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General Characteristics of Labour-Intensive Industries

In this chapter, the charactersitics of the four labor-intensive sectors of industry previously analysed individually will be collectively considered, as well as those of some other industries. Therefore, I would like to touch on what seems relevant to consideration of various aspects of the substructure that supported the process of Japan's industrialization. Some matters that I did not discuss in detail in the four preceding chapters will be partly taken up as well. For further details, the reader is asked to refer to the pertinent references cited.

The Process of Adaptation in SMIs

Disbanding of Early Factories

In the introductory chapter, I classified Japanese SMIs into three types according to the way in which they came into being. The first type began with large-scale factories using imported equipment for the production of goods previously non-existent in Japan. The second started with the production of spare parts for finished goods. The third resulted from the manufacturing of copies of industrial products previously non-existent in Japan using production techniques that were not imported; these copies were produced by traditional craftsmen who resorted to whatever applicable techniques they had on hand. The brush and knit-fabric industries are examples of the first type; the bicyle industry typifies the second; and the shell-button industry is an example of the third.

Though different in the way they were established, the three types were similar in the pattern of their subsequent development. One common feature was that the integrated factory production system imported from the advanced countries at the beginning was almost wholly disbanded and eventually became extinct. The production of brushes and knit fabrics began under

modern factory systems, and even in the bicycle and shell-button industries there were modern factories for integrated production. Typical examples are Premier Bicycle and Greater Japan Bicycle in the bicycle industry, and the factory of the German merchant Winkler in shell-button manufacturing.[1] They are specifically referred to as early factories, because they had common elements in the circumstances of their establishment and in the role they played in the histories of their respective industries.

First, none of the founders of these factories came from the class of immediate producers. The first shell-button factory was set up by the German merchant Winkler. The founders of the brush factories mainly were large merchants in Osaka and Kyoto. Teikoku Brush Co., for example, the biggest manufacturer in the early phase of the Japanese brush industry, was founded by Matsumoto Jutaro, prominent in Osaka financial circles and the president of the 130th National Bank headquartered in Osaka. Early factories of knit fabrics were established by the Konoike family, a major Osaka merchant house during the Edo period, and by former feudal lords or their high-ranking vassals. Premier Bicycle Works was established by Premier Bicycle Manufacturing Co. of Great Britain at the proposal of Greer Company, a Kobe-based British trading house, and managed by Maruishi Shokai, a company that had been known as an importer of British-made bicycles since the Meiji period. Second, most of these factories either went bankrupt or were obliged to drastically scale down their business activities.

The nine brush factories that were set up between 1888 and 1906 in the Kansai region either went bankrupt or closed down altogether between 1902 and 1927. In 1914 Teikoku Brush, which had been established as the first full-scale brush factory in Japan in 1888 and remained the biggest manufacturer in the industry throughout, was liquidated.[2]

Winkler, taking note of the significant potential of shell-button manufacturing in Japan, imported a complete set of the latest machinery and equipment from Germany and even invited skilled German workers for the start of his factory in 1890. However, his up-to-date machines proved too expensive to run because their spare parts were not readily available; eventually, they had to be replaced by simpler ones, devised by Japanese craftsmen, that cost much less to operate. At the same time, Winkler's factory lost its expected productivity and had to be disbanded. I have been unable to find out precisely when it was actually closed down; no mention of Winkler's factory is made in any of the reference materials of the late nineteenth century to which I have had access.

The most dramatic example was the disbanding of the early factories in the knit-fabric industry. All such factories set up in Tokyo and Osaka between 1872 and 1874 were liquidated by the end of the 1870s. What was dramatic about these cases was not only how short-lived the factories were but also how quickly their production techniques were adapted and their modes of production reorganized.

The circumstances of the bicycle industry were somewhat more complicated because it started with repairs and the production of spare parts. Its

integrated production was based on the growth of these earlier activities. Premier Bicycle, after being taken over by Maruishi Shokai, was eventually liquidated in the 1930s. Greater Japan Bicycle, because it concentrated its production activities on specific kinds of components, did not have to reduce the scale of its business. As their reduction or extinction came relatively late, it may not be appropriate to speak of enterprises in the bicycle industry as early factories. In any case, this fate was a characteristic of not only the bicycle industry but of all machinery industries that primarily consisted of small enterprises. The installation of the latest equipment did not contribute to the growth of successful enterprises in these sectors. For this reason and others, discussed below, these undertakings can also be considered as early factories.

A third point that deserves particular mention concerns the specific technological role these early factories played in their respective disbanding processes.

At Winkler's factory, for example, the German-built machinery that had proved difficult to maintain or too costly to operate was left idle in warehouses or outdoors. Japanese craftsmen who examined these abandoned machines devised new, simpler machines featuring a large number of wooden parts. A process that could be accomplished with a single imported machine was subdivided into a number of steps, each requiring a different indigenous machine and more manual work, but the final products were not found to be inferior.[3]

What troubled small producers in the brush industry most was their ignorance of how to plant bristles and their consequent inability to devise a machine for that purpose. To break this bottle-neck, a certain craftsman, it is reported, sneaked into the attic of the factory of Teikoku Brush, secretly observed the principles of the planting machine, and on that basis worked out a simple wood-framed planting machine of his own. Shaped like a hand-driven sewing machine, it did not demand too much skill to operate and is said to have been sufficiently productive to enable its operator, working two or three extra hours a day, to achieve a daily output comparable to that of a worker using the latest imported planting machine at Teikoku Brush.[4]

A similar sort of adaptation took place in many industries – beginning with silk reeling, which became one of the foremost Japanese industries – that began as early factories. The German-managed Walsche factory in the soap industry, the Swedish operated Shinsuisha in the match industry, and Arita Koransha, established with the help of French technology, in the chinaware industry, all played historical roles as early factories and eventually declined or were obliged to curtail a large part of their business activities.[5]

Industries That Did Not Adapt

In other sectors, however, no such adaptation took place. These sectors can be broadly classified into two types.

The first comprised sectors in which large-scale capital-intensive modes of

production were established and labour-intensive modes seemed uncompetitive from the outset. Typical examples are such basic material-producing industries as steel-making and cotton-spinning. In the spinning industry, whose downstream sectors developed as labour-intensive sectors, and which enjoyed a significant expansion of its export market, private enterprises played a central role. In contrast, the steel industry, lacking powerful downstream sectors, needed the establishment of a huge corporation by the state and private enterprises in the downstream region, such as shipyards, subsidized by the state. As in the case of the bicycle industry, after its downstream sectors, including machinery manufacturing and metal processing, had begun to significantly grow, big, privately run steel mills started to develop.[6]

The second consisted of sectors producing traditional consumer goods intended for the domestic market. In many of these sectors, no changes in mode of production were desired, and the apprenticeship system, carried over from the feudal age, remained in existence. Adherence to labour-intensive ways of production contributed to maintaining the high social evaluation the producers enjoyed and to ensuring a high level of added value. Some of the producers turned out luxury items, and the higher the social appraisal of a product, the more strictly the traditional mode of production was retained. Such items included woven textiles, dyed fabrics, chinaware, laquerware, and wooden and paper products.

However, there were exceptions. Some of the porcelain production centres that had large export markets – the Seto area, for example – actively imported Western techniques. In Yamanaka and Aizu, known for their laquerware, which was primarily intended for domestic use, a reorganization of the modes of production took place, mainly at the initiative of merchants. Big businesses (mostly organized by merchants) also began to become involved in some parts of the sawmill industry that supplied basic materials to wood craftsmen.

Personal consumption of the average Japanese did not rise rapidly before World War II, and consequently changes in the mode of production in the manufacturing of consumer goods for the domestic market were generally slow. In rural areas especially, where the majority of the working population was to be found, traditional modes of production were persistently retained and constituted a major restraint on the expansion of the domestic market. Nevertheless, there was an expanding trend of the domestic market over the long-term, owing to the growth of the overall population, development of cities, and increase of the non-farming population.

Characteristically, enterprises that based themselves on the domestic market achieved comparatively steady growth. However, there were only a few such enterprises, mostly set up by merchants who had control over the market and rarely by small producers. In other words, where the traditional mode of production was firmly established, social mobility among immediate producers was low. Even under such social conditions, craftsmen persistently maintained their skill standards, taking pride in their precise manual work, for which economic reward was never their primary concern. Here one can

find the prototype of the attitudes of skilled workers and craftsmen that were found in many transplanted industries.

Differentiation and Integration

Transformation of the Putting-out System and Organizing Agents

The historical process in which imported technologies were adapted was a process of an extensive formation of small producers, master craftsmen, and domestic industries, each taking charge of one specific step of production. This adaptation proceeded side by side with a differentiation of production processes. The development of differentiation, however, must have within itself elements to promote integration.

Integration is sometimes achieved by the modern factory system. Adam Smith took note of this system in the production of pins in England. And economists know well that integration is attained through a modern market mechanism and by the social division of labour in production. This mechanism, the "invisible hand," was also pointed out by Adam Smith. Smith would have been surprised at the mode of production in the industrialization of Japan.

One characteristic of the industries analysed in the preceding was the advantageous social position consistently held by traditional wholesale merchants and that was a common element in the putting-out system, which was formed in the Edo period. These wholesale merchants had an integrating function in that period, although the merchants' control over the producers – extending even into their personal lives – continued until much later. In the traditional putting-out system, there were direct ties between merchants and immediate producers. There was no double or triple hierarchy among the immediate producers who became independent entrepreneurs that was beyond the control of the merchants. Corresponding to the direct ties between the merchants and immediate producers, they maintained also a symbiotic social relationship. It was assumed that, while the immediate producers were subordinate to the merchants, the latter would act at their own initiative in a major economic crisis to protect individual immediate producers.

Compared with traditional social relationships, the protection of immediate producers by merchants in the industries analysed was weak despite their tight control, as suggested by the number of unequal clauses in the contracts between merchants and small producers in the early phase of the bicycle industry. Thus the social position of the merchants was strengthened even further.

There are a number of reasons for the stronger position of the merchants. First, the extensive formation of the stratum of immediate producers, though leading to the discontinuation of fixed business relations, invited fierce com-

petition among the immediate producers, so that they were obliged to rely on personal connections with one specific merchant or another, rather than securing collective bargaining power against the merchants. Second, the mechanism of transactions in the market of the earlier age had been carried over virtually intact, and immediate producers therefore found it difficult to become directly involved in market transactions.[7] Third, the increasing dependence on exports further alienated the tiny producers from the market.

Yet how was it possible to alienate the immediate producers from the process of distribution while taking advantage of competition within individual industries, so many of which had emerged as adaptation progressed? A key to this question lies in the existence of the *seizoka* or *seizo don'ya*. Entrepreneurs playing a similar role (known as *seizo oroshi*, manufacturer-wholesaler, or *seizo hambai*, manufacturer-distributor) were found in other industries as well. I will collectively refer to them as organizing agents. This term can also cover frame manufacturers in the bicycle industry, who subcontracted out the production of subparts, and assemblers of finished bicycles, who scarcely had a production process of their own.

By the late nineteenth century, it had become unnecessary for wholesale merchants in many industries to organize immediate producers for themselves; they only advanced funds to organizing agents or helped them in similar ways, but they stood at a distance from the direct production process. The differentiation into subprocesses and the emergence of diverse immediate producers, along with the rise of productivity, went far beyond the controlling capability of the merchants. It was no longer possible for them to accommodate funds, raw materials, machinery, or equipment to individual producers. Fortunately for Japanese merchants, there arose a conspicuous trend among craftsmen and skilled workers in and after the late nineteenth century to aspire for independence as small entrepreneurs. There was also a tendency to compete within individual industries. The circumstances of these miscellaneous small producers could be grasped far more realistically by ex-producers than by merchants.

Thus the social condition was created to facilitate the formation of organizing agents. The unique historical conditions that enabled overall output of the individual industries to increase in spite of the diminution of the number of employees and the sum of capital per enterprise were realized by the organizing agents assuming responsibility for integrating the functions of small enterprises and the domestic industries.

Intensified Differentiation

In the history of small industries in Japan, the growing complexity of their integration was a key process to fostering their creativity as well as their unique adaptability to modern industrialization. Further analysis of the reorganization of the putting-out system will help explain this process (see figure 1).

The first phase in the figure represents the domestic industry under the

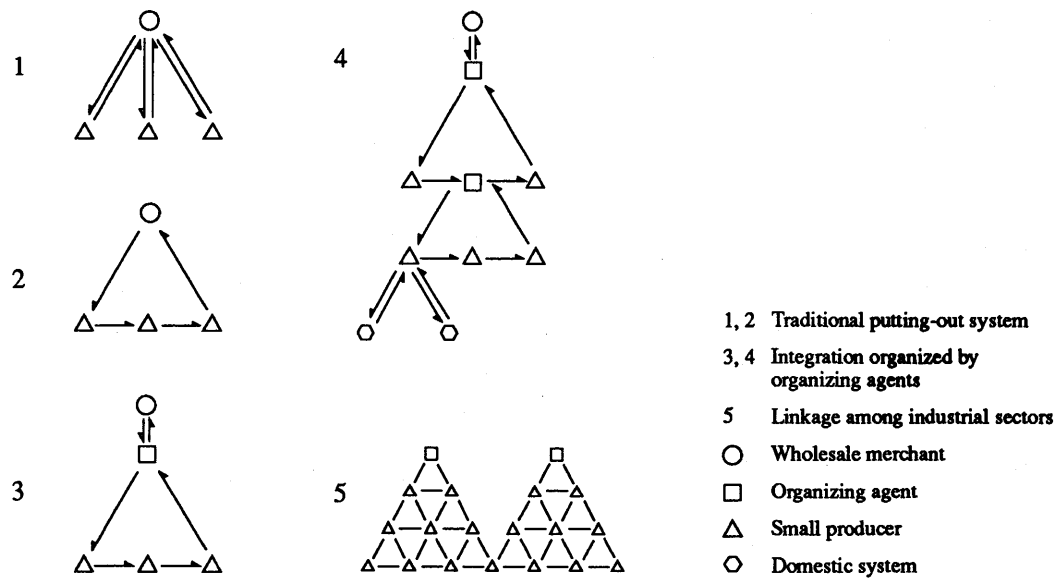

Fig. 1. Reorganization of the Japanese putting-out system

Source: Takeuchi Johzen, "Sho kaisō to sono dōkō" (Various social strata and their trends), in The Society of Socio-economic History, ed., *Sen kyūhyaku sanjū nendai no Nihon keizai* (The Japanese economy in the late 1930s) (Tokyo, University of Tokyo Press, 1982), p. 231.

traditional putting-out system in which a wholesale merchant organizes the individual and direct transacting relations of small producers, each of whom turns out finished goods. There are diverse variations in the character of the advance payment, the way in which raw materials are supplied, and in the ownership of means of production, and historical development can be traced among those variations. This point, discussed in detail by Lenin,[8] has been elucidated by many researchers.

By the second phase, a social division of labour has been formed among the small producers. It is at this phase that the concept of "immediate producers" has to be introduced, because the form of business by the small producers and their relationships with merchants and among themselves have become increasingly complex. As far as the Japanese experience was concerned, the social superiority of wholesale merchants over producers became far more firmly established in the second phase.

In this phase, the wholesale merchant supplied the raw materials and advance money; the materials were processed and turned over from one small producer to the next, each being responsible for a subprocess, until finally the finished product was returned to the wholesaler. The merchant then inspected the product, paid the balance to each producer and, in many cases, provided him with the raw materials for the next batch of products. It is emphasized and re-emphasized in the histories of Japanese SMIs and of economic policy related to the small entrepreneurs that the position of small producers under these circumstances gradually deteriorated, partly because the social relationships of the feudal age had not been thoroughly eliminated. This has been confirmed by my own research. The situation came to constitute the basis on which it was argued that mercantile activities inhibited the sound growth of producers.

In the third phase, the process became even more complex, branching out into a greater number of subdivisions, as immediate producers increased in both diversity and number. It became extremely difficult for a single wholesale merchant or small producer to check the work subsumed in the process for which he was responsible, and the emergence of the factory production system was a feasible solution to this problem. Yet, as pointed out earlier, the introduction of the factory production system was by no means a universal solution. The unique solution that was found was most conspicuous in the area of final consumer goods production, which mainly served export needs.

In some cases small producers took charge mainly of the control of immediate producers responsible for all or some of the relevant subprocesses; nevertheless, they continued to some extent to engage in production. As was seen in the case of the shell-button industry, some of those engaged in the main subprocesses even made attempts to shift to a factory production system. Producers who came to assume the responsibility to control other producers eventually had less direct involvement in the production process. Receiving either raw materials or funds or both from wholesale merchants, they circulated the raw materials among their small producers for processing into

finished goods, which they then delivered themselves to the wholesalers while making payments to the small producers. These manufacturing wholesalers, the *seizo don'ya*, who took charge of part of the production process in their own homes, have been regarded in many previous studies as constituting an intermediate form of traditional wholesale merchant transformed into producer. This view has been shared by the Ministry of International Trade and Industry and its predecessor, the Ministry of Agriculture and Commerce.

This view, however, is not correct. The *seizo don'ya* were nothing more than small producers, performing some of the functions of wholesale capitalists. As they delivered raw materials, made advance payments, and settled the final accounts with small producers, they might look as if they were wholesale merchants, but actually they were mere agents of the wholesale merchants. Therefore, they were unable to form a marketing network of their own; except as speculators, they had no opportunity to take part in the general market. They often relied on wholesale merchants for the supply of raw materials and advance funds, and the wholesale merchants were able to control the *seizo don'ya* to maintain the organization of production processes. Because of these specific limitations, I refer to them as organizing agents. Though they were looked up to as wholesalers by their subcontractors, in reality they were the wholesalers' agents and were counted on by the wholesale merchants to exercise their capabilities as organizers of the immediate producers.

The paradoxical situation of the overall industrial output growing in spite of the diminishing average scale of enterprises was given further impetus by the emergence of these organizing agents and corresponding changes in the mode of production. The early factories, which appeared sufficiently modern but whose role proved only transient, were obliged by their mode of production to disband.

In the fourth phase, the tendency that had manifested itself in the third phase became even more conspicuous and complex. In this phase, stratification took place even in the subcontract structure and in specific industries; some of the small producers subordinate to organizing agents became organizing agents themselves. These organizing agents of the lower level further subdivided the production of parts and specific subprocesses of which they had taken charge and subcontracted them out to various immediate producers.

Cottage industries and even the part-time labour of farmers' wives were made use of. As the use of part-time labour extended from the rural areas immediately adjoining big cities to more remote villages, there even emerged itinerant organizing agents who helped organize part-time workers and arranged jobs for them to meet the manpower needs of small producers.

The integration achieved by the organizing agents reached its supreme level of development during this phase. The following features can be pointed to as characterizing this mode of production.

First, this mode of production had many built-in safety valves to protect wholesale merchants and organizing agents from the adverse impacts of busi-

ness cycles. Even the safety valves were stratified. In particular, whereas sideline work by farm families was incorporated into the bottom stratum, the rural labour force was the least complaining and most diligent work-force in Japan.[9]

Second, the tiny scale of business contributed to raising the efficiency of labour-intensive production. Most of the labour-intensive enterprises were small businesses or cottage industries dependent solely on family labour or even on a single craftsman working alone in his home. Regardless of the form of enterprise, usually the entrepreneur himself comprised the core of manpower and was an enthusiastic worker. Stimulated by his hard work, both his family and employed labour were willing to work long hours for low wages. The willingness to endure long hours of work was considered an important means of opportunity for immediate producers to step upward in social status, so not just late-night but even overnight work was not rare. This explains how it was that tiny entrepreneurs could fill large orders on tight schedules.

Third, because the burden of fixed capital was on the producers, using producers was much less costly for the merchants than operating their own factories. It was commonplace in the first phase for the producers to own the means of production, and it remained customary even in this later phase for skilled workers under the employment of someone else to own part of the machines and tools used in the factory and to bear their costs. The peculiar situation of power-lending factories in the brush industry was one of the by-products of these relations of production.

An organizing agent or small producer customarily sold or lent obsolete machines and tools to subcontracting farmers or workers intent on becoming independent entrepreneurs. As expected, when conditions enabled immediate producers uniformly to own machines and tools, it was possible for the organizing agent or small producer to significantly reduce his burden of fixed capital.[10] When machines or tools were lent, the organizing agent or small producer could take advantage of the peculiarly Japanese mentality of shame regarding the borrowing of money or goods from others. Many studies point out that a Japanese borrower – true especially until World War II – tended to be servile toward his lender.[11] Nevertheless, organizing agents and small producers were able to organize production more extensively by lending machines and tools to immediate producers.

Fourth, the relationships between wholesale merchants, organizing agents, other immediate producers, and part-time workers in rural villages gradually became unilateral. The earlier symbiotic relationship between wholesale merchants and small producers steadily changed as the number of immediate producers grew and the competition among them intensified. As the practice of advance payment became obsolete and it came to be taken for granted that the immediate producers themselves should raise the initial funds and fixed capital, it also became rare for merchants and organizing agents to assist during recessions. After World War I, this social trend became so conspicuous that it was condemned even by high officials in the government as disturbing the traditional social order of Japan.[12] Moreover, even after it was

no longer unusual for a wholesaler, during a recession, to unilaterally declare the suspension of transactions to an organizing agent, or for an organizing agent to do so toward producers, an immediate producer was allowed to do so at his initiative only with the consent of the organizing agent. This trend was more prominent in sectors where market expansion was slow or production technology was scarce. Comparing the bicycle industry and the shell-button industry provides a good illustration of this.

Was it impossible, then, for a massive factory production system to emerge out of this integration process centred around the organizing agent? In fact, a sort of social reversal, the like of which is sometimes encountered in history, occurred in the fifth phase. This point will be considered in the next section.

The Formation of Modern Factories in SMIs

Merchant-owned Factories

When capital-intensive factory production emerged in small- and medium-scale industries in Japan, it did so in one of three broadly classified patterns.

In the first, wholesale merchants undertook factory management. A number of social conditions had to be present to enable the merchants, who had been involved in production only indirectly through organizing agents, to take part directly in the production process. There were some merchants who ignored or miscalculated this necessity, and not unexpectedly, the factories they operated met the same fate as the early factories.

One of the conditions necessary to enable the merchants to become factory owners was a reasonable outlook of securing a stable market over the long term, a condition still true today to some extent. There were many destabilizing elements in international trade, especially between the two world wars. Demand would sometimes mushroom and at other times fall off completely. Such wild ups and downs were seen in the shell-button and knit-glove industries. Under these conditions, merchants were not so foolhardy as to dare operate a big factory, which would require too great a fixed capital for the unstable market it was to serve. What motivated them to change their policy was the expansion of the domestic market, accompanied by a nation-wide increase in the volume of commodities distributed. Although the Japanese consumption structure did not drastically change, the expansion of cities and of the non-farming population meant a growth of the domestic market. The expansion of the domestic market was by no means rapid, partly because of the positive value attached by the Japanese to a way of life in which spending money was considered a vice and the minimization of private consumption a virtue.[13] The stimulation of the domestic economy brought about by World War I nevertheless invited a considerable change in the Japanese way of life. For this reason, after the war wholesale merchants in every industry began to operate their own factories.

Another condition was the availability from outside of a production tech-

nology that could successfully compete with the labour-intensive mode of production. As merchants, they were generally unable to develop production technology on their own. But they began to buy machinery as manufacturers developed the ability to supply machinery and equipment at lower prices, making it possible to produce less expensive goods – without having to rely on long hours of physical labour – than comparable products handled by organizing agents.

The availability of raw materials that would readily lend themselves to mass production was also necessary. Toothbrush handles, for instance, were made by hand from ox bones in the nineteenth century. The processing, done by craftsmen, relied on highly labour-intensive skills. As the celluloid industry developed in Japan during World War I, however, it became possible to readily process and shape brush handles by machine, and as the machines became commercially available, the craftsmen's skills were no longer needed. In this way, the labour-intensive sector was replaced by the capital-intensive sector, and big merchants dealing in brushes increasingly undertook the management of their own factories.

However, few instances of remarkable success were found among these factories, because the merchants operating the factories, though introducing the latest technology, tended to rely solely on cheap labour and often were reluctant to pursue even higher productivity and further technological rationality. As a consequence, if a factory appeared using, on a large scale, a more productive technology, the merchant-managed factory would be obliged either to rapidly decline or be passively reorganized as a subcontractor to the new factory. There were exceptions, however; for example, there were factory owners who sent their children to technical schools, and this well-educated younger generation enthusiastically promoted technological innovation and product quality improvement in the production processes of their respective factories.

Expansion of Production

A second path by which large factories came into being was in the fifth phase (figure 1), when the producers of parts for one industry began to manufacture components for another sector.

Such an interindustrial linkage can be formed only when the mode of production and the line of products, including those of the adjoining sector or sectors, are continually changing. No such linkage could occur in a sector heavily dependent on labour-intensive operations or traditional skills or in industries where the control by wholesale merchants or organizing agents was too strict to allow immediate producers to enter into contracts for transactions or operations of their own choice. The changes began in areas where control from above was weak enough so that movement of personnel and technological progress could occur among producers.

This trend was conspicuous in the interwar years in a number of subsectors of the machinery and appliance industry and the metal-processing indus-

try. The machine industry in this context covers machine tools, precision machinery, transport machinery, and electrical machinery including household appliances. Some of its characteristics were analysed in the preceding discussion of the bicycle industry. A similar trend also was observed in part of the knitting subdivision of the knit-fabric industry.

In the early stages of the bicycle industry in Japan, wholesale merchants forced contracts whose terms were unilaterally favourable to the merchants or to immediate producers. During World War I, however, the variety of bicycle parts surpassed 200 components, and the number of small producers of bicycle parts exceeded even that of product items. For pedals and bells, for instance, there were six or seven subdivisions each. Most of the so-called *pedaru-ya* (pedal specialists) or *beru-ya* (bell specialists) had transformed themselves into organizing agents, who would only assemble the products of the small producers.

The grip of the wholesale merchants and organizing agents was loosened also in such areas as the manufacture of chains, free wheels, and steel ball-bearings. Producers in these areas were able to turn out goods close in quality to the corresponding products of the advanced nations from the 1910s to the 1920s. As the demand for better quality but inexpensive products was high, these producers succeeded without exception in the development of an extensive market for their products.

As technical improvements progressed, some of the manufacturers of bicycle chains also began to produce chains for machine tools. In the bicycle industry, partly because nationally unified standards were set forth, there emerged manufacturers specializing in specific parts. Some of these manufacturers today are ranked top in the world market.

There were two elements that proved vital conditions for the growth of enterprises from small-scale producers of small parts to national and later multinational factories. One was that production systems and technology were constantly updated to meet changing needs while saving capital. In the early history of every successful case, often it was necessary for an entrepreneur to fulfil sudden short-delivery orders – in other words, buyers' market orders – whether for a large quantity of the same item or for small quantities of diffferent items. The entrepreneur and his family would work overnight, all available sources of initiative and creativity would be tapped, and craftsmanlike skills would be mobilized to the maximum. Even the most skilled and dedicated entrepreneurs, however, needed to see that part-time labour was always available near the factory. It was of vital importance to the entrepreneur, who had worked among skilled workers, to establish his own technological basis while staying in the framework of labour-intensive production. The entrepreneur's commitment to the quality of his products, which kept him in the shop even after his employees went home, is the theme of stories frequently told in Japanese factories even today.

Another requirement for a successful entrepreneur was to establish at an early opportunity a marketing network and thus gain release from reliance on a specific wholesaler. Shimano Shozaburo, who made his company the

world's biggest free-wheel manufacturer, and Matsushita Konosuke, founder of one of the world's largest manufacturers of electrical appliances, are two cases in point. The former, who was considered a near maniac as far as machine tinkering and improvements were concerned, travelled all over the country by night train in search of new customers. Transferring from one night train to another, catching a few winks in his seat (never in a sleeping berth), and, loaded down with samples, scurrying from one manufacturer or wholesaler to another, he embodied the tenacity typical of a Japanese small entrepreneur on the upswing. Matsushita found his opportunity for a big leap in the production of bicycle lamps. He even bought back the right to distribute his own products from the wholesaler by paying an outrageous penalty to the merchant. It was a departure from the usual practice of small producers in those days and is regarded as one of the most impressive events in the history of his company.

The Role of the *Zaibatsu*

The third pattern was the formation of large factories by *zaibatsu*. Even before industrialization, the *zaibatsu* had enjoyed special privileges and support from the government. In areas where no such privilege was available, they played no active part in the industrialization process. Their monopolistic position was vividly revealed not by their desperate efforts to develop any unexploited region of industry but by the quick shrewdness with which they secured the best parts of the market and technology as soon as reasonable prospects for a sizable domestic demand and a production capability to meet it came into view.

The Middling Class in Japan

A New Breed of Entrepreneurs

Successful integration by the organizing agents required the extensive presence of diverse small producers, most of whom, including those who eventually became the operators of medium- or even large-scale factories, had been workers or apprentices engaged in similar production processes.

At least until the 1960s in Japan, it was a dream but a realistic possibility for an employee to become an independent entrepreneur some day and have a store or a workshop of his own. It nevertheless is not sufficiently understood that this form of "social independence" was regimented to a considerable extent and had many limitations, unlike in the craftsmen's community of the Middle Ages. Though having similar occupational backgrounds, small producers in the same trade competed fiercely with one another, and the interests of organizing agents and of small producers often were in serious mutual conflict. The intensified competition produced many unsuccessful entrepreneurs, who were obliged to return to the status of employed workers.

Yet, as pointed out in the introductory chapter, the number of people belonging to this middling class continued to grow until the 1930s.[14] This peculiarity of the industrialization process perhaps reflects in part a socio-structural characteristic of Japan that made it difficult for a major social crisis of the kind envisaged by the advocates of class struggle to come to the surface in spite of changes in industrial structure. The New Dealers in the United States, who took note of the smallness of the "middle class" in Japan, failed to notice the more extensive presence of the middling class.

What I would like to draw attention to is less the largeness of the Japanese middling class than the emergence after World War II of prototypes of the business leaders and industrial relations from among this middling class. Influential business leaders in Japan after World War II can be broadly classified into three distinct types. One is a graduate of a prestigious university; he works all his active life in a specific corporation or group of corporations and eventually joins its top management. A second type is a former bureaucrat of the central government; he is invited to join the top management of a private corporation after retirement from government service. A third is the leader of a small enterprise that has grown into a big business.

This classification is a very rough one. Some business leaders transferred from governmental financial institutions to private companies, while others became prominent as the public corporations to which they belonged were reorganized into private enterprises. Not a few inherited their positions from their fathers. Yet they too can be said to belong to the first or second of these three types. Those belonging to the first two classes have some common elements. They were usually from well-off families, had experienced at least as many of the hardships as any successful businessman would experience, had good educational backgrounds, were capable of resolving conflicts without creating friction among the élite, remained unyielding to the labour unions, and had many friends and informal contacts in the central government and legislature.

Business leaders of the third type were different. They started as owners, managers, or key workers in tiny enterprises and, though of modest social and educational backgrounds, had strong personalities. They had in common a strong faith in on-the-job experience. They were familiar with conditions on the shop-floor and quick to sense any technical difficulty or human relations problem arising there.

They not only made it a rule to keep abreast of the particular circumstances in the area of production but they also had a charisma that influenced and motivated workers, middle management, and technical staff to enthusiastically pursue a specific goal. They emphasize above all the necessity, or at least the great importance, of having direct experience in the production process and day-to-day contact with their workers.

Their philosophy of life seems to stem largely from their practical experience. A typical entrepreneur of this breed would, if he found one of his workers worrying over a personal problem, talk it out with him over sake in a cheap tavern frequented by labourers. If unable to attain the desired level of

product quality, the wholesale merchant would stay up for days working in his workshop together with his craftsmen. His wife would prepare late-night snacks and breakfasts for him and his hard-working employees. If a difficult technical problem was solved, all who were present would celebrate, even at midnight or before dawn, with a modest banquet of nothing more than cheap sake and a bit of dried squid. Many biographies of the more successful of these business leaders and company histories abound with such episodes.[15]

Matsushita Konosuke was the sort of boss who, after his workers had left the factory for home, inspected and cleaned the shop, including even the workers' toilet. When a prominent statesman from a socialist country visited his factory, Matsushita announced proudly: "I am a rich proletarian." The confidence and nerve that enabled him to make such a remark were the product of years of hard work and dedication. In his company, even the labour union is loyal to the management. When Matsushita was barred from holding public office by the Occupation authorities, it was the union that stood up in his defence. While many business leaders of the third type are not sympathetic to unions, there were also those who accepted generally the unions to which their workers belonged.[16]

An entrepreneur of such traits was also likely to be keenly interested in new techniques, though the new techniques that would interest him had to be available within his means and likely to prove effective in the expected situation of the market. The simple fact of a technique being new, large-scale, or high-priced was scarcely taken heed of. He would seek a new technique that, first of all, would be adaptable to his own factory. New machines and equipment required by the new technology would be purchased, but often they were not used immediately for production. It is only a little exaggeration to say that new machines were introduced more often to be destroyed than to be used in the production process.

Let me explain. For example, there is a factory that installs a new machine; the managers, technicians, and craftsmen – and sometimes even apprentices – of the factory and also of several other factories would gather to look at it. Customarily, the machine would first be disassembled to reveal its structure and working principles. The strengths and tolerances of its parts would be examined. The observers would discuss which of the parts they could produce by themselves and whether cheaper substitutes are available, resulting in the improvement and adaptation of those parts. Even the basic mechanism of the machine would sometimes be modified. In this way, a local version of the machine – one less expensive to run and one for which spare parts would be readily available – would be put into actual production. As a by-product of this adaptation process, the working principles of the original machine would occasionally be applied even to the creation of simpler machines for use by subcontractors.

An adroitness in process control is often pointed out as a characteristic feature of Japanese engineering. In the Japanese practice, importance is attached to planning the control not merely as a matter of hard technology but in a broader scope that includes human relations. What I have described

so far seems to have constituted one of the basic conditions for the improvement of process control techniques in Japan.

Characteristics of Labour-Management Relations in Small Enterprises

In this section, focus is on the characteristics of the pattern of relations between owners and their workers created by the business leaders of the third type discussed in the preceding section. I will begin by reviewing the circumstances of apprenticeship characteristic of small enterprises. The life of a 10-year-old boy, newly employed by a bicycle retailer or a small producer in the early twentieth century, was typically something like what is described in the following quotation.

> What I was supposed to do as an apprentice at the bicycle store was mop the floor in the morning and evening and clean the bicycles on display once every day. I also had to learn how to repair bicycles and to help my senior with his repair work, which was something like what a small blacksmith would do. In the workshop, there were lathes, drills, and so forth, and I was taught how to use them as well. . . . In those days, there was no electric power available to turn the lathes, so I had to turn the pulley by hand when one of the craftsmen was using one. It was, as can be imagined, hard work. I was able to turn the pulley vigorously for 10 or 20 minutes, but after 30 or 40 minutes, my arms would ache and I couldn't turn it fast enough; at this point, the craftsman would hit me on the head with his small hammer.
>
> It may sound rather rough, but in those days it was the usual way of craftsmen. Everyone was trained in this way to make them a full-fledged craftsman. It was no use getting angry about it; taking issue would in itself have created a problem.[17]

The apprenticeship would usually continue for a year to a year and a half, depending on the talent and diligence of the apprentice and on his employer's policy. The next step was a three-to-five-year period during which the apprentice was trained in the assembly and disassembly of front and rear wheels, handlebars, and saddles; repair of chains, pedals, and rims; evaluation of the quality of parts; disassembly and repair of such complex parts as free wheels and coasters; and operation of the lathe to accomplish these tasks. All this while, he remained a live-in employee. Even after his apprenticeship, it was not unusual for a full-fledged (*ichininmae*) craftsman to continue to live in for another two or three years.[18]

In Tokyo, as late as the years following World War I, almost all shops followed the traditional apprentice system, whereby a contract was made when an apprentice entered a shop and he was paid a lump sum of money to be used as capital when he became an independent entrepreneur at the end of his apprenticeship. Those who qualified as craftsmen would perform *orei boko* (gratitude service) for two or three years at the shop where they had served their apprenticeship, and during that time "gradually develop a basis, build up a clientele for their own business activities."[19]

The employees of general merchants were required to live with their employers and were placed in a routine that left them with not a moment in the day or night they could call their own. Their employers would supply their daily necessities and allow them two holidays a month, but in reality, half of each holiday was spent cleaning the employer's house or attending to similar chores.[20] As long as the master or any other senior was still at work in the shop, they were unable to leave even if it was late at night, because it was their job to put everything in order after the day's work.

Despite the restraints on both the social and private lives of the apprentices, it would be wrong to assume that the human relations prevailing in the shops were disagreeable. The relationship could provide a uniquely educational environment, as seen in a recollection by one who experienced it.

While being trained as a blacksmith, I also served as a messenger boy for the store and ran errands to customers and the master's relatives. The master's wife taught me how to speak properly, how to express thanks politely, and so forth.

Following the traditions of the Semba district, the owner of Godai Shoten was strict with his employees and had a firm faith in what he considered the right way of doing business. Even if a customer demanded a discount, he would refuse, saying that any business that didn't make a profit would not last long and would adversely affect the service to customers. He stood by his policy of keeping prices fixed once set and was strict in collecting bills. At the same time, he was always attentive in serving his customers, which he did well, and he insisted his employees make the rounds of clients to ask them how the bicycles he sold were working. He even demanded that his employees not sleep with their feet pointing toward clients' houses, in accordance with the Japanese belief that this symbolized ingratitude.[21]

Although these values did not become extensively established as social norms, they existed in some form rather widely, but in the period that followed, a distorted commodities-and-money economy penetrated society in such a way as to belittle these self-controls. The late Meiji years were a period when conditions existed to enable a mere sales clerk in a bicycle store or a nameless lathe operator to find a chance for social advancement, rising eventually to the status of a prominent business leader. Conversely, it also was possible for a man, unhappy with the lack of discipline in the store where he worked, to run away, enter a university, and eventually become an economist. It was a period when conditions allowed for this sort of mobility.

A profile of the craftsmen in those days suggests the atmosphere of the times:

In every line of manual occupation, there is what we call a craftsman's spirit. Metal-plating craftsmen were no exception. They devoted themselves to improving their skills, as the better skilled craftsmen were respected by both their colleagues and the general public.

In the early Taisho years, there were relatively few craftsmen who had worked their way up from the status of *bonsan* (apprentice), but it was not rare for a goldsmith or silversmith, or a middle-aged man of whatever occupation, to become a polishing

craftsman in a plating shop. Therefore, no conspicuous feeling peculiar to a given line of trade, distinct from other lines, developed. It took a craftsman considerable endeavours to make himself known as, for example, "so-and-so at such-and-such plating shop." Rumours about so-and-so being able to polish *x* number of bicycle posts a day or finish so many dozen mirror frames would quickly circulate among the limited number of fellow tradesmen. Those who were talked about were of course proud of the rumours, and their masters, proud of having them as employees, treated them generously.

A proud craftsman, hearing of the high reputation of a craftsman at another plating shop, would ask his master for permission to go to that shop so he could challenge the craftsman to a competition of skills. After being allowed to work at that shop for two or three days together with the other craftsman and thus gaining recognition from the rival's master as a skillful craftsman, the polisher's pride only grew, enhancing further his high reputation. Some craftsmen travelled all the way from Osaka to Kyoto on foot to challenge a rival. (Leaving Temma in Osaka at midnight, a craftsman could reach Kyoto by dawn: After a breakfast of roasted sweet potatoes, he would proceed to his rival's workshop, arriving around 7.00 in the morning.)

There were some who travelled from one town to another throughout the Kinki region. In some towns and villages, the craftsman could connect his buff wheel to a water-wheel, originally intended for polishing rice, and use it to repair bicycles and other things.

Since metal-plating techniques were trade secrets, the masters rarely disclosed them. There were few craftsmen who knew the secrets, and they rarely moved from one place to another, but those who did travel around the countryside seem to have found great demand for the repair of metal accessories for Buddhist family altars and other personal items. Therefore, to ensure a ready supply of gold for plating, an itinerant craftsman would always carry with him a gold finger ring.

Craftsmen specializing in the preliminary polishing of unplated pieces were known as *togi-ya* or *togi-shi* and were ranked higher than *shiage-shi*, who were only responsible for finishing touches to plated pieces. It was humiliating for a *togi-ya* to be demoted to *shiage-shi*, so he worked hard to hone his skills.

A more senior polisher might, out of mischief or ill feeling, apply a mixture of oil and buff-wheel dust to an already polished piece, and a junior polisher was supposed to remove it, if not humming cheerfully the while then at least with no complaining about it.[22]

The above account reveals the spirit of self-reliance, pride in one's skills, curiosity about new techniques, and the carefree association among fellow artisans that characterized these men and their times. The early Taisho years seem to have been a period when many immediate producers were able to behave with relative freedom.

Employment practices centring in the apprentice system were maintained by the manufacturers of finished bicycles as well, as shown in the case of Miyata Seisakusho:

There was a distinct division maintained between live-in apprentices and commuters. The training of the former was particularly stringent, and they were supposed to be familiar with every task and type of machine. An apprentice would be called on to replace a blacksmith, a lathe operator, or whoever else happened to be absent. He also

had to be skilled in the use of files. Therefore, his apprenticeship lasted from the time of his finishing elementary school until the examination for recruitment into the army. Only after the end of his apprenticeship would he be treated as a fully-fledged worker.[23]

In addition, there were a number of circumstances peculiar to Miyata and other large-scale factories. Miyata Seisakusho is said to have been the first Japanese bicycle factory to make every Sunday a holiday, and it discontinued night work in the 1910s.

The maintenance of shafts and boilers, which could be done only on holidays, was in the charge of [the owner-manager's] younger brother Hikonosuke. Further, the owner had all the apprentices go to the municipal continuation school of engineering at night. He also asked a Protestant pastor from Kashiwagi named Tomura to come once or twice a month on Sunday evenings to give moral lectures, to which the owner himself listened together with his employees.[24]

Perhaps under the combined effects of the owner's own motivation to work, his daily contact with the apprentices and workers, skilful control of their leisure hours, the company's uniquely high technical standards and the steady expansion of its business and organization, Miyata Seisakusho experienced an early growth in business activities while enjoying amicable relations between management and workers. Many studies have been made of the co-operative aspects that typify personnel relations in Japanese enterprises. The studies explain these characteristics mostly by the skilful personnel management in huge monopolistic corporations; I would like to emphasize that the prototype of these harmonious labour-management relations existed in these small enterprises with high-growth potential.

At least two historical elements can be pointed to in connection with these features of personnel relations that appeared in some of the small enterprises in Japan. First, learning the way of life and work of the employer and his family by living with them in the same house had, by itself, a significant effect on the apprentices. Though this same system produced many cases of failure or even delinquency, in every successful case, the place of work was at the same time a place of education. Many advocate the important role played by the quick spread of compulsory education in the industrialization of Japan. However, I have found several instances in which both the employer and the employee had been unable to receive even the complete compulsory education. Nevertheless, analyses of the experiences of the successful small enterprises seem to reveal the great significance of the concept of occupation and of the ethics that were held and inherited. The apprentices were trained in the processing of chits, mental calculation, and even calligraphy in a naïve but sound atmosphere in which ascetic values prevailed. The atmosphere and attitude towards work seem less attributable to compulsory education than to the informal education and popular morals that had developed in earlier times.

The second element is the high degree of social mobility that embraced everyone from workers to owners. While this had the effect of intensifying competition within individual trades and thereby strengthening the control of wholesale merchants, it also allowed those engaged in production – from the owners of small enterprises, master craftsmen, and skilled workers to unskilled workers and even apprentices – to stand on a common social basis. For this reason I have used the term "immediate producer." Entrepreneurs could fall to the status of employed workers as conceivably as apprentices could rise some day to become prominent managers. Under such high social mobility, it was possible for both employers and employees to regard each other more or less equally. While harmonious relations in huge monopolistic corporations have been achieved by means of skilful strategies by élite business leaders, their counterparts in small enterprises have developed in a process of natural growth.

Some Supplementary Explanations

Strengthening Labour-Intensiveness by Adaptation

In the industrialization of Japan, the capital-intensive sectors found it difficult to become competitive in the international market. What greatly contributed to foreign exchange earnings when the terms of international trade were unfavourable to Japan was the wide variety of commodities produced by the labour-intensive sectors.

The most important reason for the international competitiveness of these products was the extensive availability of cheap labour. Takahashi Kamekichi was one of the first scholars to stress this point.[25] However, it would be a mistake to think that an abundant supply of labour willing to work long hours for low wages would be sufficient to set up internationally competitive labour-intensive industries if only the necessary technology and capital were brought in from outside. Here lay a weak point in Takahashi's analyses. Labour-intensive industries cannot be competitive unless a number of other requirements are satisfied.

First, skills were necessary in carrying out effectively manual work and physical labour. Craftsmen who made toothbrush handles by shaving ox bones had calloused hands and feet, and it was believed that no one without such callouses could achieve a basic efficiency in his work. Boring a lateral hole on the back side of a tiny ornamental shell button, only 2 mm or so in diameter, was done with a simple drill by a craftsman who had nothing to rely on other than the sense in his fingertips. Yet he would be considered incompetent unless he could process 15,000 to 20,000 buttons a day. It was necessary to cut as many buttons as possible from each shell, and from the honeycombed remainder smaller buttons were cut. Mass production of large units is less suitable for a labour-intensive industry than the production of a variety of items in a small quantity. The skill level had a decisive bearing on efficiency in labour-intensive production.

Second, the improvement of tools and machines strengthened manual skills. When the process of adaptation described earlier was linked with the formation of new skills, their combined effect was enough to drive out even the latest factory production system introduced from advanced nations. Moreover, these adaptations took place as a result of the spontaneous endeavours by immediate producers. Even simplified machines, when introduced from the outside, only gave rise to passive piece-rate workers. The findings of a number of surveys on subcontract producers in rural villages substantiate this point. If achieved by an immediate producer for himself, however, an adaptation would give him a kind of founder's profits, stimulate competition, and provide an incentive to improve skills, which in turn would encourage further adaptations.

Third, conditions to help craftsmen and workers become independent entrepreneurs were needed. In other words, their wage level had to be high enough for them to accumulate some savings. In a labour-intensive industry, especially in the subsectors in which considerably high skills are demanded, the combination of differences in personal capabilities and of the piece-rate pay system resulted in a substantial differentiation in wages. The wages paid to at least the top one-third had to be generous enough to enable them to become independent if they lived frugally. It should also be pointed out that the funds needed to establish an independent business were reduced by the progress of adaptation and other factors. Furthermore, any social practices and controls that could inhibit the independence of small producers had to be eliminated. As far as the Japanese experience is concerned, the expansion of the market served to accelerate the invalidation of various inhibitory conditions.

Some Social Problems Arising from the Increase of Small Enterprises

In addition to the conditions pointed out above, the progress of integration by organizing agents encouraged the formation especially of small enterprises, inasmuch as, in labour-intensive industries heavily dependent on personal skills, small enterprises are more efficient than large ones. On a small scale it was easier to organize the work-force according to personal ability, monitor the work of and give advice to unskilled workers, assess the demands and preferences of the skilled on a comprehensive basis, press ahead with adaptation, and above all stimulate the spontaneous efforts of skilled workers and craftsmen by giving them a realistic dream of some day becoming small entrepreneurs. The willingness of those with skills to work hard favourably influenced unskilled workers and apprentices. These conditions[26] nevertheless constituted the source of various social problems.

As adaptation progressed and more and more small producers gained independence, the competition among them intensified and their financial circumstances deteriorated, thus making their independence only nominal. Many small producers became independent even during times of recession, but they were obliged to do so to protect themselves from the bankruptcy of their former employers.[27]

In sectors whose market underwent no significant expansion and whose production technology made no remarkable progress, the apprentice system became fixed and formalized, and young men or women were hired at low wages. Workers in these sectors felt hopeless about their futures and occasionally turned to crime in their places of work.

Intensified competition among small producers, wild fluctuations of the market, and arbitrary controls by wholesale merchants drove some of the immediate producers, especially organizing agents, into speculation. This often led to acts of fraud by one immediate producer toward another, often culminating in bankruptcy.

As the regimentation of medium-scale enterprises by large-scale enterprises, of small producers by medium producers, and of cottage industries by small entrepreneurs progressed and solidified, the relationships among these groups came to constitute something like the hierarchy of older times. As unreasonable demands made by a higher stratum on a lower became established practice, and as an increasing number of enterprises began relying on such malpractices, the very industry in which this tendency emerged lost its potential for dynamic development.[28]

When the financial deterioration of a small enterprise became chronic, the distinction between profits and wages ceased to exist and a small entrepreneur was thus degraded to a "*de facto* worker." An even worse situation was the unlimited use of unpaid family labour. In Japanese society, with its persistent paternalistic family system, such an arrangement could occur with relative ease.

These tendencies were more conspicuous in the stagnant sectors of industry and became more serious when the market was dull. However, even dynamic sectors, almost without exception, directly or indirectly involved these failing subsectors. In these subsectors, many immediate producers put their wives and children to work, forcing the family to toil long hours in miserable conditions. This structure was built into the bottom stratum of Japanese industry, the same industry that is acclaimed for a success whose rapidity is unprecedented in world history.

Conclusions

The number of small enterprises in the manufacturing industries of Japan reached its peak about the time Japan's economy entered the "rapid growth" phase, which began in the 1950s. Their absolute number, together with their proportion to all enterprises as estimated from various indicators, tended to decrease along with the subsequent expansion of the national economy. Several small enterprises successfully overcame the intense competition and grew into major corporations, and, consequently, "rapid economic growth" can be regarded in a way as the process of the "bipolarization" of numerous small enterprises.

What I have focused on is how the small enterprises were formed in so

great a number as to make possible their bipolarization. In other words, my analyses were based on the assumption that the emergence of the small industries constituted a phase in which the potential for rapid economic growth was accumulated. What potential did the development of small- and medium-scale industries build for the epochal expansion of the Japanese economy?

First, the development of modern manufacturing industries was accompanied by the formation and expansion of numerous sectors producing intermediate goods and components. Moreover, often an auxiliary industry producing components for another sector grew into a major independent industry. The bicycle industry in the nineteenth century was nothing more than a small subsector of the traditional vehicle industry, and the production of motor cycles was merely a supplementary subsector of the bicycle industry. The number of subsectors growing into independent industries can be an important indicator of the vitality of the national economy to which they belong. This point is particularly important in the analysis of the metal-processing and machine industries. The direction in which the bicycle industry in Japan developed provides themes for case-studies on the Japanese experience of economic growth, and it lends itself to international comparative studies as well.

Second, the role of the wide variety of minor sectors of industry (i.e. SMIs) in providing downstream support to the various major industries deserves positive evaluation from the viewpoint of industrial structure. Even if a large corporation is set up in a specific upstream sector (typically a sector producing basic materials and relying on economies of scale, such as the steel industry), without the solid establishment of downstream sectors, it will be extremely difficult to create a market large enough for intermediate products to match the dimensions of the upstream sector. When Japan was still a newly developing country, the sectors that were competitive in the international market were its labour-intensive sectors, without which no foreign exchange could have been earned to finance the import of technologies and equipment for advanced industries. What is more important, however, is that their development eventually paved the way for the rapid expansion of the large sectors producing basic materials.[29]

A third point I'd like to make concerns a number of characteristic features connected to the formation of uniquely Japanese technologies. It was impossible for Japan as a late starter to immediately achieve a revolutionary system of technologies that would surpass international standards and (what is more important) provide the foundation for technological development. Resorting to political intervention would have been a caricature of progress.[30] One of the reasons for my repeated references to adaptation and differentiation is related to this point. The tendency of Japanese producers to decompose a new technology into labour-intensive components or divide a production process into simpler subprocesses profoundly conditioned the subsequent Japanese path of technological innovation. The degree of perfection to which the final products were finished, the stringence with which the

finished product was evaluated, the thorough penetration of this stringence into not only the inspectors of the final process but also everyone engaged in any part of the production process, the sense of responsibility for process control and quick responses to process control needs, the deep intellectual interest in the processes and final products, and the general recognition of the need for not only entrepreneurs but also common workers to have such intellectual interest – all these characteristics began to be observed at a relatively early stage of Japan's industrialization. It was reasonable and wise for Japanese enterprises, while taking advantage of these characteristics, to try to build up their own technologies first in the areas of final process and of intermediate process control.[31]

Fourth, the basic character of personnel relations in Japanese enterprises evolved in the development of SMIs. I described in the preceding a number of characteristic features of this development process – the most significant among them, however, is the closeness of the relationships among entrepreneurs, engineers, skilled workers, and common labourers, together with their common faith in on-the-job experience. Success cases and instances of failure demonstrate that a key to the success of a small enterprise lay in its human relations. That workers more or less shared their employers' attitude toward work and a sense of responsibility is related to the existence of such social conditions as would give them reasonable prospects to become independent entrepreneurs after progressing up a number of steps in the hierarchy. For an entrepreneur to keep workers, skilled or unskilled, under his employment required specific conditions: tasks had to be progressively sophisticated in character; the structure must be continually expanding; and a worker staying longer in the same position should have better long-term prospects to be given greater responsibility and economic rewards. A stop in growth would mean the beginning of the collapse of the structure because of further adaptation and differentiation; the Japanese tendency to give overriding priority to growth can be explained in terms of this aspect.

Fifth, an important aspect of the development of SMIs relates to the creation of a unique image of the entrepreneur. Many observers, both foreign and Japanese, have pointed out the peculiarities of Japanese business practices that are at the same time the strengths of Japanese business. The references to "Japanese-style management," "Japanese pattern of labour-management relations," and "Japanese skill mastery" apply more typically to big businesses that have developed out of smaller ones, such as those I have discussed, than to the huge corporations that have enjoyed generous protection from the government since the very early stage of industrialization. I have been able to portray only a few entrepreneurs, but they are typical examples of the new breed of business leader in Japan. Many of the personality traits observed in them were shared by the founders of Suzuki and Toyota, who started as manufacturers of wooden looms and laid the bases of what later grew into major automobile manufacturing companies, and Hitachi (now the biggest manufacturer of electrical machinery and appliances in Japan), which began as a small subsidiary of a mining company and was in charge of machine repair for the parent organization.

These aspects were formed in the course of the development of small enterprises and industries in Japan and eventually constituted the preconditions for the full-scale economic growth after World War II. In this context it is important to emphasize the relevance to our times of the fact that most of the industries discussed developed in labour-intensive sectors.[32]

Japan is said to be a world leader in the production of industrial robots. In the enterprises manufacturing these robots, traditional skills and manual dexterity are preserved and protected much more than one might imagine. Since the quality of software fed into the brain of an industrial robot determines its market value, the desire to preserve traditional skills is not without basis. Obviously there is a big difference between software that represents the standardization of the work done by an average skilled worker and software deriving from the work of the best skilled worker, incorporating even the very delicate movements of his fingers. This difference holds as true for an automatic machine turning out sophisticated knit products as for a metal-processing robot. The development history of Japanese industry, in which manual skills have evolved into more sophisticated technologies, involves indispensable elements for present technological advancement.

I would like to re-emphasize that labour-intensive production was the more efficient system in small enterprises. In several instances in Japan, large-scale production and mechanization were implemented in cases in which the production process could better have been developed in a labour-intensive way; failing this, however, the result often proved a miserable failure.[33] Similar errors are repeated many times even in the present world economy. Judging from the Japanese experience, an economic system that has to force large-scale organization and social discipline on a sector of industry that has the potential for labour-intensive development perhaps implies the existence of problems regarding the development of human capabilities. Labour-intensive sectors include extensive areas dependent on the spontaneity and creativity of individual workers – including latent areas not yet perceived as such. The findings of relevant surveys endorse this fact. Whereas the development of such human capabilities has proved an important asset to the Japanese economy today, it also is significant that their development has been stimulated by the high level of social mobility and intense competition among immediate producers. This high level of social mobility deserves emphasis for its role in encouraging certain members of society to exert themselves and grow more than if this mobility had been lacking, and it also provides an interesting focus in international comparative study, and therefore I have analysed this element in particular detail.[34] The intense competition among small producers, and within the same social stratum, can explain Japan's historical experience of little social unrest or political turmoil relative to the extent of transformation its economic system has undergone.

I have attempted to trace in considerable detail the diverse development processes observed in each labour-intensive industry and the progress of adaptation and differentiation therein partly with a view to assisting comparative study in the future. But I also wish to again point out that the thorough development of labour-intensiveness in itself was a key element in the

modern revival of some of these labour-intensive enterprises: even today, Japan is a major producer of high-quality buttons made from natural shells, and its demand for high-quality brushes is met mainly by domestic products. The importance attached to manual work is not unrelated to society's valuation of the best of the products of manual work as akin to works of art. True, most of the other industrialized nations also have such sectors, but Japan is one of the foremost among them in the diversity of these sectors.

Tracing the industrialization of Japan with focus on the labour-intensive industries and immediate producers has resulted in the foregoing conclusion. Through my study, I have been able to consider in depth such characteristics of the Japanese as "adaptability," "willingness to venture," and "willingness . . . at least to imitate," as Professor Lockwood once pointed out.[35] I have also been able to discover that these qualities can be either inhibited or promoted by a number of social relations. Some maintain, as Dr. L. Robbins has pointed out, that what concerns the inner qualities of personalities is better left to poets and metaphysicians. There are times during the course of research when it seems best to follow his advice. However, we should not belittle the possibility of reaping greater results by further expanding the realm of economics in the empirical direction before hastily taking his advice. I shall be very happy if my research provides some specific hints in this respect.[36]

Because of the limited scope of this study, I have been unable to touch on a number of important points. I would like, then, to briefly indicate some areas of study that should be referred to in a study such as mine.

First, a social character almost identical to that of the immediate producers in the labour-intensive industries existed in the middle stratum of the Japanese bureaucracy. Though few studies have focused on this point, some findings are emerging, including those from the UNU projects on vocational education.[37]

Second, and more important, the values held by immediate producers seem to have had something basically in common with those of the people engaged in Japan's highly labour-intensive agriculture. There is a vast store of studies on the labour-intensive nature and the historical development of Japanese agriculture, including many remarkably fruitful ones.[38]

Third, many of the social classes I have analysed constituted the active supporters of Japan's xenophobia and military expansionist policy from the 1930s to the 1940s. It is the social responsibility of those involved in the study of this intricate problem to bring as many subjects of analysis as possible into the realm of empirical research in socio-economics before leaving it in the hands of poets and metaphysicians. Yet it is beyond the scope of my modest research to attempt empirical analysis of this point.[39]

Fourth, any meaningful historical evaluation of Japanese SMIs should take into account the problems that arose during and after the post–World War II phase of "rapid economic growth." I have focused on the formation process of the conditions constituting the basis of the economic growth and have not analysed post-war developments. However, as the form and the social im-

plications of SMIs have been rapidly changing since the 1960s, the social problems Japanese SMIs have encountered over the last few decades will have to be studied in the future for the benefit of developing nations searching for a more rational path of growth.

Fifth, Japan's labour-intensive sectors are present in a number of areas where maximum value is ascribed to the very fact of their being labour-intensive. These areas include manufacturers of mainly handmade goods that constitute vital elements of the traditional culture of Japan. At every point in world history since ancient times, a similar phenomenon has been observed in the processing of precious metals. However, the span that such an area of industry can have is related to the uniqueness and depth of the culture of the nation. In Japan it covers diverse sectors such as food processing, weaving, dyeing, laquerware, pottery, metalwork, furniture, architecture, construction materials, woodcraft, and traditional weaponry such as swords. Such an area constitutes an interesting boundary between economics and other disciplines. In some cases, some of the traditional commodities survive, at their highest level of quality, the emergence of new substitutes and the transfer of technology for their production, but in other cases the traditional goods quickly disappear. What the general trend proves to be is related not only to the orientation of the national culture but also to the basic character of its labour-intensive industries and the technological innovations taking place there. These are topics that will perhaps be of interest for future research.