



Dialogue: The fundamental bases for the Japanese people

## To the fundamental bases for the Japanese people — The possibility of initiatives for integrating archaeology with anthropology



Sannai-Maruyama site, archaeological site in Aomori Prefecture

### **Shinoda Kenichi, the National Museum of Nature and Science vs Matsugi Takehiko, the National Museum of Japanese History**

**Editorial staff:** This special feature discusses research on the lives of ancient people beyond the boundaries of study areas, with a focus on the time from the Jomon period to the Kofun (ancient tomb) period. Please tell us what you think of the time from the Jomon period to the Kofun period.

**Shinoda Kenichi:** Genome information shows that the genetic structure of modern-day Japanese was more strongly influenced by the immigrant Yayoi people who came to Japan from Korea and China than by the Jomon people, who constituted the fundamental bases for the Japanese people. It seems that because the people from the Korean and Chinese continents were agricultural people, they had a strong ability to increase the population. Anthropological studies on the Jomon and Yayoi periods have revealed that modern-day Japanese living on the main island of Japan have many genes derived from Korea and China.

The next issue is how the Jomon people were originally formed, and what genetic changes led to modern-day people in later times.

I analyzed human bones from the Kamakura period, which were unearthed in Kamakura city. I am sure that because Kamakura was the capital city at that time, many people gathered there

from different parts of the country. The results of my analysis showed that the genetic structure of people in the Kamakura period was almost the same as that of modern-day Japanese. I speculate that the genetic structure of urban residents in the Kamakura and Edo periods was almost the same as that of modern-day Japanese. However, I do not know how things were before that. I am very interested in the human movement that occurred on the archipelago before that situation emerged.

**Matsugi Takehiko:** For the last decade, I have paid attention to population as a significant carrier of cultural information. At the base of history are the increase and decrease in population, the dispersion and concentration of population and the movement of population. Environmental conditions may be linked with that movement. While you deal with human beings themselves, such as human bones and their DNA, I want to elucidate the Japanese people who lived from the Jomon period to the Kofun period and after that, as well as the history of their societies, by focusing on traces showing past human activities and objects made by human beings.

Originally, when I went to study in the UK for a year, I studied under a professor who specialized in evolutionary archaeology. I understood that if I studied by incorporating the concepts of modern evolutionary science into historical phenomena, I would be able to delve more deeply into the histories of some areas. I think that it will ultimately be difficult to unravel cultural and historical changes and biological evolution based on the same principle. Methods of reproduction differ between culture and biological genetic information. The word *meme* emerged. To date, there have been no successful cases of linking the meme with history. Accordingly, any attempt to do so is certainly difficult. But I want to reconstruct the entire dynamism of history on the basis of the concepts of evolutionary science.

## ●Extracting ancient environmental information

**Matsugi:** I think that environmental information is expected to be used for the archaeology of the Japanese archipelago as well.

**Shinoda:** There have been many interdisciplinary attempts in the areas connecting anthropology with archaeology, but mutual understanding is difficult. Archaeologists discuss cultural changes in considerable detail, but morphological anthropological research fails to provide that information. However, the use of genome information enabled us to have significantly detailed discussions; we have been able to have discussions that mesh with each other.

In this situation, the use of environmental information came into the view of researchers. Up until today, researchers have speculated about the temperature of the earth by analyzing the core of ice in the Arctic and Antarctic. They have argued that it was the glacial age, and it was warm at that time. However, the climate of the places where human beings whose archaeological and anthropological data are available actually lived has not been elucidated.

For example, while the entire earth is growing warmer, some places are becoming colder. The climate is not uniformly flat. To understand actual human activities, it is important to

comprehend the climate of particular areas on the basis of archaeological and anthropological information. Recently, we have been able to show this point in significant detail. (Refer to the papers by Kawabata and Nakatsuka in this special feature.) I believe that we have a common platform for archaeological, anthropological and paleo-environmental discussions.

### ●Questioning the image of ancient people

**Shinoda:** When we think about the Jomon and Yayoi periods, we must consider the differences between them in terms of the groups. Based on a significant amount of evidence, anthropologists consider that the Jomon and immigrant Yayoi peoples from Korea and China were genetically different. Accordingly, the matter of the origins and intermixture of people, that is, where these two types of people came from and what contact they had with each other, is important. If we look at the Kofun period which followed, the intermixture between immigrant Yayoi people who originated from northern Kyushu and the Jomon people progressed at a nationwide level, leading up to the period of people who were the ancestors of modern-day Japanese. I am keenly interested in what led society in many parts of the country at that time.



Yoshinogari Ruins in Saga Prefecture is one of the largest Yayoi-Period ruins

**Matsugi:** Regarding the Kofun period, the theory of the state formation by horse-riding people from the continent was presented immediately after Japan's defeat in World War II. At that time, there was a starting point that led up to what you just mentioned. Based on archaeological

evidence, however, the theory of the state formation by horse-riding people was totally denied. Following this, the movement of people itself was discussed in such a way that it was incorporated into a story about the beginning of the Yayoi period.

It has long been said that people moved from Korea and China to Japan during the Kofun period as well. This leads to the matter of how the personal characteristics of the Japanese people were transformed in the Kofun period, which was an important era. As an extension of the way of thinking according to which Japan accepted people from Korea and China in the Yayoi period, which led to the formation of Japanese groups, and these Japanese groups were thought about in a fixed manner, it is said that people from Korea and China came to Japan as foreigners in the Kofun period, and that the ruling class of the Japanese people may have mixed with these people from Korea and China to a certain extent. But what about the situation of the genetic groups that further constituted the fundamental bases? We have yet to see discussions that combine this with genomes and the like.

**Shinoda:** Now that analytical technologies have made progress, if we have the appropriate materials, we can have these discussions. I think it is important to review the previous results according to such data.

Based on previous research, I speculate that the people who came from Korea and China due to rice cultivation made a significant contribution to modern-day Japanese genetic elements, and that the intermixture between the Jomon and the immigrant Yayoi people was conducted peacefully. However, because there were probably gaps in areas and periods from a nationwide perspective, it has yet to be seen how the intermixture was completed. I think that now is the time to think about it.

Recently, the mitochondrial DNA type of the Jomon people is revealed in detail. Research shows that the Jomon people in eastern Japan brought a little influence to the modern-day Japanese. Instead, it was revealed that the genetic types of the Jomon people in western Japan have remained in large numbers. Generally speaking, when we think about Jomon culture, we often imagine it as the culture of eastern Japan. As a result, we have tended to speculate that the Jomon genes from eastern Japan were passed on to modern-day Japanese. But as the research progressed, it was revealed that this might not have been the case.

If the population increased as a mixed group and moved from the west to the east, the initial situation was important. Probably, people from Korea and China were relatively small in number compared with Jomon people in western Japan. My approach commenced from this point, and I now want to examine the situation of this intermixture. The study of the Kofun period is an extension of this approach.

That is why I recently started to analyze human bones from the Kofun period as well. I began analyzing human bones from group burials in tunnel tombs in Kyushu and several tunnel tombs in the Kanto area. I have yet to look at the Kansai area, but I suppose that there may be differences in genetic types between Kansai, Kyushu and Kanto. I assume that they were not homogeneous groups of people in terms of genes. I am interested in how DNA data can contribute to the archaeological studies of the Kofun period.



## ●From population movement to social change

**Matsugi:** When I look at the movement of objects in the Kofun period, I can see the significant movement of human beings. A survey of pottery in many parts of Japan has recently revealed that when the Kofun period began, there were increased flows of population between distant places. Among other things, it seems that for example, a significant number of people in the Kanto area moved from the Tokai area between the late Yayoi period and the early Kofun period. The archaeological and cultural information can be interpreted in this way.

**Shinoda:** You mean that people moved from Tokai to Kanto, don't you?

**Matsugi:** Yes, the pottery came from Tokai. It was centred on the era of the Yamatai state in the third century. Archaeological evidence shows that people from Korea built residential areas of a considerable scale around Gunma prefecture in around the fifth century. In addition, ancient tombs facing the sea were recently discovered along the Pacific coast. For example, stone burial chambers with the same shape as those in Kyushu were introduced to and scattered along eastern Japanese coastlines. We have now come to realize that people moved in a larger scale than they had previously imagined.

In addition, as a recent topic, researchers have focused on how the population increased and decreased in an effort to explore quantitative social changes, including cultural information, by totalizing previous excavations. (Refer to the paper by Wakabayashi in this special feature.) When I was working for Okayama University, I carried out such research on the Okayama Plain. Up until now, there have not been many efforts made to gain an understanding of the quantitative data, but this is intended to capture the real population movement. It will build the foundations for interpreting a variety of cultural information.

Archaeology can discover how the population moved and what cultural information is included in it to a certain extent. If you combine genome information with this, I am sure that it will be possible to grasp dynamic movement to a significant degree.

**Shinoda:** I am also interested in the issue of population and recognize it as an important. I have continued research using an ancient DNA analysis method in the Andes area in South America over the last twenty years. A range of civilizations rose and fell in this area over 4,000 years. The last civilization to thrive in the area was the famous Inca Civilization. As a result of my analysis of the genetic changes of the groups that created these cultures, I discovered that when the culture changed, there were places where people changed or did not change. The genetic structures of groups changed significantly in areas that had relatively small populations. Conversely, even if the culture changes in areas with large populations, the genetic structures of the groups do not change. Probably, Japanese people are not aware of this, but the relationship between population size and cultural change is an important issue.

**Matsugi:** That's interesting, isn't it?

**Shinoda:** For example, if the population increased in the Kinki area, we should consider that it is because the native people themselves increased or people from other areas entered this area. If we can find the answer to this question, we will be able to obtain fundamental data as to how society changed.

The Nazca culture in the Andes area, which is famous for its Nazca lines, originated from the first century AD and suddenly vanished around the sixth century. The genetic character of the people who created this culture was different from those of the people who lived in the same area after the sixth century. Because it does not rain at all in this area, the lines drawn on the ground have remained there for 2,000 years. The environmental situation in this area is so severe that population growth was difficult. The largest population of Nazca is estimated to have been about 50,000, but the population can be considered to have been smaller in the final phase when the environment deteriorated. The impact of environmental changes is so extreme in an area whose environment is vulnerable that people cannot live there. The next time the area becomes inhabitable, another group comes in. I speculate that something like this happened in the Nazca area. Because Japan is located in an area whose land is relatively productive, I think that it did not enter such a state.

**Matsugi:** That's interesting. It is said that the population of the Yamato state may have been small before the chiefly mounded tombs (*kofun*) emerged. When these tombs were created, a considerable number of people gathered from many parts of the country. Change occurred at that time. This is also interesting.

**Shinoda:** If we combine information about how the environment changed with this, it will become very interesting. Climate and the environment are so closely linked with food production that they can be major factors that make people move. This will also overlap with data about the stability of social structures revealed by archaeological investigations. Probably, by looking at these results, anthropologists will consider how evidence that remains within human genomes can be interpreted. If we can combine this information properly, I think that we will be able to clarify the conditions of social changes.

## ●The mystery of ancient mounded tombs

**Matsugi:** An interesting example is the huge ancient mounded tombs. These tombs became huge when the population decreased between the late fourth to early fifth centuries. What does this mean? While the number of ancient tombs itself decreased sharply, some of them became huge.

**Shinoda:** So you mean that the huge ancient tombs were concentrated during a particular period of time?

**Matsugi:** We need to elucidate the specific system under which it was conducted. Roughly speaking, such patterns can be observed in the relationship between the increase and decrease in the population and the size of the monuments.

**Editorial staff:** A layman's perspective says that the reason why huge monuments were built was not as proof of prosperity, but out of desperation.

**Shinoda:** I think that the point is motive. In the case of Nazca, society finally declined due to environmental changes. At that time, a large-scale ritual of sacrifice emerged. Rituals of sacrifice themselves were not uncommon in Latin American civilizations, and such rituals could also be seen in the Nazca culture from its initial phase. But it was when the environment deteriorated that they started holding large-scale rituals of sacrifice. They held the ceremony of cutting off people's heads and displaying dozens of them. They also built huge temples, which may have been aligned with this. I guess that when they became dependent on God out of desperation, they thought that they had to offer up something of importance. Unexpectedly, what people think may be similar.

**Matsugi:** I think so. Jomon monuments were created during a period when the earth became colder and the sea level dropped. Clay figurines and stone tools for religious rites also began to be developed after the population started to decrease. Perhaps they are similar. There may be patterns like this.

## ●Expectations for assimilation

**Shinoda:** In the field of Japanese anthropology, previous academic interests were concentrated in the relationships between Jomon and Yayoi people. But there are still many things that have yet to be discovered. How does archaeology explain the increase and decrease in the population?

**Matsugi:** The population increased in many parts of the country in the latter half of the mid-Yayoi period (from the first to second century B.C.). This is conceivably because the climate was so warm and stable that productivity increased. Change began during the late Yayoi period, and shortly before the Kofun period began, the population increased in some places and decreased in others. At some points in time in the Kofun period, the population decreased significantly in many parts of the country. I think that this was linked with the so-called Kofun Cold Age.

**Shinoda:** Roughly speaking, population changes were linked with the climate, weren't they? Did this lead to more battles for resources?

**Matsugi:** The population decreased in the second half of the early Kofun period, the late fourth century, in many parts of the country, and weapons and armor began to develop at this stage. But there were few traces of people using them; that is, little evidence in human bones across the



Japanese archipelago. The mobilization of materials shows that people on the Japanese archipelago engaged in military conflicts with forces on the Korean peninsula. Conversely, many traces of violence could be seen in the archipelago during the Yayoi period.

It is said that violence decreased in the Kofun period. In fact, this is related to the issue of whether or not you look at human bones from that perspective. Traces of killings and wounds could be seen in human bones from the Yayoi period in an earthenware coffin found in northern Kyushu, and these human bones were in good condition. A little more than ten examples of traces of killings and wounds were discovered in the Kofun period as well. About half of them were human bones found in underground chambers in Shimauchi in southern Kyushu, which were in very good condition. This may be affected by biases as a result.



Omura cave tombs of Kofun period in Kumamoto Prefecture

**Shinoda:** Only a few human bones from the Kofun period were found. I also conducted a DNA analysis in the Shimauchi tunnel tomb. Because there are many human bones buried in the same tunnel, I am interested in analyzing the relatives. Ancient DNA analysis will enable us to reach a conclusion about what we have been unable to examine up until today due to a lack of data. As a result, I think that we will be able to draw up detailed scenarios of the population history and make new interpretations based on them.

Abstract aspects, including social structure, are studied by archaeology and historical studies, but many of the facts that form bases for examination are produced by scientific research. This is also true of analyses using various isotopes as well as genome information (refer to the paper by Naito



in this special feature) and data about environmental changes. I think that knowledge about natural science is playing an important role for the clarification of these abstract aspects.

**Matsugi:** We have heard the term *integration between natural science and humanities and social sciences* for many years. But just as when we attempt to combine water with oil, even if they appear to be combined, they are actually not. I think that they can be better combined chemically, and that we will have to do that.

**Shinoda:** I think that it will be possible in some areas and impossible in others, but it will be possible in this area.

### ●To elucidate people's lifestyles and cultures

**Editorial staff:** What do the ancient tombs along the Pacific coast say about the people who lived there? Were they tombs of people in power, as expected?

**Matsugi:** Speaking of ancient mounded tombs, they are often linked with the image of tombs of people in power, but these are only a few cases. Coastal ancient tombs were in sea caves or rows of stone coffins made by arranging stones on the beach. They are probably the tombs of ordinary people specialized in fishing and trading on the sea.

Up until today, we archeologists have extracted hierarchical and political information from ancient tombs. But today's studies are not always like that. For example, there are multi-faceted interpretations, such as extracting the details of occupations from ancient tombs or focusing on duties, including trade.

Accordingly, today's studies focus not on the movement of people in power, but on the more basic movements of people, the way people lived and the spread of lifestyles and cultures. Behind today's studies is how people lived and moved.

**Editorial staff:** So you mean that today's studies have the way many people lived in sight?

**Matsugi:** That's right. After all, the reproduction of the population is part of these efforts. Up until today, we have only been able to see rulers' ancient tombs. But we are gradually moving to approach history on the basis of the movement of entire populations.

**Shinoda:** Society in the Kofun period was hierarchical, which involves the difficulty of analyzing such a complex society.

In many cases, anthropologists regarded bones unearthed from anywhere as a sample of a certain population. I think this approach was acceptable with samples in the Jomon and Yayoi periods. But in the case of the Kofun period, bones unearthed from the ancient tombs of people in power and bones unearthed from sea caves have different meanings.

When we mention the Kofun people, it refers to an important person. If you show the results of

the DNA analysis of the Kofun people, it may be interpreted as the DNA of people in power. This must be communicated properly between archaeologists and anthropologists.

If human skeletal remains are excavated from the Kofun period, it is important to know from what type of ancient tomb the human bones were unearthed and what interpretation of DNA data can be drawn from it. Because the interpretation is dependent on the attributes of the tombs themselves, it can only be undertaken by Kofun-period researchers. This is the reason why interdisciplinary studies are necessary.

**Matsugi:** Do you think that perhaps hierarchies are also shown in personal characteristics?

**Shinoda:** It is probably difficult to grasp hierarchical differences on the basis of morphological study. But if we take an approach from a genetic level, we will be able to clarify the differences. For example, if you obtain genetic data showing that there are clearly two different groups in the same ancient tombs, you can draw the following two interpretations: (1) Different groups used to live together; and (2) There were different hierarchies. Up until today, such a discussion has been impossible. It is also certain that there is still no data for model cases. However, now that a considerable number of human bones have been unearthed from the Shimauchi tunnel tombs, if differences are discovered from their data, you will face the issue of how to interpret them.

**Editorial staff:** Do you mean that you can tell whether hierarchies were inherited historically?

**Shinoda:** In terms of interpretation, if it turns out that there were genetically different groups within the same area, it is conceivable that there was no intermarriage between these groups consistently, or that although they intermixed with each other once, they did not get married due to the subsequent emergence of hierarchies, and differences emerged because a sufficiently long time passed. Because the result is the same judging from the DNA data, its interpretation cannot have a single meaning.

The more complicated social structures become, the more difficult it is to undertake the simple interpretation. It is the issue of what really happened there that we want to know. The point is what effort and research we will have to undertake to find it out.

**Editorial staff:** We expect that you will discover the extent of Japanese culture through your research.

**Shinoda:** What is called Japanese culture consists of the lump sum of history. I know that we cannot elucidate it easily, but it is important to start from the fundamental bases for the Japanese society one by one.

**Matsugi:** Because it is just like looking at a multi-layered structure from above, it is tough work. Although it is difficult, we may be able to approach the origins of culture more scientifically with a focus on the issue of people's recognition.

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### **MATSUGI Takehiko**

He was born in Ehime prefecture in 1961. He completed a doctorate at the Graduate School of Letters, School of Letters, Osaka University. After working as a professor at Okayama University, he is currently a professor at the National Museum of Japanese History. He specializes in Japanese archaeology. By elucidating people's mental phenomena and evolutions through an analysis of objects, he seeks to reconstruct historical studies as science. He is the author of *A Collection of Japanese History 1: A Story of the Creation of the Archipelago* (Shogakukan Inc., 2008; awarded the Suntory Prize for Social Sciences and Humanities), *What is the Ancient Tomb?* (Kadokawa Corporation, 2011), *Unrobbed Ancient Tombs and Emperors' Ancient Tombs* (Shogakukan Inc., 2013) and *The Archaeology of Beauty* (SHINCHOSHA Publishing Co., Ltd., 2016), among other works.

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