The Cities in Tohoku seen from the Occupational Structure

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Preface

Needless to say, there are various ways to understand the nature of a city, and many geographers have been working hard to define a geographical city. According to the general interpretation of this problem, a city is a settlement with a population of some size, usually defined as an administrative unit by standards which differ from one country to another. It is supposed to have a continuous urbanized area, with a central core of civic activity. A city is also considered to have areal differentiation within itself. Some people are inclined to adopt a more sociological approach insisting that a city must be characterized by ways of life of the citizens. It is not the objective of this paper to go into the details of this problem. The author merely points out that it is a matter very much different from one region to another according to the difference in the patterns of total culture. In this short paper, the Japanese administrative unit *shi* is used as a unit of settlement more or less equivalent to a city, although with many differences as well. The author also uses the term city oftentimes, but it is only for convenience' sake, and he does not intend to mean with it the urban settlement in the original sense of the word.

There are 62 *shi* in Tohoku as of 1963, and their population varies from a little more than 30,000 to more than 420,000. As was mentioned above, the word *shi* is different from the ordinary connotation of a city. Especially the movement of the amalgamation of administrative units which largely was carried into effect during the period of 1953–54, suddenly increased the number of *shi*, and at the same time, it intensified the deviation of *shi* from city as a unit of settlement. Nowadays the term *shi* means little more than an administrative unit with population above 30,000 (later, the minimum requirement was set at 50,000 in 1954, but many of the new *shi* are still below this limit), and with more or less urbanized agglomeration of residential areas which put together should include more than 60% of the houses of the settlement. Many of the *shi* are hardly urbanized in the true sense of the word, and do not deserve the name of cities, in spite of the fact that as the result of amalgamation the size of their population is fairly large.

1. The size of population.

Notwithstanding the fact that a *shi* today means little more than an administrative unit, the size of the population is still an important standard to understand the nature of Japanese cities, and so the analysis will start with the statistics of population. The author's discussions in this paper are mainly based on the statistics of 1960. To use the data from 1960 census, the first thing to do is to compare the population of the cities. It is evident from the purpose of this study, that the size of the working population is more to the purpose than the figures of the total population. Then the relation between these two kinds of figures must be investigated. As it is shown in fig. 1, the total population of the cities has a close

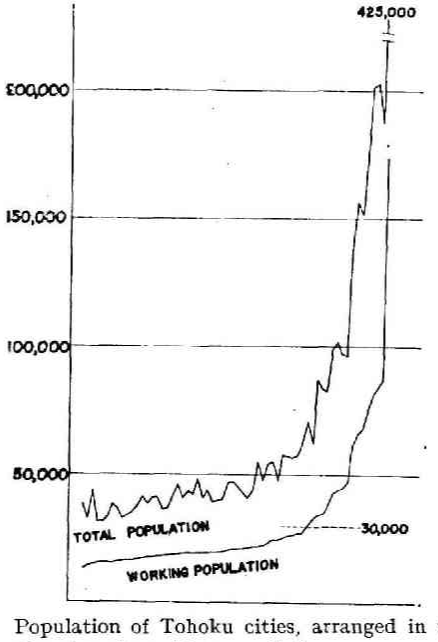

Fig. 1. Population of Tohoku cities, arranged in the order of the size of working population.

correlation with working population. There are some exceptions in which both figures are not parallel, but the deviations are not too large, and it was confirmed that they do not contradict the conclusions drawn from the following discussion. Therefore, mainly the figures of the working population are used here to show the size of the population, and only casual references will be made to the total population.

In fig. 1, in which the working population is arranged in the order of the size,

there are three obvious discontinuities in the distribution. Such are between above and below 30,000, 50,000 and 150,000. When Tohoku cities are classified according to the size of working population divided by the discontinuities, the number of the cities belonging to the classes is as follows:

Class 1 (above 100,000) ..... 1 (Sendai)
Class 2 (50,000-100,000) ..... 7 (Yamagata, Akita, Aomori. Hachinohe, Hirosaki, Morioka, Fukushima)
Class 3 (30,000-50,000) ..... 9 (Yonezawa, Sakata, Koriyama, Aizu-Wakamatsu, Tsuruoka, Ishinomaki, Kamaishi, Hanamaki, Taira)
Class 4 (below 30,000) .....45 (Names are omitted)

This classification accords with the actual aspects of the cities fairly well. Sendai being by far the largest city in Tohoku, has many characteristics which distinguish it from other major cities. Its total population in 1960 was over 425, 000, and with its adjacent areas, Sendai metropolitan area has a population of nearly two thirds of a million.[1] Many ministries of the central government have their branch offices in Sendai to take care of the whole of Tohoku, which is not true of the other cities in Tohoku. The author distinguishes it without hesitation from the other cities, and classifies it as class 1. The 7 cities of class 2 include 5 cities which are the sites of prefectural governments, and thus the centers of local administration. The other 2 cities belonging to this class are Hachinohe and Hirosaki, both of which can be distinguished from other smaller cities in their size and their background as former castle towns as well as their present day importance as the centers of local economy. In the size of total population, they vary from about 139,000 (Fukushima) to 204,000 (Akita). The 9 cities of the class 3 also have common characteristics that distinguish them from most of the cities belonging to class 4. Majority of the class 3 cities are rather old cities, which had got the status as *shi* before the recent amalgamation, which resulted in a radical increase of the number of *shi*. In total population they range from about 62,000 (Hanamaki) to 103,000 (Koriyama), and the discontinuity from the cities in class 4 is clearer in working population than in total population.

Thus the above mentioned classification of cities by the size of working population fairly well indicates the conditions and the differences among Tohoku cities, and it will be safe to use it as the basis of general reconnaissance.

2. Occupational structure of the cities.

For the purpose of further analysis, the cities are classified into 3 groups

1) Miyagi Prefecture: New Industrial City; The Development Program of the Coastal Area of Sendai Bay. (in Japanese), Sendai, 1962.

according to the size of the working population above discussed, namely: (1) cities with working population of above 50,000, or the cities of class 1 and class 2 above referred, (2) those with 30,000–50,000 population, and (3) those below 30,000. Then the number of the cities belonging to the groups is 8, 9, and 45 respectively.

Based on the official statistics of 1960 published by the national government in 1961[1], the working population of the cities is classified into 3 categories, namely those engaged in the primary, the secondary, and the tertiary industries. In the primary industries are included agriculture, forestry and hunting, fishery and aquiculture. The secondary industries are mining, construction and manufacturing. The tertiary industries include wholesale and retail businesses, finance, insurance,

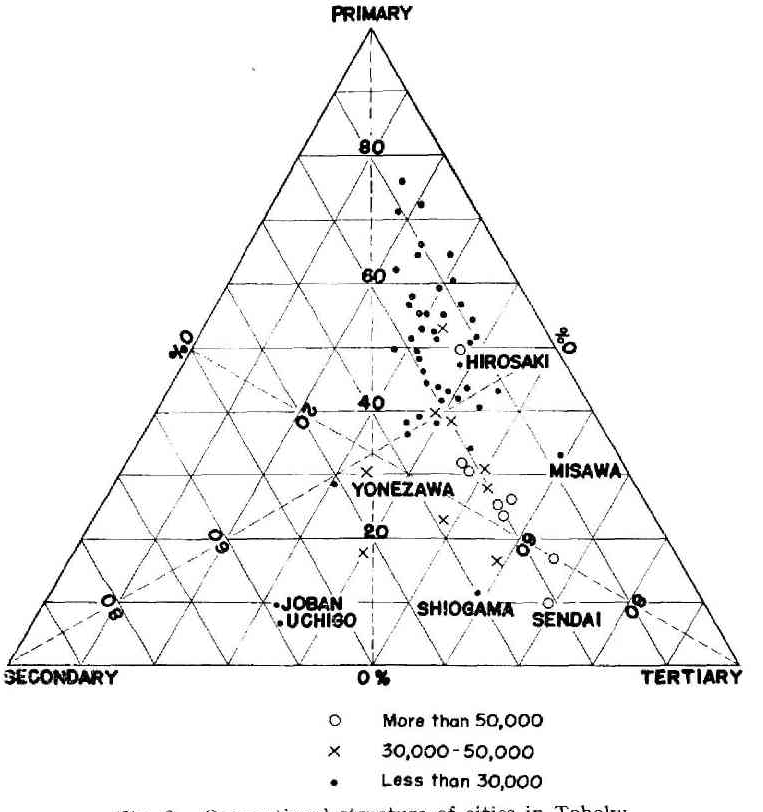

Fig. 2. Occupational structure of cities in Tohoku

1) Bureau of Statistics, Office of the Prime Minister: 1960 Population Census of Japan. Tokyo, 1961.

real estate and other businesses, communication and traffics, general services and public services. There may be arguments about the classification of the various industries into three major divisions. Perhaps the biggest point is whether mining should be classified as the primary or the secondary industry. Some of the small scale mining managements really make us think that they should be classified as a primary industry, but more important ones are closely related with manufacturing industries, and the author also thinks that it will be more reasonable to classify it as a secondary industry.

For each city the percentages of working population are calculated for the three categories, and the 62 cities of Tohoku are indicated in the triangular diagram using symbols representing the above mentioned 3 groups (fig. 2). The characteristics obtained from the diagram are summarized as follows.

Group (1), namely the cities with more than 50,000 working population indicate a very concentrated distribution in the diagram. The cities of this group are characterized by their high ratio of the tertiary occupations together with the low proportion of the primary occupations. There is an exception and that is Hirosaki. Hirosaki was a castle town of importance in Edo period, being the capital of Tsugaru district. After the Meiji Restoration of 1867, it was the capital of Hirosaki prefecture for a while, but when the prefecture was abolished, it missed the chance to be chosen as the site of the new prefectural government, and the city has since been stagnant in its development. Before the end of World War II, the 8th Army Division had been stationed in Hirosaki, and it had some schools of importance, but even then the city barely was able to maintain itself above the level of minor local centers.

The distribution of group (2) cities, or the cities with 30,000–50,000 working population is a little more scattered in the diagram, but is still fairly well concentrated. Here again, there is an exception, and that is Hanamaki. In spite of its fairly large total population,Hanamaki is characterized by an unusually high ratio of the working population in the primary industries. All the rest are characterized by the low percentages in the primary industries, and by high proportion of the working population in the secondary industries. It is noteworthy that the distinction between group (2) and group (1), with larger population, exists mainly in the fact that the former cities are characterized by their higher proportion of the working population in the secondary industries (fig. 3). This phenomenon may be explained as follows. The larger cities of group (1) represent the occupational structure of maturely developed cities in this part of Japan. Namely it is characterized by very high percentage of the population in the tertiary industries, while the percentage of the population in the manufacturing

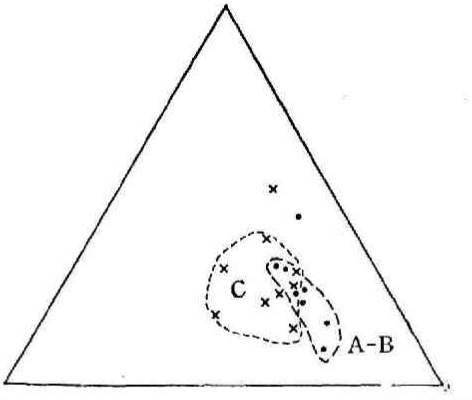

Fig. 3. Distinction between groups A-B and C

industry is not so high as one might expect for the cities of their size. On the other hand, many of the cities of the group (2) have gained some kind of modern manufacturing industries, which is an indispensable condition for them to develop as modern cities. The introduction of such industries is done usually by the encouragement on the part of the cities, and in most cases it brings about a disproportion in the occupational structure. In the cities of this group, which naturally are less mature than the larger cities of group (1), the disproportion thus grown has not regained the balance yet by means of the increased proportion of the tertiary industries. A typical example of this case is the city of Yonezawa. Due to the through-going amalgamation, Yonezawa annexed large agricultural areas within its city limits, to the extent that the population density of administrative Yonezawa dropped even below the population density of the nation as a whole. Even this, however, did not keep the city from having a relatively high percentage of the secondary occupations.[1].

Group (3) consists of smaller cities with working population below 30,000. This group as a whole is characterized by the high ratio of the working population in the primary industries. There are several exceptions which are worthy of special references. The first group of exceptions consists of 3 cities in Joban district; namely Uchigo, Joban and Nakoso. All of them are small in their total population size. As a matter of fact, the first mentioned two are the smallest and the third smallest cities of the 62 under consideration. These three cities are characterized by their unusually high ratio of the working population in the secondary

1) Yonezawa City: General Aspects of the Population of Yonezawa City, based on the Census of 1960. (in Japanese). Yonezawa, 1961.

industries. Joban is one of the three major coal producing areas of Japan, and all three of these cities started as the centers of coal mining and related industries. In accordance with the general decline of the coal industry, these cities are now suffering from depression and are compelled to consider the rearrangement of their industrial functions. In Nakoso, for instance, a thermal plant was established with generating capacity of 175,000 KW using the coal from Joban area, and a plan to add another plant of the same capacity is now under consideration. In the diagram, therefore, we can find good reason to separate these cities as a special group by themselves.

The second exception is the city of Shiogama. Shiogama is a sea port close to Sendai, and has been known as an important fishery base as well as a commercial port. The urban area of this city is almost a continuation of Sendai, and the amalgamation of these two cities has long been under discussion.[1] It is only because of various circumstances that they have not been unified, which undoubtedly will take place before too many years. There is no wonder, then, why Shiogama represents an exceptional structure in the diagram with its high proportion of the working population in the secondary and the tertiary industries resembling that of Sendai. Another and the last exception is Misawa with its isolated distribution in the diagram, and characterized by a remarkably low proportion of the working population in the secondary industries combined with very high proportion of of the working population in the tertiary industries. Misawa is a city well known as a base of the U.S. Air Force in Japan and also of the newly born Japanese Air Force. The unusual occupational structure of Misawa is understandable from the fact that the city is heavily dependent upon the businesses dealing with the service men.

3. Classification based on occupational structure.

In combination with the idea of the hierarchy of the cities, it is possible to classify the cities in Tohoku as follows. The classification is mainly based on their population size and the occupational structure of the inhabitants.

A. **Sendai**. As the largest city in Tohoku, Sendai possesses a unique position in the hierarchy of the cities in Tohoku. Together with its adjacent areas, the total population of the Sendai metropolitan area is nearly two thirds of a million, and it is estimated to reach 754,000 in 1970[2].

Besides having the prefectural government of Miyagi, there are many branch offices of the central government in Sendai to take care of the whole of Tohoku.

1) Miyagi Prefecture: ibid.
2) Planning Committee, Sendai City: Future Program of Greater Sendai. (in Japanese). Sendai, 1963.

Following are the examples: The Bureau of Administration Investigation for Tohoku, Tohoku Headquarters of Defence Army, Tohoku Bureau of Treasury, Tohoku Branch of the Ministry of Public Welfare, Commercial and Industrial Bureau of Sendai, Tohoku Bureau of Construction, Tohoku Branch of National Railroad, Tohoku Bureau of Electric Communication, etc. Thus in many ways Sendai is not only the center of local administration for Miyagi Prefecture, but also the center for the whole of Tohoku.

B. **Major centers of local importance.** In this group there are 5 cities which are the sites of prefectural governments, namely Aomori, Akita, Morioka, Fukushima and Yamagata. The sixth city, Hachinohe has no prefectural government, but is a growing sea port located on the eastern coast of Aomori prefecture. Its hinterland covers not only the eastern part of the prefecture, but also the northern part of Iwate prefecture, including the city of Morioka. The very fact that it was nominated, together with Sendai-Shiogama and Joban-Koriyama areas, in 1964 as one of the three major cities under the New Industrial City Program, is the proof of its importance. The cities in this group are characterized by high percentage of the population in the tertiary occupations. The size of the working population is between 57,000–82,000, and that of the total population is about 140,000–200,000.

C. **Minor centers.** This group includes 8 cities, namely Yonezawa, Sakata, Koriyama, Aizu-Wakamatsu, Tsuruoka, Ishinomaki, Kamaishi, and Taira. In total population they range from about 60,000 to a little over 100,000, and in the size of working population, the range is between 30,000–50,000. All of them have rather strong historical background, and some of them were prewar *shi*. All of them have brought in some modern manufacturing industries, a typical example of which is the iron producing city of Kamaishi. The proportion of the secondary industries is thus considerably higher than in the cities belonging to the groups A and B. (fig. 3).

D. **Cities with disproportionately high ratio of the primary industries.**

Hirosaki and Hanamaki make up this group. In the size of the population, they ought to be classified into B and C groups respectively, but they have unusually high percentage of the working population in the primary industries. The disproportion was caused mainly by the amalgamation of the adjacent agricultural areas. As a matter of fact, Hirosaki is still considered generally as a local cultural center not less important than the cities of group B, although its development was, as referred to before, retarded by historical circumstances. The occupational structure of the real core of the city is more like the cities in group B, but the core is relatively too small to give the city as a whole an urban character in

its occupational structure. The same explanation may be applied to Hanamaki. The ranking of these cities in the hierarchy should be almost equal to C and higher than E.

E. **Smaller settlements**. Majority of the *shi* with working population below 30,000 are in their nature still rural settlements with more or less urbanized centers. It is hard to understand these *shi* as being cities. Almost all of them have more than 35% of the working population engaged in the primary industries. The range of their total population is from a little more than 30,000 to about 60,000. They are rural settlements with small urbanized centers. The fairly large figures of the total population are the result of recent amalgamation, but in their function as central places, their ranking is definitely below class C.

F. **Three centers in Joban district**. Nakoso, Joban and Uchigo are characterized by their unusually high percentage of the population in the secondary industries. This, of course, is due to the system which classified mining in the secondary industries. It, none the less, clearly shows the speciality of these cities as a group. In their outlook, they are certainly different from most of the towns classified into group E, but they are not particularly more urbanized than the latter cities.

G. **Two settlements with unusual occupational structure**. Such are Shiogama and Misawa. As was explained above, Shiogama is actually a part of Sendai, and in its occupational structure, it is very much like Sendai. It is merely a matter of years before these cities will amalgamate to make the Greater Sendai.

Misawa is another case of its own. It is an air-base town, and in that sense it is a unique settlement in Tohoku. Its occupational structure is characterized by its unusually low percentage of the population in the secondary industries, and high percentage of the working population in the tertiary industries.

4. Distribution of the cities.

In fig. 4, the cities thus classified are shown in a map using different symbols. The distribution of the cities in Tohoku is very uneven, and it seems entirely out of order. The reason for this is that the densely inhabited areas in Tohoku are separated by mountains and are located in the basins small and large. The landforms are one thing that one should keep in his mind fully to understand the distribution. To identify the more densely inhabited basins and plains, the author used the population density as an indicator. The areas with density below 100/km^2 are shaded in the map, and they approximately indicate the mountainous areas. The unshaded portions approximate to the basins and plains, and these are the foundations for the development of urban settlements.

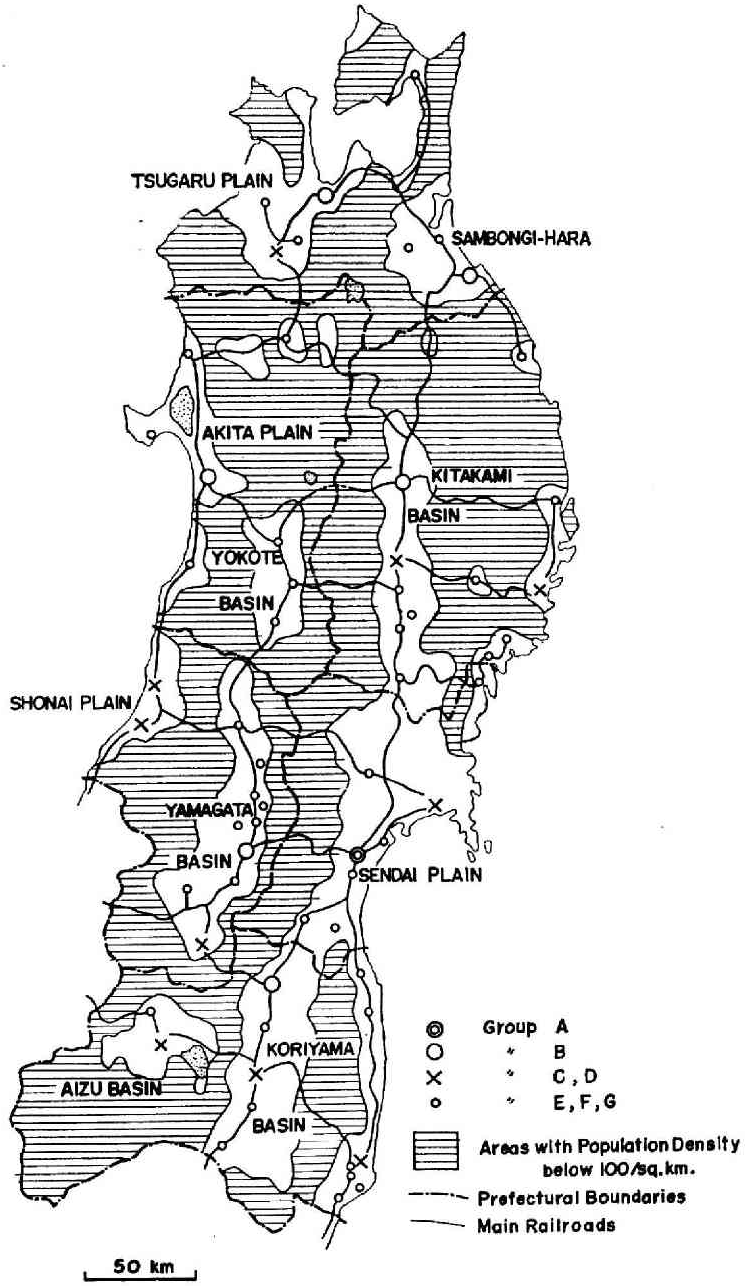

Fig. 4. Distribution of cities

Now the correlation between the size of the basins and the development of cities appears more in order. No two cities above class B are found together in the same basin. Where the basins are large, the combinations are A-C-E, or B-C-E. In the smaller basins, either B or C is missing, and the combinations are B-E or C-E. The Shonai plain on the coast of the Sea of Japan makes a unique case with its twin cities of Sakata and Tsuruoka. There, the division of functions between them as a sea port and a castle town originated in feudal days, and in the recent period the rice producing single crop area of Shonai did not tend to allow other central places within the basin.

Although the distribution of cities in Tohoku does not fit theoretical pattern too well, it is not surprising in a region like this where the human habitation is interrupted by mountains and is not continuous. Nevertheless if observed in detail, it is possible to find clues which hint at the general rules for the theoretical patterns. The distances between cities of classes A and B range widely, but in the southern part of Tohoku where the network of the cities is denser, they are somewhat even; Sendai-Fukushima 99 km, Fukushima-Yamagata 90 km, etc. The same relation is observed in the northern part too; Aomori-Hachinohe 96 km, Hachinohe-Morioka 109 km, and Morioka-Akita 145 km (in this last case, the cities are separated by the central mountain range). Perhaps it will be safe to generalize that the distances among the cities of classes A and B are about 100 km. In the same way, the distances among cities of class C, and among these and the cities of classes A and B are estimated at about 50 km (Fukushima-Koriyama 46 km, Koriyama-Yonezawa 43 km, Sendai-Ishinomaki 51 km, etc.). Among still smaller settlements, the author failed to find any generality. Sometimes the distance is less than 4 km, at other times it is more than 100 km. As it was discussed in another part of this paper, many of the small settlements of class E are still devoid of the function of central places.

Conclusion.

In the preceding sections, the author pointed out that the classification of Tohoku cities based on the analysis of occupational structure worked fairly well. It fits the ranking by the size of population too. The occupational structure is only an aspect of the characteristics of cities, and the close correlation pointed out above is somewhat more than one could expect in an ordinary case. What really needs explanation is why there is such a close correlation in Tohoku.

In accordance with the new and rapid growth of industrial cities in Japan, traditional hierarchy of the cities is now under the process of rearrangement. Many cities are gaining relative importance, while quite a few old cities are stagnant in

their development, and are losing their rankings in the hierarchy as the result of competition. The author thinks that he finds the backwardness of Tohoku district in the very fact that unlike in other parts of Japan, the size of the cities and their functional hierarchy are still in harmony here.

The author wants to extend his thanks to **Tohoku Economic Development Center** for the research grant awarded to the group of geographers in Tohoku for the study of cities in Tohoku.

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