of the Restoration until 1919, agriculture had financed the Japanese experiment with industrialization. The products of agriculture had furnished the factories, machines, complexes and infrastructure that enabled Japan to escape from accidental and intentional relations of dependency, defeat Russia in war, play supplier and financier to warring world powers, amass a level of wealth and international position that legitimated Japan’s place in the world and develop the integument by which agriculture could and would be left behind.

Therefore to understand and evaluate Koide’s remarks, we should first recognize the industrial policy of the Meiji state. Doing so will identify the processes of revision to land tenure, law and education as well as the establishment of research centers, universities and exhibitions that ultimately recontextualized the Japanese agrarian order and its potentialities for world agricultural systems. Such a study will reveal the role of Japanese farmers, especially that of the rōnô, in utilizing pre-industrial Japanese agriculture to undergird the transition to industrial agriculture; from there, we should be able to grasp to what extent pre-industrial techniques were effective conduits for “modern” agriculture, as well as the ways that their contributions have been intentionally downplayed.

Industrialism with an Emphasis on Agricultural Production

Fortuitously, the Meiji Restoration came at a time of industrial transition, when the model established by Great Britain was not only questioned by other nations experimenting with industrialism but among empires challenged by the increasing dominance of Western powers. That variance of industrial experiences enabled the Japanese state to select from multiple models, to try, reject, alter and amend. Japan’s emphasis on avoiding conflicts like the Opium Wars, the necessity of escaping the terms of unequal treaties and the realities of “free trade” contributed to the conflation of national security with industrial progress. For the Meiji oligarchs, if Japan were to be an independent nation let alone one that could complete alongside the West, Japan would not only need to embrace industrial technologies but outpace her competitors in the development and application of significant breakthroughs in a plethora of industries and sectors.

With this goal in mind, the Meiji state sought to make use of domestic resources to their full extent. As an agrarian empire, the dramatic increase in silk, rice and tea prices, which had occurred in the ending years of the Tokugawa bakufu, provided an opportunity to do so. Moreover, the drop in the price of cotton textiles, yarns and machine-made goods, encouraged the transition from growing to importing and processing cotton. Yet tacking a mechanized reeling, spinning and weaving system onto disparate, rurally located textile handicrafts would prove impossible without significant alteration to the surrounding agricultural base, not only in terms of cultivation but also labor. Thus the initial goal of silk, rice and tea exports required greater concentrations of specialization, the importation and

refinement of the factory system and modifications to cropping and crop rotations in order to ensure that Japanese farmers produced raw materials that could be used domestically and sold, processed, for profit abroad.

Textiles were the first sector to mechanize within a factory system in Japan.\textsuperscript{200} They were also the first industry to contribute to international manufacturing, particularly European silk production. As early as the 1830s a Japanese text on sericulture, the \textit{Yōsan Hiroku} [Secret Records of Sericulture] (1803), had been brought back by a Dutch physician. It was later translated into French and published in 1848.\textsuperscript{201} This transfer occurred before either the opening of treaty ports or \textit{pébrine} disease had decimated French silk production. One scholar suggests this was the case because Japanese sericulture was of high repute abroad, a product of long-lasting respect for East Asian techniques engendered by the Physiocrats and validated by an appreciation for detail that continued to inform Japanese techniques even after the factory transition.\textsuperscript{202} However, the reality is that Japanese silk production was lesser in volume to China’s not only at that time but until around 1905 – exceeding China’s only because of mechanization.\textsuperscript{203} Japanese sericulture may have offered technique but it did not offer volume sufficient for international demand.

The silk industry was consequently a means of competing with both the West and China. However, unlike in the past, when Japanese sericulturalists had gladly pulled on Chinese knowledge and technology, in the Meiji era mostly Western models were selected. At first the technology elected for Japan’s silk industry was chosen for its symbolic value.

\textsuperscript{202} Ibid., 101, 110-111.
rather than with regard for its use and application. In essence, these purchases were intentional and conspicuous consumptions of modernity, proof of the Meiji state’s ability to buy even the most expensive equipment from the beginning stages of industrialization.

In essence, these machines were selected for their place of manufacture, not with regard for local resources or techniques. In one instance the most expensive French machinery, and even French coal to operate it, were imported at ludicrously high prices against the recommendation of the French engineer who was to install and operate it. His recommendation, that locally available wood supplies be used to manufacture and to run silk reeling machinery was disregarded by government officials who lacked technical training. Instead, because French techniques were considered to be superior, more was spent and less was immediately gained.

What becomes apparent after a quick survey of the earliest state-run silk factories is that decisions like the one above impacted profit margins not only because of the initial outlay but because they created an industrial capacity larger than domestic raw material production. The Meiji program therefore began with an important conflict: the acquisition of foreign machines and foreign opinion selectively applied toward goals that may or may not have been genuinely developmental. Along with the intentional avoidance of “traditional” local knowledge and practices, as well as opinions in support of them, the state did not integrate acquired technology with available resources in such a manner that would produce success. The result was a level of technological and cultural dependency. Where there was a

---

207 Ibid., 150-151.
capacity, indeed a capacity recognized by foreign specialists, to develop from within, the Meiji state selected the more expensive option.

The Meiji state was not gifted with an infrastructure that could be developed as quickly and completely as desired. Modifications to existing social, economic and transportation systems were required; and those alterations would take time, if they were going improve upon Western precedents. But time was not something the oligarchs were willing to invest. Having identified quite famously via the Iwakura mission (1871-1873) that Japan was some 40 years behind Britain, the immediate goal was rapid development. That sort of advancement would be expensive and disordered. Moreover, it would be led by officials who had not had the opportunity to inculcate technical and empirical knowledge and experience.

By emphasizing time over quality or resource availability, the Japanese state aligned itself with the West over East-Asia. The East Asian model of agriculture and manufacture, which Professor Koide had praised and so many visitors to China, Korea and Japan found fascinating and abhorring for a variety of reasons, favored labor intensive, material conserving methodologies. But the stress on time meant that replication of significant technologies and applications would precede the development of a base that could support these changes. Such a decision necessitated the perpetual injection of knowledge and material, all at great expense, to keep sectors from withering until a foundation was in place to support them. It also meant that attempts to develop sectors that were domestically unsubstantiated, like an iron industry, would struggle for some time because it would be dependent almost entirely on imports.

---

A complete and enduring industrial revolution needed to come from the base of society itself. And with policies aimed at increasing agricultural and handicraft production, it was very much intended. However, the state’s emphasis on time undermined the base in many ways, chief among them a lack of consideration for or control over environmental damage. The unregulated industrial wastes from mines, factories and chemical plants, which were emitted into the air or deposited in the soil and water, deeply impacted specific regions, principally agricultural zones. Analysis of the run-off near the Ashio copper mine following the flood of 1891, for instance, found heavy concentrations of sulfuric acid, ammonia, aluminum oxide, magnesia and iron compounds. Additionally, the water’s source, the Watarase River, contained cadmium, chlorine, lead, phosphoric acid and zinc. By the time of these analyses, the marine life in these waters had died, crops had failed, and people were irrevocably injured.

Clearly, the government’s inability to balance the priorities of agriculture and small-scale handicrafts with industrial manufacture jeopardized the base of future industrial stability, let alone the livelihood and health of Japanese citizen-subjects. However, it also indicates yet another by-product of a national state with dreams of industrialism. With no government precedents to pull upon concerning the circulation of industrial wastes, the state was uncertain in its response. From initial indications of pollution, fish kills, poor harvests and increasing cases of disease in the 1880s, it took the state until 1897 to require pollution controls for the Ashio mine. Yet even then the matter remained a largely local and isolated issue when it came to crafting a national policy for environmental pollution. Thus, when the Chisso fertilizer factory was established at Minamata in 1907, it operated until 1959 without

210 F. G. Notehelfer “Japan’s First Pollution Incident,” 181.
meaningful regulation or oversight. From 1930 until the late 1960s some 224-600 tons of mercury were dumped into Minamata bay. And all the while, as protest slowly began to amass, the government remained reluctant to intervene until utterly damning evidence was made available.\footnote{211}

Yet even with environmental damage, Japanese industrialism succeeded relatively quickly. The trade imbalance peaked from 1874-1878 and ended in 1881.\footnote{212} From 1878 to 1892 cultivated acreage increased by a rough 7\% but acreage yields improved by 21\%.\footnote{213} The Ten Year plan for 1884 identified further gains through specific strategic products such as camphor, wax, paper and marine goods while also encouraging ceramics, glass, indigo and flax.\footnote{214} Food production continued to increase from 1894-1914,\footnote{215} in spite of rural depopulation. And around this time, water power was gradually replaced with coal such that, by 1917, the nation’s entire power supply was electric.\footnote{216}

With the acquisition of Korea and Taiwan the agricultural base was further expanded, allowing the Japanese empire to flirt with food security.\footnote{217} However, as with all things, state intervention was intense and monopolies on particular goods, like salt, tobacco and camphor, as well as direct control of the railways, dockyards and munitions deeply impacted the development of primary industries, such as iron and steel. Subsidies for all manners of industries were therefore necessary. Industry could not have developed in Japan without them. Capital injections were provided for shipping, shipbuilding, railways, sugar production,
chemicals, dyestuffs, silk, rice and the development and maintenance of co-operative societies, guilds and trade associations.\textsuperscript{218}

Ultimately, it was agriculture that had succeeded in providing the tax revenue and raw resources that had enabled this, given that 80.5\% of government revenue from 1875-1879 and 85.6\% from 1882-1892 came from the land tax.\textsuperscript{219} When it was not agriculture itself, it was the agriculturalists whose consumption pushed economic growth forward. Even when they did not spend, the Japanese subject’s savings drove investment through bank deposits.\textsuperscript{220}

Yet throughout the first decade of the Meiji era, it was farmers who were the most discontent. Certainly more than the samurai who had received payments from the state, the former Tokugawa peasants slowly had their village autonomy stripped away. Gradually it was replaced with an increasingly penetrating central authority, which in time came to hold some aspect of every process of agricultural production closely controlled and regulated by a variety of government organs. Given this, it is not surprising that peasant uprisings, which had increased towards the end of the Tokugawa era, continued and intensified in these early years of the Meiji era; there were some 200 from 1868 to 1878.\textsuperscript{221}

As uprisings centered on the issues of land tenure and taxes, the principal way the state sought to secure revenue, increase production and improve on the Tokugawa past was through land reform. But land reform, like environmental policy, proved imperfect. In the end it tended to benefit landlords more than owner-cultivators. Furthermore, the results of land reform perpetuated a conflict common throughout Japanese history, the regional or

\textsuperscript{218} Ibid., 120-121.
\textsuperscript{221} Ian Inkster. Japanese Industrialization: Historical and Cultural Perspectives, 74-75.
central against the local; but this time the state habitually sided with the industrial against the agricultural, the landlord against the tenant, the big against the small.

Tokugawa tax systems were utilized for the first years of the Meiji period until a series of orders, released from 1869-1872, culminated in the Land Tax Reform Regulations of 1873. These orders established that farmers and townsmen owned the land, issued titles to the owners, initiated a system for crop yield inspection, created uniform, nationwide tax legislation, placed no restrictions on what could be grown and removed preconditions for tax payment in specie.\textsuperscript{222} By 1881, some 11,900,000 acres of arable land and 18,675,000 acres of forests, wastes and miscellaneous lands had been registered.\textsuperscript{223}

From 1868 until 1873, when the Tokugawa tax rolls were still utilized, tax rates varied regionally. And while this might prevent an accurate, nationwide account of tax figures, it does allow some general conclusions. W. G. Beasley’s study of Tokugawa tax rates in 120 out of roughly 260 domains reveals variation in tax rates of 20-30\% at the time of the Restoration. But no matter how shocking this figure first appears, it is the result of local officials increasing tax rates on cash cropping and productive zones without undergoing updates to the land surveys. Thus rates themselves may have been high but they were based on much lower aggregate figures, figures established in the 17\textsuperscript{th} century, for landholdings that may have improved or degraded. Increased tax rates therefore sought to benefit from increased production without undergoing the added expense of undertaking surveys and updating records. For this reason they are inaccurate for understanding how much of a farmer’s crop was actually collected by the state – a sometimes inflated tax rate based off of an inaccurate land figure. That said, Beasley offered regional averages that came in at slightly

\textsuperscript{223} Ibid., 183.
under 40%, nothing close to the higher end of 60% recorded in some locations where double cropping and cash cropping were prevalent.\textsuperscript{224}

When the Land Tax Reforms began, they established a uniform 3% tax on land value, tabulated through an assessment of the average yield as well as the quality of the land (this figure was reduced to 2.5% in 1877 following massive unrest and protest. That half a percentage point reduction amounted to a loss of 16.7% in state revenue). The prefecture also assessed taxes based on the land value – which varied from 0.5-2.5\%\textsuperscript{225} – in some instances doubling the tax rate. Taxes were collected in cash, which forced farmers to be market oriented; but more importantly, this changed the value of the tax burden, based on annual prices, i.e. when rice prices decreased, as they did from 1882-1888, the tax burden rose for those who cultivated rice.\textsuperscript{226} Additionally, as agricultural production increased, if consumption did not rise proportionally, prices could and would fall. By forcing farmers into the market in order to commute crops to cash meant that if farmers succeeded in increasing output beyond available consumption they would also be collectively decreasing their profit margins.

At the same time as the state conducted land reform it renegotiated internal borders. The 276 domains of 1868 had been 302 prefectures in 1871 but as of January 1\textsuperscript{st} 1872 became 72 prefectures.\textsuperscript{227} Over the course of the next decade, prefectures would be abolished, renamed and recombined such that Okinawa prefecture, Osaka prefecture,

Tottori prefecture and Nara prefecture would be created.\textsuperscript{228} As these borders were renegotiated, prefectural officials were delineated into a formal, rigid hierarchy. Classed from rank 4 - 17, they received a monthly salary based on their position. At rank 4 an official would receive up to 250 yen per month while at rank 17 a salary of 12 yen per month was typical.\textsuperscript{229}

Following the formalization of the prefectures and the consolidation of prefectural officials, in April of 1888 the state promulgated the Organization of the Government of Towns and Villages, also known as the Town and Village Code. Among its many changes and policies, the law established a chain of command whereby matters that could not be solved by the village council were forwarded to the district, the district to the prefecture and the prefecture to the Administrative Court. Unsurprisingly, the step in this hierarchy that was the cause of the most contention was the lowest. To form the council the village was first composed of residents, people who lived in the town or village, were entitled to the use of its establishments and held some obligation to the locality. Of these residents “every independent male person” was considered a citizen if he had been a resident of the town or village for the previous two years, contributed to the town or village, paid national land taxes of two or more yen, was at least twenty-five years old and had a household. All citizens were given voting rights in town and village elections and could serve in local office. It was citizens who could serve on the village council.\textsuperscript{230}

The council size was prescribed by the law based on the population of the village. A village of 1,500 or less had an 8 member council whereas a town of 20,000 or more had 30 members. Members were selected from the citizens and by the citizens after they had been

\textsuperscript{229} Ibid., 269-270.
\textsuperscript{230} Ibid., 367-371.
divided into two groups. Each group was composed of individuals who had paid 50% of the village’s taxes; however one group was made of the top earners and the second group included everyone else.\textsuperscript{231} Thus in regions with great economic division, one group might be composed of only a handful of villagers and the other of several hundred. What made this particularly harsh was that each group was evenly represented in terms of village power, as each group held an equal number on the village council;\textsuperscript{232} thus the rich, just as in Tokugawa times, held a disproportionate amount of power. In this way the village council system did not address the conflict between landlords and tenants that underpinned peasant protest in the Tokugawa and Meiji eras and paved the way for ongoing conflict concerning land tenure. In fact, it institutionalized conflict.

At the beginning of the Meiji period tenant land was 30% of total arable land and 20% of peasants were full tenants while 35% were partial tenants. Land reform increased these percentages. Tenants were not eligible for citizenship in their towns or villages because they did not pay the land tax. Instead, tenants continued to pay their rent in kind, usually providing 50% of the crop.\textsuperscript{233} Without representation in the village council, tenants remained silent members of the community along with anyone else denied suffrage. Considering that tenant population could be quite high, land reform essentially confirmed a given agrarian hierarchy through political rights. Moreover, since these political rights were affirmed through tax payments, reform could not and did not benefit non-landowners. Instead, land reform succeeded in pushing small-scale owner-cultivators into tenantry.

Land reform redefined agricultural relations through its emphasis on for-market production. The opening of cultivation to cash crops and highly productive cultivars meant

\textsuperscript{231} Ibid., 371.
\textsuperscript{232} Mikiso Hane. Peasants, Rebels, Women, and Outcastes. 13.
that someone who was successful was just as likely to gain as someone who was mediocre or unsuccessful was to lose. However, competition between cultivators was nothing new. As Thomas Smith’s *Nakahara* demonstrated in the previous chapter, peasants often bought and sold each other’s lands depending on their relative economic position. But in the Meiji period, access to commercially available capital inputs enabled the rich in new and important ways. With nitrogen-rich inorganic fertilizers via the market and the increasing availability of Western-style farm machinery the gradual acceptance of new technologies and new products assured increasing yields (one economist even ventures that without the use of chemical fertilizers Meiji agriculture would have “only” increased by 60% instead of 120% from 1883-1937). The result was that those with money could afford to adopt technologies that improved production, either through making more efficient use of resources or by saving on labor.

Yet the small-scale farmer could not afford to invest capital in machinery that would increase labor productivity. Instead, in order to compete with large-scale landowners who could, the small holder needed to either invest more labor in crops that responded well to added labor inputs or switch to crops that could produce profit on available capital and labor resources. If a farmer increased his labor intensive practices and subsequently downgraded his land holding, if his land taxes were less than 2 yen, he was no longer eligible as a citizen in his community.

Selling one’s land amounted to selling one’s suffrage. The precariousness of this position cannot be emphasized enough. As labor intensive practices could only prove profitable on small-land holdings, attempts to perpetuate labor intensive practices on larger

---

holdings required the employment of agricultural laborers, the shrinking of one’s landholding or a transition to extensive agricultural methods and machines. In essence, pre-industrial Japanese agriculture, while still productive, in the context of Meiji land reform and suffrage qualifications, insured that its practitioners would be unable to participate politically in their village or town.

One result of this dynamic is visible in the following graph where, no matter the prefecture, rates of tenancy increased from the start of the Meiji era. It is noteworthy that in 1916 where some prefectures had tenancy rates as low as 35% others were approaching 65%. Of the 23 prefectures depicted here, 8 saw declines between 1907 and 1916, and only two a significant level of reduction, in Kouchi and Okayama.

![Table 1: Changes in the Ratio of Tenanted Land in Major Prefectures](image)


While some historians, like Richard Smethurst and Ann Waswo, have attempted limited revisionism on the topic of tenancy in Japan, neither arguments are compelling in light of the

---

237 I have altered none of the content of Teruoka’s graph; the dates, title and locations have been translated.
above graph. Smethurst claims that tenancy was a step-up for hereditary workers, that voluntary tenancy, where owners borrowed land in order produce more, was a means to advance and there was a general rise in the standard of living.  

He makes use of facts that, while certainly true, detract from the more common causes of tenancy, like a failure to pay taxes, the inability to purchase land, a lack of capital for one’s own tools, seed and supply or self-perpetuating relationships of dependency. Thus Smethurst’s positives come through ignoring strong negatives. Moreover, his conclusions have been attacked as poor scholarship.

Waswo’s argument less obviously asks the reader to abandon sympathies towards the poor. In her depiction, landlords are not one-size-fits-all, maleficent property owners. There are two principal types: the landlord who rented out nearly all of the land and the landlord who farmed part of the holding. They can be further categorized by the kind of land and its location. These demarcations provide for a diversity of landlord types and a spectrum of tenancy (an 1885 survey showed 20 unique kinds as of the Restoration). To Waswo, no matter the kind of tenancy, landlords shared the risk of the tenant and therefore granted rent reductions, rented or lent tools and tried to provide alternative employment opportunities, as well as contributed to schools and provided scholarships, in order to motivate tenants.

In the end, Waswo asks us to consider to what extent landlords were impacted by industrialization, how their revenue was undermined by the eventual replacement of agriculture with industry and finance, and the conjoined nature of landlord and tenant

241 Ibid., 9.
242 Ibid., 23.
243 Ibid., 31-33.
deterioration. Essentially, she argues, things were more acceptable when the landlord was involved but once the landlord was forced to consider other income sources landlord-tenant relations, and therefore both landlords and tenants, experienced decline.

In short, Waswo asks us to consider to what extent landlords were good managers and to question our initial bias towards the overseer along with our default alignment with the exploited. But no matter how effective this is, such a view does not reconcile certain negative realities. When tenants protested, landlords responded in kind. They transferred the rights to tenancy, assessed tax arrears, occupied the fields by force, prohibited entry to tenant-cultivated land, and seized unharvested crops and movable assets. These are not the responses of kind, concerned and invested landlords. They are the tactics of property owners seeking to ensure that promised monies are delivered and assets are preserved. Of course, this does not deny that benevolent landlords existed. But it challenges the benevolent landlord as an acceptable norm.

Landlords were something of a norm when it came to emulation, though. And when landlords became proponents of agrarian improvement, they embedded the values of industrial agriculture into Japanese commercial cultivation.

These improvements, often presented as the Meiji Nōhō, or Meiji Agricultural Principles, were a combination of technical and economic practices that valued increased yields, heavier applications of fertilizers, land improvement and the application of more efficient processing machinery or techniques. The Meiji Nōhō also took advantage of hybridization, utilizing high-yielding rice varieties, species that experienced decreased shattering and more densely packed tillers, with petro-chemical fertilizers.

---

244 Ibid., 68, 81.
246 Ibid., 3.
The Meiji Nōhō should look familiar in many ways. With the exception of inorganic fertilizers and specific high-yielding rice varieties, it mirrors the contents and connections of earlier agricultural modes of production. Both the Tokugawa and the shōen periods saw changes in fertilizer use, the number of plant varieties, an extension in irrigation, specialization and commercialization, a greater uniformity in cultivation as well as better and more widely practiced seed selection. It seems this continuity helped enable the transition to industrial agriculture by projecting certain developments as natural elements of an indigenous evolutionary process.

Once the Meiji Nōhō was joined with increases in acreage and double cropping, deeper plowing, uniform seed beds, transplantation in straight rows and extensions and modifications to water storage and irrigation and manuals they became a paradigm, an agrarian totality. The expansion of rail, paved roads and fixed shipping routes reinforced commercial connections while required elementary education, the construction of vocational and technical schools, lecture and speaking tours by rōnō, as well as Western agricultural experts, experimental stations and exhibitions of agricultural products addressed the social and political elements of rural reform.

These changes in cultivation, infrastructure and behavior created new relationships of authority. Farmers no longer looked only within the village but could pull on national developmental programs, fundamentally created and maintained by the state, for information and guidance. In this way the government emerged as “a coordinating and facilitating agent

---


for the agricultural sector. And this was a role for the state that had only, in very limited ways, been played before.

Undoubtedly the overlap of industrialism, nation-building and the preservation of the state required a firm grasp on agriculture. As agriculture was the hinge for all state policies, and the chief source of government revenue, it financed industrialism. But as the largest sector of the Japanese economy, it was the principal occupation of Japanese subjects. Control over agriculture, and agrarian disputes, was the only way for the state to ensure complete dominance over the nation after the removal of the samurai and daimyō eradicated previous internal challenges. This style of control came through specific political, social and economic reforms which indirectly provided for increased state control. The penetration of the national government into the village on the premise of correctly the ills of Tokugawa village order actually mandated village hierarchies and associations; its connection to suffrage only masks its operation. Land and tax reform undergirded political changes, forcing social and economic changes that placed individuals before the state as opposed to the communal village order of the past. The only component that remained to be controlled was agricultural information and technology. Agrarian improvement, especially those facets handled by institutionalized science, was the state’s approach.

Specialists, Institutions and Attempts at Settlement

One additional by-product, and indeed necessary component, for the successful penetration of the state at local levels was the opening of agriculture to the scrutiny of specialists. In Japan, this was accomplished by experts employed by the state. Between 1868 and 1885, 5.6 million yen was spent on foreign employee salaries. This amounted to roughly

---

40% of the yearly budget for the Ministry of Industry, though at the peak of foreign employment, in 1877, it was 67%. In that seventeen year period over two thousand individuals were hired from Western countries as well as an unknown number of Chinese. Called the oyatoi gaikokujin, “foreigners employed by the government,” they contributed roughly 9,500 man-years of service to Japan.

Oyatoi were hired to accomplish specific goals, whether that was in relation to railways, lighthouses, shipyards, armories and factories, the development of academic and scientific institutions or the colonization of Hokkaidō. But they were always teachers. Some were hired explicitly for that purpose while most were accidental instructors. In explaining, directing and correcting, they imparted to their students, subordinates and coworkers ideas, techniques and behaviors that Japanese workers, researchers and students would not have easily gained access to otherwise. Moreover, in perpetually being observed, they were exemplars, projections of Western societies and their values.

With their underlying purpose the training of their replacements, their deliberate exhibition of specific Western skills accentuated the thinly veiled tension of their presence. On the one hand, Japan wanted to be free of the West yet on the other it embraced Western paradigms. That conflict revealed to what extent the oyatoi were representations of international pressures applied to Japan. As foreign nationals who hailed from countries that enforced unequal treaties, granted their citizens extraterritoriality and favored exclusive trade

---

agreements, oyatoi were as much a means for development as they were reminders of Japan’s place in the world. Moreover, through their writings, particularly in the press, some turned their government positions into national competitions, allowing the successes or disappointments of other foreigners to become a means for celebration, anxiety and humiliation. Such was certainly the case for the British in 1878 when their government failed to renegotiate their unequal treaty with Japan. In that year all British employees within Japan, except language teachers, were released from their contracts and replaced by Germans. Until that moment Britain had provided the largest contingent of oyatoi.

Regardless of whatever discomfort and embarrassment they experienced or were the cause of, the oyatoi were treated well. It was common for oyatoi to receive salaries that exceeded all student tuition for the institutions where they taught. Some were even paid in multiples of the typical salary for their positions. Where an oyatoi engineer made between 400 and 800 dollars per month, his Japanese equivalent received 250. In fact, beyond their salaries surpassing Japanese counterparts, oyatoi received inflated standing through the civil and bureaucratic status system. Oyatoi were awarded honors and esteem that made them “quasi-civil servants” and the most well treated of them all, the head of the American

---


255 Both the Germans and the British were particularly vocal in critiquing American efforts in agriculture. Examples can be found with the Japanese Gazette (November 25, 1880) and J. J. Rein, The Industries of Japan Together with an Account of its Agriculture, Forestry, Arts and Commerce, 19-20.


258 Ibid., 234.
Mission to Hokkaidō, received honors equal to the Prime Minister while accepting a higher salary than the Prime Minister.259

The oyatoi were not the only piece of the Meiji modernization plan. Their complements were students sent abroad. Intended to absorb foreign knowledge as well as to seek out the newest developments, theories and technologies, domains sent students to study abroad before the Restoration, despite its illegality. After 1868 students continued to be sent abroad and their number increased rapidly.260 But the initial wave of around 92 students, from individual domains and the bakufu, as well as the 200-300 students who went abroad following the lifting of bakufu restrictions in 1866, largely failed to impress. This was partly due to the declining quality of overseas instruction but mostly because of the establishment of universities within Japan. Thus the first group of students was recalled in 1873.261 When the foreign study program was renewed in 1875, students were funded through the Ministry of Education and provided loans in exchange for government service upon return.262

An additional component of the Ministry’s directive was that top students within Japan were selected to study Mining, Engineering, Law and Education.263 As these fields generally reflect, the emphasis of the state was on training a professional class rather than bureaucrats.264 From 1886-1920, 4 additional imperial universities were established, schools that focused individually on engineering, science, medicine and agriculture.265 All the while

263 Ibid., 177.
265 Ibid., 256.
Japan’s preeminent teaching institution, Tokyo University, continued to grow and contribute. From 1876-1912 Tokyo U. produced 12,235 graduates (9% or 1,118 grads in agriculture).266

Students abroad and an emphasis on producing superior programs and qualified graduates within Japan were as much about weaning the state off of the oyatoi as they were an expression of distrust for and of the West. While overseas students were a means of confirming the promises of the foreign employees, they also ensured that the high cost of importation did not result in the consumption of outdated technology or modes of thought. Moreover, Japanese students enrolled in the elite institutions of the West were kept abreast of the latest discoveries and developments. These could be reconciled with the technologies and programs at work in Japan upon their return. Likewise, as these students had been funded through promises of returning and working in Japan, the government was assured that the oyatoi would be replaced with competent, Western-trained Japanese.

Yet the overseas students may have been an expensive redundancy. When they returned many met with stringent job and entrance requirements that forced them into elementary school teaching and social work rather than elite positions or fields.267 But even so, in replacing the oyatoi, many of whom were not degree-holding specialists, Japan had created an industrial, professional class. Even if the more prestigious positions, like the chairs of college departments, were not attainable by returnees, students who had studied abroad succeeded in removing one of Japan’s dependencies. As this occurred around 1880,268 we should wonder how their return affected Meiji development as a whole.

The Formation of Sapporo Agricultural College

In many of the fields where they were employed, oyatoi could be immediately replaced with trained Japanese specialists. However, with the colonization of Hokkaidō the conflation of the Japanese frontier with the American experience and an idolization for the American pioneer made this difficult. Instead what the Americans initiated ultimately succeeded in ending the mission itself. Under the guidance of General Kuroda Kiyotaka (1840-1900), the head of the Kaitakushi (Development Agency or Hokkaidō Colonization Commission) “experts” in agriculture, botany, metallurgy and mechanical engineering were to develop the infrastructure of the island through the expansion of fisheries, farms and factories, the construction of roads and docks and the erection and operation of an agricultural college. These projects were intended to bring settlers to the land, develop its industrial and agricultural potentials and intensify a military presence; however, they also held the added outcome of linking Hokkaidō’s educational and technical institutions to the rest of the empire, as well as their developing counterparts in Europe and the United States.

The American Mission is more commonly known as the Capron Mission, named for its leader, Horace Capron (1804-1885), an entrepreneur and factory owner, a successful cattleman, a once vice-president of the Maryland State Agricultural Society, vice-president of the U.S. Agricultural Society and U.S. Commissioner of Agriculture.²⁶⁹ Capron’s decisions were ultimately the ones that resulted in a series of agricultural testing centers and experimental farms that formed the basis for a state controlled agricultural network.

Capron’s first steps were taken while awaiting the results of a climatological and geographic survey of Hokkaidō. In September of 1871 three separate, and formerly private,
estates in the Tokyo area, totaling 114 acres, were purchased and designated as farms.\textsuperscript{270} Eventually they would employ nearly 800 people, only a handful of whom were foreigners. Visited in 1873 and 1874 by the Empress, they functioned as places of scientific study as well as exhibition. Over time their role swelled such that, in March of 1875, they were labeled experimental stations and acreage was added to the second and third sites.\textsuperscript{271}

The eventual expansion of the agricultural testing stations’ role, and their increasing impact on agriculture and commerce, led to their physical and national extension. In October and November of 1893 six additional branch sites were opened; but even still, a research backlog prompted three additional sites in 1896. By 1897 there were 38 experimental farms in operation and the Head Farm, what had been Capron’s Farm One, oversaw research and experiment in:

- seed quality
- rice cultivation
- improvements in buckwheat varieties
- acclimatized fodder-grasses
- improved the size and shape of transplantation beds
- amended drainage
- enriched insect control
- released information on vegetable health and disease
- informed farmers regarding fertilizer application
- timing and quality
- collected reports and published them through the Japan Agricultural Society
- held lecturing tours and responded to public queries

Connected to the state sites were 37 experimental farms at the prefectural level, maintained at local expense, as well as 110 sub-stations, at the city and village levels.\textsuperscript{272} Nonetheless, the peak in expansion appears to have been by 1906, when the costs of the Russo-Japanese War required alterations to the national budget. As a result, three man state branches were closed

\textsuperscript{270} David Forsyth Anthony. \textit{The Administration of Hokkaido under Kuroda Kiyotaka 1870-1882}. (Ph.D. diss., Yale, 1951), 49.
\textsuperscript{271} Ibid. 85-92
\textsuperscript{272} Haruki Yamawaki. \textit{Japan in the Beginning of the 20th Century}. (Tokyo: Japan Times, 1903), 134-145.
and the technical staff was eventually reduced, from 86 to 72.\textsuperscript{273} Even still, this shows rather nicely against the Euro-American referent where, in 1880, there were about 150 experimental stations in all of Europe\textsuperscript{274} and because the Hatch Act (1887) had not yet passed in the United States only a handful were privately in operation there.

Capron’s original farms were planted in March of 1872 following the arrival of seeds and supplies, including over one thousand fruit trees, from the United States. At that time Farm One, of roughly 30 acres, was planted with fruit, especially apples and grapes, as well as vegetables; Farm Two, approximately 35 acres, was planted in grains and other farm staples, including sugar beets; and Farm Three, 65 acres, was designated for dairy farming, animal breeding and pasturing.\textsuperscript{275} By 1873 over 32,000 trees had been gathered at the Tokyo farms to be shipped to Hokkaidō.\textsuperscript{276} In preparation for this, three model farms were established at Nanae, Sapporo and Nemuro. The first farm, a site of some 2450 acres, had been formerly the possession of a German farmer, R. Gaertner, who had entered into an agreement with the Tokugawa bakufu in 1865 under the agreement that he provide instruction in Western techniques for three years, have 12 associates and employ 50 laborers. In 1870, because Gaertner had sided with the Tokugawa in the civil war preceding the Restoration, he was removed and his lands were purchased by the Kaitakushi.\textsuperscript{277}

In Hokkaidō the three model farms were, as with the Tokyo sites, dedicated to particular crops and practices. Nanae became the site of fruit, cattle, horses and sheep whereas at Sapporo vegetables, fruits and forage and at Nemuro fruit, cereals and timber and the technical staff was eventually reduced, from 86 to 72. Even still, this shows rather nicely against the Euro-American referent where, in 1880, there were about 150 experimental stations in all of Europe and because the Hatch Act (1887) had not yet passed in the United States only a handful were privately in operation there.

Capron’s original farms were planted in March of 1872 following the arrival of seeds and supplies, including over one thousand fruit trees, from the United States. At that time Farm One, of roughly 30 acres, was planted with fruit, especially apples and grapes, as well as vegetables; Farm Two, approximately 35 acres, was planted in grains and other farm staples, including sugar beets; and Farm Three, 65 acres, was designated for dairy farming, animal breeding and pasturing. By 1873 over 32,000 trees had been gathered at the Tokyo farms to be shipped to Hokkaidō. In preparation for this, three model farms were established at Nanae, Sapporo and Nemuro. The first farm, a site of some 2450 acres, had been formerly the possession of a German farmer, R. Gaertner, who had entered into an agreement with the Tokugawa bakufu in 1865 under the agreement that he provide instruction in Western techniques for three years, have 12 associates and employ 50 laborers. In 1870, because Gaertner had sided with the Tokugawa in the civil war preceding the Restoration, he was removed and his lands were purchased by the Kaitakushi.

In Hokkaidō the three model farms were, as with the Tokyo sites, dedicated to particular crops and practices. Nanae became the site of fruit, cattle, horses and sheep whereas at Sapporo vegetables, fruits and forage and at Nemuro fruit, cereals and timber and the technical staff was eventually reduced, from 86 to 72. Even still, this shows rather nicely against the Euro-American referent where, in 1880, there were about 150 experimental stations in all of Europe and because the Hatch Act (1887) had not yet passed in the United States only a handful were privately in operation there.

Capron’s original farms were planted in March of 1872 following the arrival of seeds and supplies, including over one thousand fruit trees, from the United States. At that time Farm One, of roughly 30 acres, was planted with fruit, especially apples and grapes, as well as vegetables; Farm Two, approximately 35 acres, was planted in grains and other farm staples, including sugar beets; and Farm Three, 65 acres, was designated for dairy farming, animal breeding and pasturing. By 1873 over 32,000 trees had been gathered at the Tokyo farms to be shipped to Hokkaidō. In preparation for this, three model farms were established at Nanae, Sapporo and Nemuro. The first farm, a site of some 2450 acres, had been formerly the possession of a German farmer, R. Gaertner, who had entered into an agreement with the Tokugawa bakufu in 1865 under the agreement that he provide instruction in Western techniques for three years, have 12 associates and employ 50 laborers. In 1870, because Gaertner had sided with the Tokugawa in the civil war preceding the Restoration, he was removed and his lands were purchased by the Kaitakushi.

In Hokkaidō the three model farms were, as with the Tokyo sites, dedicated to particular crops and practices. Nanae became the site of fruit, cattle, horses and sheep whereas at Sapporo vegetables, fruits and forage and at Nemuro fruit, cereals and timber and the technical staff was eventually reduced, from 86 to 72. Even still, this shows rather nicely against the Euro-American referent where, in 1880, there were about 150 experimental stations in all of Europe and because the Hatch Act (1887) had not yet passed in the United States only a handful were privately in operation there.

Capron’s original farms were planted in March of 1872 following the arrival of seeds and supplies, including over one thousand fruit trees, from the United States. At that time Farm One, of roughly 30 acres, was planted with fruit, especially apples and grapes, as well as vegetables; Farm Two, approximately 35 acres, was planted in grains and other farm staples, including sugar beets; and Farm Three, 65 acres, was designated for dairy farming, animal breeding and pasturing. By 1873 over 32,000 trees had been gathered at the Tokyo farms to be shipped to Hokkaidō. In preparation for this, three model farms were established at Nanae, Sapporo and Nemuro. The first farm, a site of some 2450 acres, had been formerly the possession of a German farmer, R. Gaertner, who had entered into an agreement with the Tokugawa bakufu in 1865 under the agreement that he provide instruction in Western techniques for three years, have 12 associates and employ 50 laborers. In 1870, because Gaertner had sided with the Tokugawa in the civil war preceding the Restoration, he was removed and his lands were purchased by the Kaitakushi.

In Hokkaidō the three model farms were, as with the Tokyo sites, dedicated to particular crops and practices. Nanae became the site of fruit, cattle, horses and sheep whereas at Sapporo vegetables, fruits and forage and at Nemuro fruit, cereals and timber and the technical staff was eventually reduced, from 86 to 72. Even still, this shows rather nicely against the Euro-American referent where, in 1880, there were about 150 experimental stations in all of Europe and because the Hatch Act (1887) had not yet passed in the United States only a handful were privately in operation there.

Capron’s original farms were planted in March of 1872 following the arrival of seeds and supplies, including over one thousand fruit trees, from the United States. At that time Farm One, of roughly 30 acres, was planted with fruit, especially apples and grapes, as well as vegetables; Farm Two, approximately 35 acres, was planted in grains and other farm staples, including sugar beets; and Farm Three, 65 acres, was designated for dairy farming, animal breeding and pasturing. By 1873 over 32,000 trees had been gathered at the Tokyo farms to be shipped to Hokkaidō. In preparation for this, three model farms were established at Nanae, Sapporo and Nemuro. The first farm, a site of some 2450 acres, had been formerly the possession of a German farmer, R. Gaertner, who had entered into an agreement with the Tokugawa bakufu in 1865 under the agreement that he provide instruction in Western techniques for three years, have 12 associates and employ 50 laborers. In 1870, because Gaertner had sided with the Tokugawa in the civil war preceding the Restoration, he was removed and his lands were purchased by the Kaitakushi.

In Hokkaidō the three model farms were, as with the Tokyo sites, dedicated to particular crops and practices. Nanae became the site of fruit, cattle, horses and sheep whereas at Sapporo vegetables, fruits and forage and at Nemuro fruit, cereals and timber and the technical staff was eventually reduced, from 86 to 72. Even still, this shows rather nicely against the Euro-American referent where, in 1880, there were about 150 experimental stations in all of Europe and because the Hatch Act (1887) had not yet passed in the United States only a handful were privately in operation there.

Capron’s original farms were planted in March of 1872 following the arrival of seeds and supplies, including over one thousand fruit trees, from the United States. At that time Farm One, of roughly 30 acres, was planted with fruit, especially apples and grapes, as well as vegetables; Farm Two, approximately 35 acres, was planted in grains and other farm staples, including sugar beets; and Farm Three, 65 acres, was designated for dairy farming, animal breeding and pasturing. By 1873 over 32,000 trees had been gathered at the Tokyo farms to be shipped to Hokkaidō. In preparation for this, three model farms were established at Nanae, Sapporo and Nemuro. The first farm, a site of some 2450 acres, had been formerly the possession of a German farmer, R. Gaertner, who had entered into an agreement with the Tokugawa bakufu in 1865 under the agreement that he provide instruction in Western techniques for three years, have 12 associates and employ 50 laborers. In 1870, because Gaertner had sided with the Tokugawa in the civil war preceding the Restoration, he was removed and his lands were purchased by the Kaitakushi.

In Hokkaidō the three model farms were, as with the Tokyo sites, dedicated to particular crops and practices. Nanae became the site of fruit, cattle, horses and sheep whereas at Sapporo vegetables, fruits and forage and at Nemuro fruit, cereals and timber


\textsuperscript{276} Harold S. Russell. Time to Become Barbarian, 129-140.

were maintained. Through the stations in Tokyo and Hokkaidō Japanese agriculture received American crop varieties including the impressive assortment of 75 varieties of apples, 52 pear, 30 grape, 25 cherry, 14 plum, 14 raspberry, 10 current, 8 gooseberry, 5 blackberry and several varieties of apricots and peaches. Moreover, government nurseries propagated and then distributed these varieties to farmers throughout the islands, both through centers in Hokkaidō and the Tokyo farms. Other introductions, via the Kaitakushi, included celery, lettuce, asparagus and rhubarb. In addition, under the management of Edwin Dun, an Ohioan rancher, experimental farms of roughly 37,500 acres at four separate locations in Hokkaidō oversaw stud farming that emphasized the breeding out of weak horses. Dun also sought to establish and maintain beef and dairy industries to improve the Japanese diet. The success of the former is indicated by both the 1,396 slaughterhouses that were in operation by 1900 and the 1.7 million cattle butchered from 1893-1902 within Japan.

A part, if not an alternate center, in the creation of this agricultural network was the Sapporo Agricultural College (SAC), which became the Imperial University of Hokkaidō in 1918. General Kuroda’s attempt “to establish by every possible effort, scientific, systematic and practical agriculture,” led to the establishment of a preparatory school in Tokyo in June, 1872. However, much of what the General had envisioned did not come to pass immediately. Agriculture was not added to the curriculum until 1874 and Physics,

278 David Forsyth Anthony. The Administration of Hokkaido under Kuroda Kiyotaka 1870-1882, 93.
279 One might notice among the immense assortment of cultivars the heavy emphasis on fruit. This was due to almost universal agreement among Western visitors that Japanese fruit was with little exception inedible, especially when raw. For examples see: Edward S. Morse. Japan Day by Day, 1877, 1878-79, 1882-83. (Boston: Houghton Mifflin Company, 1917), 197-198; Rutherford Alcock. Capital of the Tycoon: A Narrative of a Three Years’ Residence in Japan. Volume I. (New York: Harper & Brothers, 1868), 286.
280 American Influence upon the Agriculture of Hokkaido, Japan, 11-15; Foreign Pioneers: A Short History of the Contribution of Foreigners to the Development of Hokkaido, 157.
282 The Semi-Centennial of the Hokkaido Imperial University, Japan 1876-1926. (Sapporo: The Hokkaido Imperial University, 1927), 107.
Mechanics, Mining, Geology, Architecture, Surveying, Chemistry, Botany and Zoology, also the General’s intentions, were absent until sometime later. When the school was removed to Sapporo in 1875, SAC was added to it.

Described as an “Agricultural College on Western principles” by foreign travelers, and even included in Murray’s 1913 Travel Guide, SAC was not an institution for the amelioration of Japanese agriculture. This was a place where Japanese boys would be trained to live and think as Westerners. The food was all foreign, part of the American administration’s attempt to replace what they saw as the inferior grain, rice, with the superior grain, wheat, through bread. This diet was believed to match the climate more appropriately, preparing the boys’ bodies for the needs of a cold climate. In addition to diet, moral indoctrination via Christianity was attempted. The first two cohorts, under the direction and legacy of the college’s first president, received complimentary copies of the bible; but the religion and its use in moral instruction did not continue after the first two years of the college’s operation.

SAC was formerly opened in 1876 under the presidency of William Smith Clark with the assistance of professors William Wheeler and David P. Penhallow, all Massachusetts Agricultural College (MAC) graduates or professors. These men would build off of the infrastructure established by the Kaitakushi, as well as Kuroda’s intentions for the preparatory school. When it comes to the historical record, Japanese and Euro-American

284 Nitobe Inazo. *The Imperial Agricultural College of Sapporo, Japan.* (Sapporo: Imperial College of Agriculture, 1893, 2-4.
285 James Herbert Veitch. *A Traveller’s Notes or Notes of a Tour Through India, Malaysia, Japan, Corea, the Australian Colonies and New Zealand During the Years 1891-1893.* (Chelsea: James Veitch & Sons, 1896), 131.
scholars have almost universally accredited Clark with establishing the curriculum, designing the grounds and initiating the practices of the agricultural college. In this way Clark has been perhaps given too much credit, his bust and mythic departing words, “Boys, be ambitious,” adorning the college and its crest.

In truth, nearly everything that Clark did had a precedent at MAC. When Mori Arinori, the Chargé d’affaires for the Japanese legation, attended MAC in 1872 he was said to have remarked as he watched the students in military drill that this “is the kind of an institution Japan must have, that is what we need, an institution that shall teach young men to feed themselves and to defend themselves.” And, that is exactly what Hokkaidō received. The MAC professors embarked on a campaign of replication where model barns, crop experimentation, stud breeding, dairying, meat industry, scientific silviculture, greenhouses, botanical gardens, laboratories, student publications, popular education campaigns, public lectures and agricultural were meant to develop a practical and theoretical agricultural program. While their success is undisputed, it is also of note that they did little to invent or adapt the workings of MAC to the needs and wants of Japan and its agriculture. Other American employees of the Kaitakushi did not fail to notice this. For Edwin Dun, SAC was merely a “fac-simile of the Amherst institution,” an imitation of MAC in Japan.

No matter its uniqueness, SAC was a conduit for the integration and extension of Euro-American agricultural techniques. As a part of this process, Japan was evaluated against the expectations and perceptions of SAC’s American professors. The First Report of SAC, provided by Clark in 1877, declared that “the agriculture of Japan greatly needs improvement

---

289 Amherst Graduates’ Quarterly. Volume XI (Nov., 1921–August 1922), 106.
and the value of its agricultural products should soon be largely increased.”

To accomplish this, the report prescribed the introduction and improvement of livestock along with the cultivation of maize and fodder-grasses and suggested refining living arrangements through the erection of stone homes and barns.

These recommendations inculcated dependency. Because seed should every year be imported from the US, Hokkaidō would require constant injections of foreign botanical goods to maintain its support. Considering that 1,200 pounds of seed, which included 17 different varieties of grasses, were ordered from America in that year alone, the development of seed processing and storage facilities should have been a primary goal if Japanese agricultural self-reliance and stability were intended. Obviously this was not the case; and yet most of Clark’s recommendations were taken seriously.

The report deemed Hokkaidō to be a place of rich soil, good climate, cheap labor, low fuel prices, plentiful water and easily obtainable lime. It considered the island an ideal location for sugar beet production, a then thriving industry in Europe and a topic of much interest at MAC itself. In fact by advocating this position, Clark drew on his knowledge of five years of beet sugar research, which had included extensive surveys and analyses of sugar content, and relocated that goal to SAC. Even after Clark left, research on sugar beet cultivation continued under Professor Penhallow, who was deeply ridiculed by the British press for his failure to produce a competitive crop.

---

294 Ibid., 10.
295 Ibid., 22.
296 Ibid., 26.
297 Ibid., 28-32.
298 General Catalogue of the Massachusetts Agricultural College 1862-1886. (Amherst: J. E. Williams, 1886), 95.
300 “Agricultural Education in Japan,” Japan Gazette.
Indeed the lingering attachment to a sugar beet industry in Hokkaidō proved to be, just as with the first silk factories in Japan, an enduring and costly experiment with much delayed accomplishment. When the Kaitakushi was abolished the new administration invested 1 million yen in erecting a sugar beet mill near Muroran and an additional 2 million yen in stocking a Sapporo mill with the latest and most expensive machinery. Contracts with local farmers were also initiated. The mill at Muroran was in operation only a few years before it was shut down and the machinery for Sapporo was never installed. Eventually, though, the machines were utilized in a small-scale beet industry that is still in operation today.

As with the beet industry, SAC provided its students with some of the misplaced views of their American teachers. Nitobe Inazo, an SAC alumnus and eventual SAC professor, internalized and projected the American assessment when he wrote: “Japan had long since forgotten the art of breaking up new land; her agricultural system was too intensive to be applied to a newly-opened country.” Yet Japanese agriculture had, since the start of the Tokugawa era, been engaged in reclaiming land; and campaigns of village and land rehabilitation, like Ninomiya’s, were well underway in the middle of the 19th century. That Nitobe either did not know this or chose to neglect it indicates an important advantage of Western agronomy that had nothing to do with its contents. Because Western agricultural learning was an academic vocation, one associated with certification and career advancement, it easily replaced non-institutionalized Japanese agronomy. Moreover, because Japanese agricultural knowledge was not even offered in the course catalogue, SAC grads did not

303 Nitobe Inazo. The Imperial Agricultural College of Sapporo, Japan, 2.
304 The Development of Hokkaido Imperial University. (Sapporo: The Hokkaido Imperial University, 1923), 9-25.
have a choice to prefer or study it within the allegedly more scientific, formalized setting of the university or college.

Thus what is most shocking about this dynamic is that the man who purportedly composed the initial curriculum for SAC complimented Japan’s excluded agriculture in his 1879 speech “The Agriculture of Japan.” During his address Clark stated

in practical agriculture the Japanese are remarkably skillful, and have numerous methods and customs which might well be imitated by us. There cannot be found in any other country extensive fields which produce more human food to the acre, or which are more free from weeds, or which maintain their fertility from generation to generation…

Yet Clark’s respect was not sufficient to consider including those “numerous methods and customs” in the curriculum of a school in Japan that centered on agriculture. This in part helps to explain how “Sapporo Agriculture College, as an educational institution was a success from the start” but when it came to its influence upon Hokkaidō’s industry and agriculture “it might just as well have been located in Tokio or any other place in Japan proper.” SAC had failed to integrate itself with Japanese practice and therefore existed as a parallel, and largely unconnected, agricultural track.

Although SAC had a limited influence on actual agricultural practices, it was praised. Edwin Dun, who had been highly critical of Capron and Kaitakushi policies at large, believed “in proportion to its [SAC] endowment it has turned out more men of mark than any other institution of learning in the country.” Even the British newspaper, the Japan Gazette, well-known for its frequent attacks on American endeavors, managed sarcastic approval concerning “the spirit in which…experimental work is suggested and carried

---

307 Ibid., 54.
It seems that in the context of its MAC parentage, SAC had managed to accomplish a relative level of success.

Over time, though, modifications made SAC into a Japanese institution. The college expanded its program offerings and curriculum to accommodate local farmers. A Winter School was established in 1894 to integrate the off-season and courses with practical application were included gradually, as part of the general curriculum. Once SAC was placed under the authority of the Department of Education, April 1, 1895, the curriculum was constantly revised as part of the effort to incorporate SAC into Tohoku Imperial University, which was formally accomplished in 1907. These tweaks and adjustments undoubtedly moved the college away from its MAC foundations. In fact, by adjusting to the needs of practical instruction and local farmers SAC was anticipating changes that American farmers would call for with their own land-grant colleges, which they accused of being too theoretical.

However, even with the limited success of SAC, the settlement of Hokkaidō ultimately did not occur on the American model. When the Kaitakushi was abolished in 1882 only 25,150 acres had been cleared since 1868; this amounts to roughly 1% of Hokkaidō. Moreover, when the new government enabled the extension of local agricultural societies they expanded the agricultural practices and relations of the main institutions.

---

308 Ibid.
309 The Semi-Centennial of the Hokkaido Imperial University, Japan 1876-1926, 70.
310 Ibid., 94.
islands. By the 1920s most of Hokkaidō was owned by absentee landlords and the model of the independent owner-cultivator pioneer had failed.

The Capron Mission and SAC indicate to what level the colonization of Hokkaidō was actually about national development and institutionalization. The priorities of both were to make specific material changes that would allow for structural modifications to follow. Where the Capron Mission established infrastructure, such as roads and docks, of interest to civilians and the military, SAC was intended to contribute to thorough settlement. Together these projects installed a defensive line in the northern territories, establishing Japanese imperial dominance over territories that may have otherwise been contested.

Yet the changes of the “American pioneers” were only superficial. They did not reconcile Japanese society and culture with the processes of development that Americans found integral to the settlement of a frontier. Because the pioneer never quite developed among Japanese migrants, and Western agricultural modes of production did not become immediately normalized, Hokkaidō’s development was slow in comparison to initial projections. But the Kaitakushi was well financed; and its funding seemed greater than the value of its accomplishments.

In this way the colonization of Hokkaidō is a microcosm for Japan’s experience with modernization and Western modernity as a whole. The failure of industries throughout the frontier and the immense cost associated with these failures did not stop modernization but only seemed to encourage future endeavors. Hokkaidō’s sugar beet industry, previously discussed, provides a nice example. In the first stages, expensive machinery and foreign technicians were acquired; but initial projects were slow to develop because technology had not been aligned with domestic sugar beet production. Processing capacity far outstripped

---

sugar beet cultivation, and the problem of sugar content lingered. Over time, experiments at SAC and contracts with farmers solved part of these problems, but not without greater capital injections. With new machinery, a great deal of money had been spent on an industry whose scale did not meet with the realities of cultivation. Although the oyatoi were replaced, by the time that a successful sugar beet industry was in operation, a great deal of money had been invested, some spent on machinery that was not even installed. This industry could have been developed for less, with fewer errors, at a faster pace. But the obsession with technology and Western apparatus was the greatest diversion from the successful application and operation of industrial processes. In this way Hokkaidō was a sliver of the Meiji industrial project; but it represents the state’s industrial project, as a whole.

The successes and failures of SAC, the Capron Mission and the initial wave of Meiji modernization are also evident in Hokkaidō’s agriculture. The American method had limited applicability. The Japanese diet did not emphasize the beef, dairy or wheat now perpetuated on the frontier. Moreover, the cultivation of these products did not match with pre-industrial Japanese practices. The application of Western techniques therefore received skeptical responses and inadequate use. When it came to their adoption, only horses became somewhat common on Japanese farms. Large machinery were rarely utilized, and chiefly remained on Kaitakushi and college farms.315

Where modernization ventures succeeded was in the creation and integration of intellectual and scientific institutions, particularly those that put Japan on level with agricultural development abroad. As we saw earlier, Japan had by the turn of the century a high proportion of agricultural testing centers and experimental stations in comparison to the United States and Europe. These centers and SAC kept Japan well apace with the

mechanization of agriculture. That connection enabled Japanese farmers to experiment with many of the same agricultural mechanisms as American farmers, simultaneously.

In the US the shift to horse-drawn machinery was well underway by 1845. But when a portable steam powered engine was produced in 1849 it was slow to sell. It took the rapid expansion of cultivated land, the death of countless horses during the Civil War and improvements to processing machinery to lead American farmers away from equine motive force. Even then steam power proved risky. It was expensive to repair; farmers reported slow service times and the risk of explosion and fire made the technology hazardous. Draft animals therefore remained the principal agrarian mover until the 1920s when petroleum-powered tractors, as well as combines and corn pickers, became available. At that time horses were quickly replaced such that the last of the farm horses were disappearing in late 1940s. In terms of this trajectory, Japan’s agricultural development was completely parallel with the 20th century’s agrarian giant.

European agriculture also played its role. Germanic influence became the backbone for the Agricultural College of Komaba, which the Emperor attended the opening of in March 1878. Established separately from the Capron Mission and originally under British advisers, the college developed underneath German specialists whose focus on agricultural chemistry and the actualities of Japanese agriculture was much preferred. One of the leading experts, Max Fresca, whose largely negative evaluation of Japanese tillage and paddy drainage was then well known, recommended that hand-tilling be replaced with livestock,

---

that wet rice cultivation be replaced with well-drained paddy, and that purchase of fertilizer replace the use of green manures.\textsuperscript{321} These comments penetrated the Japanese agricultural community when integrated with the agricultural testing centers, spurring several agricultural societies to experiment with a variety of plows – and even inculcated an intense rivalry between prefectures, their participants and Komaba graduates.\textsuperscript{322} Regardless of any controversy concerning their evaluations, German professors’ willingness to experiment with tea, rice and other Japanese staples\textsuperscript{323} was welcomed as it was perceived as integrating traditional Japanese agriculture with the practices of institutional science.

Between SAC, the Department of Agriculture at Tokyo University and the Agricultural College of Komaba a scientific, institutional core for agricultural development was in place, all by 1880. Furthermore, a fascination with science disseminated throughout Japan’s educational system. In the 1870s and 1880s greater emphasis on science was promoted at the elementary level. In taking such steps, the Meiji state crafted a national science policy; and unlike many other nations at this time, made science and its pursuits publically funded. This was not without its drawbacks, however. A national policy for science subverted individual interests and emphasized the structural development of departments and faculties.\textsuperscript{324} By sacrificing the personal passions of its researchers and professors, the various stations, laboratories and universities came to project government interests as science. Later in the period, when government and business increasingly intertwined, this had the effect of institutionalizing very specific goals under the mantle of objectivity and progress.

\textsuperscript{323} Donald Roden. “In Search of the Real Horace Capron: An Historiographical Perspective on Japanese-American Relations,” 559.
Integrating Local Farmers:

Of all the thousands of foreign experts, only 28 had been hired in the field of Agriculture and Commerce. Of those, most were German but eight were from the U.S.\(^{325}\) Those eight were almost exclusively hired by the Kaitakushi for the Hokkaidō project, yet they were hardly a significant presence among the 78 oyatoi employees of the bureau.\(^{326}\) Thus in the midst of the greatest agricultural project under the Meiji state, the agricultural experts were a minority, as agriculture was itself among the oyatoi.

It is certainly curious that with agriculture as such a primary sector for Japanese development only a handful of experts were selected to improve it. Clearly, they were not a strong enough presence. From 1868 until around 1880, when the government focused on increasing agricultural production in order to secure tax revenues, the oyatoi were greatly unsuccessful. The Kaitakushi’s attempts to colonize and develop Hokkaidō, with the principles of Western science at the forefront, had failed. While the agricultural colleges in Sapporo and Tokyo churned out graduates, they were not people from whom the typical Japanese farmer would accept instruction. University graduates were professionals trained to work and serve within institutions, not on farms. In essence, the state’s approach to agriculture had been flawed and the low results they yielded were principally due to the inability to appropriately connect Western agronomy with Japanese agriculture at the local level.

One of the principal problems with the application of Western agricultural practices and knowledge before 1880 was that farmers did not want to be told by the government, or

government officials, how to cultivate. Even when things could be done to alleviate problems for villagers, villagers refused do what they had been told by the state.

Such was the case with the pearl moth, well known for devastating rice in double-cropping regions. In Shikoku in 1878, villagers so adamantly opposed external direction they stonewalled viable solutions. When a local village head, who had conducted experiments on his own, developed a solution and attempted to spread his results he was disregarded. The state's approach, to verify the village head's findings through an agricultural testing center, integrated the village head with the state. When villagers continued to ignore the findings, the government published the prescribed measures; but villagers continued to refuse them. As of 1886, fines were issued along with threats of imprisonment. But in 1893 half of the annual rice crop was destroyed by infestation. New regulations were passed in 1896; and again in 1904. All the time, villagers saw and understood the nature of the problem: that burning the stubble from the previous year’s crop, rather than allowing it to remain in the field, destroyed the eggs lying dormant in the stalks. But the incentive to do the extra work or the impetus to listen to state officials did not exist. When government agents came to ensure that peasants burned their fields the farmers protested. It was not until 1908 when the government finally succeeded, through a combination of persuasion and subsidy, to convince the farmers to carry out the necessary steps of prevention and control. Only then did the moth problem diminish.327

The issue of the pearl moth was more than a conflict between human needs and nature. The underlying problem was one of history. For over a millennia the local had been autonomous when it came to village matters. None of the bakufu governments had succeeded in completely regulating and administrating agricultural production. The village

had been an autonomous unit of agricultural and social control, with its own systems for administrating and reconciling issues within that community. When problems that could not be resolved arouse, a nearby village or association of villages provided assistance. The government’s role had always been to intercede during times of famine, or in the midst of revolt. Otherwise its sole purpose was the collection and consumption of taxes. For these reasons government presence at the local level was not only seen as unnecessary it was meddlesome. Yet here was the Meiji state attempting to address local issues through prescriptions, publications, laws and fines. Who, at the village level, was to be certain that the state was acting in the best interests of the farmers? And regardless of potential benefits, if villagers did accept state control it further weakened local autonomy.

Ultimately, one way the state resolved this tension was through law. As mentioned previously, the Town and Village Code significantly reworked local authority and made the village answer to the district, which in turn responded to the prefecture. But placing the village within a strict hierarchy was only one way of addressing the issue. Another was through village and agricultural associations, made compulsory through law, which overtime allowed the interests of the state, and those of businesses attached to the state, to become central to farmer practice and identity. However, village and agricultural associations could not function without local intermediaries who empowered these gatherings with meaning and validity. From the top down, landlords provided this service. Landlord associations did everything they could to facilitate modifications that would improve quality, ensure higher yields and decrease waste.\footnote{Ann Waswo, \textit{Japanese Landlords}, 49-57.} But because landlords mimicked the paternalism of the state, their success was limited. For these reasons villagers needed other incentives, and other voices, to lead them into associations that in the end would bind them into national
programs where their individual concerns, and their health, became secondary to national priorities.

From 1880 until 1895 the state made use of the Veteran Farmer System, a program that relied on rōnō to circulate among the villages, convey the best practices of the Tokugawa period, disseminate superior seeds, correct techniques and improve agriculture at large. With emphasis on double cropping, dry paddy cultivation, seed selection and hybridity, irrigation and improvements to pumping, rōnō continued to emphasize the application of labor. In the midst of this program many of the original agricultural testing stations and agricultural colleges at all levels of government were closed, purportedly due to funding problems. However, throughout the period the universities, and those agricultural testing stations that remained opened, continued to develop and advance Western agronomy. Likewise, the graduates of Japanese and Western institutions were hired to circulate within the countryside on field observation and lecture tours. The result was the simultaneous presentation of rōnō techniques and Western practices which produced a “unity between the traditional practices and theories and foreign agricultural science [that] became the basis for the new method of rice cultivation.”

Where Western science on its own had failed, its fusion with Tokugawa practice succeeded. Rōnō taught principles such as double-cropping, rice transplantation and crop fertilization. These techniques were a foundation onto which Western skills and procedures could be grafted. Once farmers had mastered intensive rice cultivation, petro-chemical

---

fertilizers, hybridized seeds and standardized paddy sizes could be integrated. Then, with consistent field sizes, oil-power tractors and other agricultural machinery could be employed.

Agricultural associations expedited the merger of Japanese and Western approaches, normalizing acceptable applications through legislation. With the passage of the Agricultural Association Law (1899) associations were established in every region, at all levels of government. The law required prefectural governors, mayors, town and village heads, as well as prominent landlords, to head their appropriate chapters, thereby making the associations arms of the state.

In similarity to the gonin-gumi, agricultural associations came to be the conduits through which state decrees were announced and abided. In Oct. 1903, in preparation for the Russo-Japanese War, 14 directives were issued via the associations. These directives sought to ensure the testing of seed fertility, the use of rice nurseries, planting in rows, land improvement and the use of livestock. Should it be necessary, the police were to enforce these regulations. That agricultural associations were used in this way is not surprising; but it is important that the law was promulgated after the Veteran Farmer System expired. It indicates to what level the rōnō may have helped prepare the villages for increased central control. Had they not, we would expect to find more peasant protest and revolt. But by 1899 the peak of peasant unrest had passed.

Through the Veteran Farmer System best practices spread nationwide; and the gradual improvement to local practices led to what the Meiji state had intended, agricultural development. But agriculture’s place in the Japanese economy was shrinking. In 1880

---

335 Ibid.
about 70% of the population was engaged in agriculture, full time. They produced 47% of GDP and paid 75% of taxes.\footnote{Kozo Yamamura. “Introduction to Part Four,” in Japan in Transition from Tokugawa to Meiji. Ed. Marius B. Jansen and Gilbert Rozman. (Princeton: Princeton University Press, 1986), 377.} By 1920, farmers were roughly 50% of the population, producing 27% of GDP and providing 10% of total tax revenue.\footnote{P. Francks. “The Macroeconomic Role of Agriculture in Japan’s Development,” in Meiji Japan: Political, Economic and Social History 1868-1912. Ed. Peter Kornicki. (London and New York: Routledge, 1998), 221; The Kozaburo Kato. “Agrarian Origins of Modern Japan,” in Agriculture in the Modernization of Japan 1850-2000. Ed. Shuzo Teruoka. (New Delhi: Manohar, 2008), 49.} It was the introduction of excise taxes on alcohol, soy sauce and sugar that had largely decreased the role of the land tax in public revenue, as income taxes on corporations remained light. By 1910 nearly 54.9% of government income came from these consumption taxes.\footnote{Keiji Ushiyama. “The Establishment of Japanese Capitalism: 1888 to World War I,” 59.} Yet even when the place of the land tax decreased proportionally, the burden on agriculture was not altered. Tenancy rates continued to increase, the land tax remained the same, and increasing agricultural production risked glutting the market and driving prices down.

The Veteran Farmer System therefore played an inconsistent role. Rōnō were trusted members of the community whose actions, knowledge and behavior were upheld by village opinion.\footnote{Thomas C. Smith. “Peasant Time and Factory Time in Japan,” Past & Present No 111 (May, 1986). http://www.jstor.org/stable/650505 (accessed Sept 22, 2010), 177.} Their role as appointees, lecturers or officials of the state was recognition of that village authority as much as it was an elevation from local expert to quasi-bureaucrat.

In thinking back to the rōnō of the Tokugawa period, Ninomiya the foremost in our minds, it would be the rare veteran farmer who did not, at being given the opportunity to correct poor practices, improve peasant livelihood and enlighten the state. But no matter their individual intentions, while shoring up the agrarian base, the rōnō enabled greater exploitation by the center. Their “traditional” knowledge became a national baseline for agricultural practices, replacing regional variation and local diversity with a specific set of practices. As experts in each area of cultivation, e.g. rice, silk, tea, cotton and sugar,
disseminated their personal preferences throughout the nation, individuals came to apply rōnō teachings on a general level not seen during the Tokugawa era. This relative level of homogeneity created a national Japanese agriculture, commonalities that would have been beneficial to villagers and the state. But the state could ultimately make better use of it. Synchronized practices and universal applications met the needs of law and institutions, a consistency that could be observed, regulated and, when needed, corrected.

In succeeding, the rōnō opened Japanese agriculture to modification. In doing this, they eradicated themselves. In time, the rōnō emphasis on labor intensive agriculture became backward-looking in comparison to Western agriculture’s stress on labor savings. Agriculture is, after all, a difficult job. When someone offers to make it easier, it becomes hard to argue. Moreover, when more can be produced with less effort, and perhaps even at lower costs, it is even more difficult to ignore. Rōnō, after the successful integration of Western agronomy, could no longer offer advances along the same path of agricultural development selected by the Meiji state.

Rōnō also contributed to their demise when they approved of the state’s role in evaluating agricultural production. Starting in 1881, the government assembled well-known and respected farmers from across the country in Tokyo for the All Japan Agricultural Conference. There the farmers exchanged information and opinion, as well as tested their skills and assumptions. Conferences like these were an extension of the state’s enthrallment with exhibitions, which had begun a decade earlier. However, when attached to agriculture, expositions were more than national and international displays. They became a means for providing acknowledgment, validation and reward, especially when connected to the Veteran Farmer System.

---

343 Ibid., 154.
Between February and April of 1881 the Association for the Promotion of Cotton and Sugar ran in Osaka. 7,000 individuals responded to the call for participants. From among them, 918 received awards for cotton products while 296 were recognized for their work with sugar. Honors were even bestowed on the deceased. In the mind of one scholar, these awards were finally an acknowledgment of rōnō abilities as well as a means for appreciating the teachings of the ancestors. But once farmers accepted awards as recognition of superior skills, they also consumed the standards of judging and being judged. Once evaluation by anonymous experts and the necessity for emulation became components for agricultural assessment, the socio-cultural milieu that had engendered the rōnō was no longer complete. As the values of the exhibition were ferried home to the villages and incorporated with the hope of future prizes they became embedded in the agricultural system at large, instilling competition as a chief value.

When rōnō bought in to exhibitions and award ceremonies, they validated the state’s role in gathering and evaluating agriculture, agriculturalists and agricultural commodities. The state also acknowledged this shift, directing the agricultural associations to also be responsible for the organization of prize shows. Building on the success of specialty expositions like the Association of Forestry’s event at Ueno Park in 1883, where 2,430 objects were displayed, and the 1886 Association for the Progress of Silk Thread and Ceramics exposition, a three month affair, local agricultural associations emphasized quality products and superior skills throughout the year. The hope was that government demands for higher quality, and therefore more expensive rice, could be achieved through public competitions and displays, instead of direct government presence and legislation. But the concern for quality did not remain with rice alone; it permeated and undergirded

345 Ibid., 95-96.
agricultural fairs as a whole. Gradually, the state came to hold a concern for the entire process of production.\textsuperscript{346}

\textit{Rōnō} Techniques Abroad

With the ending of the Veteran Farmer System, the role of the \textit{rōnō} and the significance of pre-industrial agriculture weakened. Steadily, rural population diminished, cities swelled, the factory system normalized and agriculture grew less significant. The loss of local autonomy, perpetually reaffirmed through the dictates of the agricultural associations, was reinforced through the information, guidance, and prescriptions the local agricultural station. The communal support and personal connections that individuals had held central in the Tokugawa era were replaced with the education, status and science of the new social order.

This was no longer the mere renegotiation of the village or rural life. This was the contradiction of agrarian empire and the logic of agriculture. The farmer’s craft had been eviscerated. Control and knowledge of natural processes, gained through personal experience, was no longer an acceptable means for understanding and manipulating the natural world. Now academies and experts informed the farmer what to do, when to do it, and how to do it.

The domestication of the farmer and agriculture was a messy affair. But no matter how much it succeeded within Japan it did not completely eradicate pre-industrial Japanese agriculture. At the same time that Japanese pre-industrial techniques were being replaced within Japan, Japanese practices were quite competitive abroad.

The first Japanese migrants to the West Coast arrived after 1885 when immigration was permitted by the Meiji state. These early wanderers found jobs in various manual industries but in time transitioned to tenant farming. Supported by companies and merchants who financed their loans, many Japanese in America eventually became successful owner-cultivators. There were approximately 30,000 employed in the summer of 1909, according to the US Immigration Commission. By the time of the internment camps some 109,391 individuals were taken from California, Washington and Oregon. Of these persons, 5,390 were registered operators of farms, farms that totaled 266,120 acres, or 1% of total farm acreage of the time.

Japanese farms were “considerably smaller than other farms, on the average,” few were dairy farms and field crops were rarely cultivated. Instead, it was common to see intercropped and double-cropped fields worked over with hand labor. Japanese farms specialized in grapes, fruit, berries, nursery stock, poultry, tomatoes, lettuce, melons, asparagus, onions, beans, cabbage, peas, celery, spinach and cauliflower, i.e. crops that responded well to labor intensive practices and bore some relation to Japanese cultivars.

In total, the Japanese who were removed from their old farms produced 20% of the vegetable crops for their region, held 70% of the total acreage of berries and grew 85% of the West Coast’s strawberries. Where other small-scale cultivators in the area complained that these crops rarely could be grown at profit, the Japanese succeeded. A study of that success, conducted in November of 1945, found that one critical support for the immigrant community was its “successful cooperative organizations.” Indeed, the study found,

---

“evacuees were a cohesive group.” So much so that the US government had to take steps to replace them as quickly as possible so as to minimize crop losses. Ultimately, though, farmers could not be found who could maintain the labor intensive methods and the land once owned by the Japanese was eventually attained by large landowners, the very landowners who had competed with the Japanese.351

What the Japanese farmers did not have in the US was compulsory agricultural associations that dictated what was acceptable and what was not. Instead the “traditional” local supports of voluntary associations upheld the community, maintained labor intensive agriculture and enabled success. That accomplishment was as much their own as it was an emblem for the efficacy of pre-industrial Japanese agriculture.

351Ibid. 354-361.
Conclusion: A Reconsideration of Japanese Agriculture

The history of Japanese agriculture from early times until the Meiji era is a narrative of expansion, polishing and development. Gradually, geographically-isolated agricultural communities formed interconnections, developed networks for communication and exchange, and over time cemented an agricultural base. As imported cultivars and techniques strengthened Japanese agriculture, diverse sets of practices arose to meet local climatological, environmental and human needs. In time, population increased and its pressures led agriculturalists towards labor intensive practices.

In the Tokugawa era this materialized through the expansion of cultivated acreage, increases in production, the evolution of regional specialization and emphasis on cash and industrial crops; all of which undergirded commercial expansion, economic development and urbanization. Nonetheless, this transition did not bring with it large-scale pollution. Because the principal motive force was humans, and that population relied heavily on wood supplies, the greatest problem was matching consumption with regrowth, protection and maintenance with destruction. As Conrad Totman’s research shows, that balance was attained in the 1840s and 1850s, when the experiment with deforestation and land degradation ended and the land once more became a green archipelago.352

Towards the end of the 19th century much changed. Agriculture, which had been the base of Japanese society and culture, was increasingly marginalized by the machine. And although agriculturalists and the products of cultivation funded the policies of the state, agriculture would never again be the center. To therefore speak of the rōnō at this point is to describe the marginal within the marginal, the expert in a system that was increasingly pushed to the side. And although rōnō and Japanese agriculture progressively became the

periphery of Japanese industrial society, their role and contributions are worthy of consideration in connection to the Meiji modernization program.

A history of the rōnō conveys how farmers and preindustrial agricultural knowledge and techniques made deliberate, conscious contributions to the Meiji effort. By drawing on their pre-industrial experience, applying it to changing contexts and assisting the integration of Western agricultural methods to Japanese practices and environments, they facilitated agricultural transition. But just as the oyatoi, they succeeded in replacing themselves.

Once rōnō lost influence within Japanese agricultural communities, the emphases of Western agronomy succeeded in outgrowing the stresses of pre-industrial Japanese cultivation. Like the root structures of competing plants, at one point they had intertwined. But the loss of rōnō authority and the ascendency of state control over agriculture, particularly through the agricultural associations, allowed Western practices to continue rearranging agriculture within Japan. In time, an organic, sustainable and increasingly ecologically-oriented agricultural mode of production was displaced with a petro-chemical reliant, machine-driven agronomy dependent on imports, factories and fossil fuels. It has yet to be determined if this was for the better.

To date, the criteria for assessing success and failure have been the product of the Western system itself, figures of labor savings, higher yields and population increase. But these are not the only criteria for evaluation. If an agricultural system were to be judged based on soil structure, beneficial insect populations, the health of the surrounding environment or air and water quality, perhaps other agricultural norms would emerge. Yet as long as the criteria that favor Western agronomy are the means for evaluating world-wide agricultural production it is unlikely that alternative agricultures, like that of the rōnō, will be once more viewed as applicable systems for food production.
Nonetheless, the long arc of Japanese agricultural development describes to what extent human beings have thrived under situations of limited resources. It provides evidence of communities that have adapted to local conditions, perfected conservation techniques and successfully provided for more people on scarce arable lands than any other agricultural system put in practice before petro-chemical fertilizers and genetically-modified crops came into being. As the Meiji state discovered, there was much to learn from this methodology. And there still is. But we can learn nothing without embracing the history of the individuals who practiced these techniques.
Works Cited


“The Agricultural College, Komaba, Tokio,” The Kobe Advertiser and Shipping Register, April 16th, 1879.


Amherst Graduates’ Quarterly. Volume XI. Nov., 1921–August 1922.


The Development of Hokkaido Imperial University. Sapporo: The Hokkaido Imperial University, 1923.


*General Catalogue of the Massachusetts Agricultural College 1862-1886.* Amherst: J. E. Williams, 1886.


Nitobe, Inazo. The Imperial Agricultural College of Sapporo, Japan. Sapporo: Imperial College of Agriculture, 1893.


Professor Koide. “Agriculture in Japan: a paper read by Professor Koide before the Agricultural Section of the Royal Society, 11th June, 1918.” Sydney: Pratten Bros., 1918.


Veitch, James Herbert. *A Traveller’s Notes or Notes of a Tour Through India, Malaysia, Japan, Corea, the Australian Colonies and New Zealand During the Years 1891-1893*. Chelsea: James Veitch & Sons, 1896.


