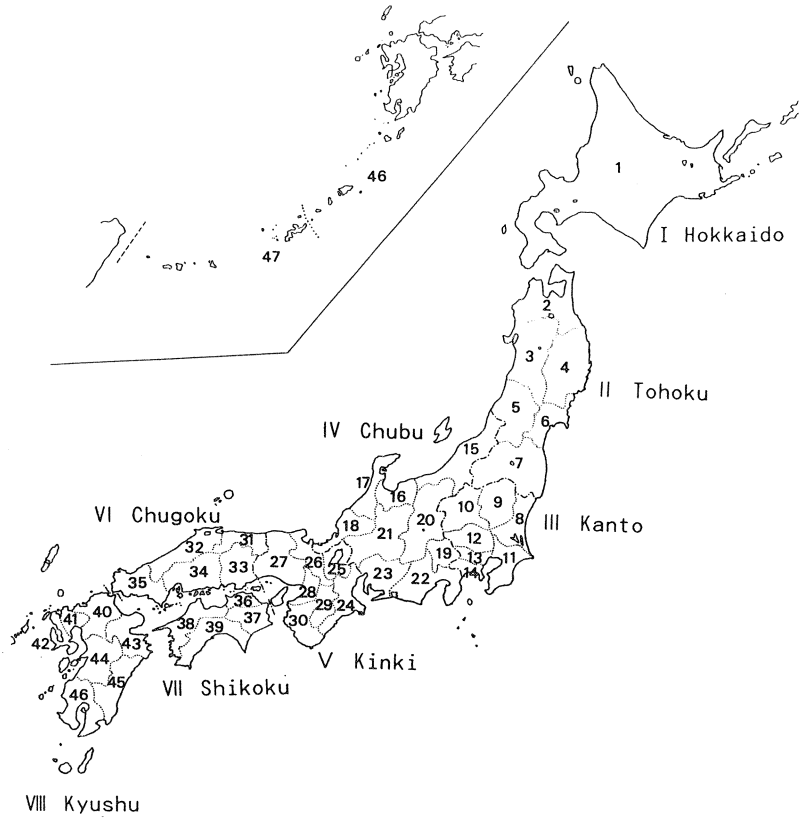
PREHISTORIC JAPAN

New perspectives on insular East Asia

Keiji Imamura

Prehistoric Japan



Prefecture names

I Hokkaido District
- 1 Hokkaido

II Tohoku District
- 2 Aomori
- 3 Akita
- 4 Iwate
- 5 Yamagata
- 6 Miyagi
- 7 Fukushima

III Kanto District
- 8 Ibaragi
- 9 Tochigi
- 10 Gunma
- 11 Chiba
- 12 Saitama
- 13 Tokyo
- 14 Kanagawa

IV Chubu District
- 15 Niigata
- 16 Toyama
- 17 Ishikawa
- 18 Fukui
- 19 Yamanashi
- 20 Nagano
- 21 Gigu
- 22 Shizoka
- 23 Aichi

IV Kinki District
- 24 Mie
- 25 Shiga
- 26 Kyoto
- 27 Hyogo
- 28 Osaka
- 29 Nara
- 30 Wakayama

VI Chugoku District
- 31 Tottori
- 32 Shimane
- 33 Okayama
- 34 Hiroshima
- 35 Yamaguchi

VII Shikoku District
- 36 Kagawa
- 37 Ehime
- 38 Tokushima
- 39 Kochi

VIII Kyushu District
- 40 Fukouka
- 41 Saga
- 42 Nagasaki
- 43 Oita
- 44 Kumamoto
- 45 Miyazaki
- 46 Kagoshima
- 47 Okinawa

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Routledge
Taylor & Francis Group
LONDON AND NEW YORK

First published in 1996 by UCL Press

Reprinted 2003 by Routledge

Published 2016 by Routledge
2 Park Square, Milton Park, Abingdon, Oxon OX14 4RN
711 Third Avenue, New York, NY 10017 USA

Routledge is an imprint of the Taylor & Francis Group, an informabusiness

British Library Cataloguing in Publication Data
A catalogue record for this book is available from the British Library.

ISBNs:
978-1-857-28616-8 HB
978-1-857-28617-5 PB
978-0-203-97342-4 eISBN

Contents

Preface

In 1993, I had an opportunity to give a series of lectures on Japanese prehistory at Institute of Archaeology, University College London. My English was not quite good enough to speak on complex matters on the spot, so I wrote it all out beforehand, then had it checked by a British student, and read it in classes. When the lectures were finished, the collection of lecture notes became the basis of this book.

The lecture notebook, prepared for students with virtually no knowledge of Japanese prehistory, seemed to provide other foreigners who wanted to know something about prehistoric Japan with an adequate introduction. The absence of more than ten years of any new publication in English on the outline of Japanese archaeology also seemed to make it worth publishing.

As a matter of course, many amendments and additions were necessary for it before it could form a book. In fact, Chapters 9 and 14 were newly written to supplement large gaps in the lecture notes.

Such a background does not necessarily mean that this book is a mediocre summary of general knowledge. First, it presents new perspectives based on the latest data of Japanese archaeology. The tremendous increase in the number of rescue excavations in recent Japan (9494 sites in 1994, for instance) and the ensuing increase in the number of publications of excavation monographs (about 3000 volumes a year!) are reporting innumerable important new facts, which are overturning old theories and even newly presented theories. Note that three-quarters of the bibliography in this book was published after 1980.

It is inevitable, albeit regrettable, that this modest volume can represent only a small portion of the fruits of such excavations and the endeavours of no less than 5000 archaeologists in Japan; countless papers and monographs underpin this book. Secondly, this book is not intended to be a comprehensive description of individual facts and various theories, but is a contextual approach to the development of Japanese prehistory. Many important facts outside of the context have been omitted for the sake of clear and consistent description. In many sections and for the same reason, only one theory is introduced out of various possibilities. Consequently, my own studies feature more prominently than an impartial estimation of their contribution to the whole of Japanese archaeology might suggest they should. Thirdly, this is a pure digest of *Japanese* archaeology in particular, because most of papers and monographs on which this book is based were published only

in Japanese (more than 99 per cent of archaeological publications in Japan are written in Japanese). Many previous outlines of Japanese archaeology in English were handicapped because they were written by foreigners who necessarily relied too much on papers written in English, whose Japanese authors were restricted to those who had learned Western methodology and become accustomed to Western values.

Perhaps the most characteristic feature of Japanese archaeology is its extreme positivism. Interpretations based on insufficient evidence are frowned upon as being of little consequence. This rather stoic characteristic of Japanese archaeology is also often looked down upon by foreign scholars as merely describing materials and individual facts without meaningful perspective and critical thought, and is treated similarly even by Japanese archaeologists who have learned Western methodology. Nevertheless, much progress has been made and a secure base for further research has been established by the steady accumulation of work by many archaeologists.

The developmental process of prehistoric Japan is surely unique in world prehistory. However, it can be recognized more properly as a process of adaptation to its natural environment and to its unique geographical and historical position. In this sense, Japanese prehistory constitutes an integral part of world prehistory. I have lingering doubts about how much the above-mentioned aims have been realized within the limited time and limited pages available. I shall be very happy if this book manages to convey merely rough images of prehistoric Japan, and current conditions of Japanese archaeology to foreign archaeologists, and if it helps to make Japanese prehistory an integral part of world prehistory.

The author expresses heartfelt thanks to Professor David R. Harris, formerly Director of Institute of Archaeology, University College London, and to Dr Ian C. Glover, Head of the Department of Prehistory there (when I gave lectures at UCL), who gave him a precious opportunity to give lectures at their institute; to the Japan Foundation, which provided funds for his stay in London and a portion of the cost of this publication; to Dr Mark Jonson (University of Hull), Dr Mark Hudson (Okayama University, Japan) and Mr. Douglas Fuqua (University of Hawaii), who kindly took the trouble of correcting my English writing; to Mr Roger Jones, Publisher and Chief Executive of UCL Press Limited, who published this book and proved to be an effective long-distance correspondent with the author in Japan; and finally to many students, including my former student Dr Mariko Yamagata (University of Tokyo), all of whom patiently listened to my lectures spoken in poor English and contributed many significant opinions.

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February 1996

The author and UCL Press gratefully acknowledge the financial assistance of the Japan Foundation in the publication of this book.

CHAPTER ONE

An introduction to Japan's natural environment

Japan is an archipelago separated from the Asian continent by the Sea of Japan. Its land is mountainous and the coastal plains are segmented by mountain ranges. Although the temperature varies considerably along its north–south span, most areas fall within the temperate zone. It has the largest amount of rainfall among land areas within the temperate zone, promoting the growth of dense forests. All of these environmental features have had strong influences on the character of Japanese prehistoric cultures.

Japan's geographical setting

Japan is an island country composed of four main islands and many small ones. The four – Hokkaido, Honshu, Shikoku and Kyushu – are located in close proximity, and the straits between them have never been serious barriers to cultural contact (Fig. 1.1). One important exception was rice cultivation, which during the prehistoric period did not cross the Tsugaru Strait separating Honshu and Hokkaido. This was not explained by either its width (20km) or its impassability, since similar types of prehistoric pottery were distributed on both sides of the strait. Rather, the strait marked the climatic northern limit of rice cultivation.

There were two main entry points for continental cultures, northern Hokkaido in the north of Japan and in the south, northern Kyushu. These are the two closest points to the continent. The latter was especially important as a gateway to the advanced cultures of Korea and China. Although crossing the distance of 180km with two stepping-stone like islands in between was not impossible, neither was it easy by prehistoric navigation standards. It was a crucial distance, which made Japanese cultures isolated on some occasions and brought them into contact with continental cultures on others.

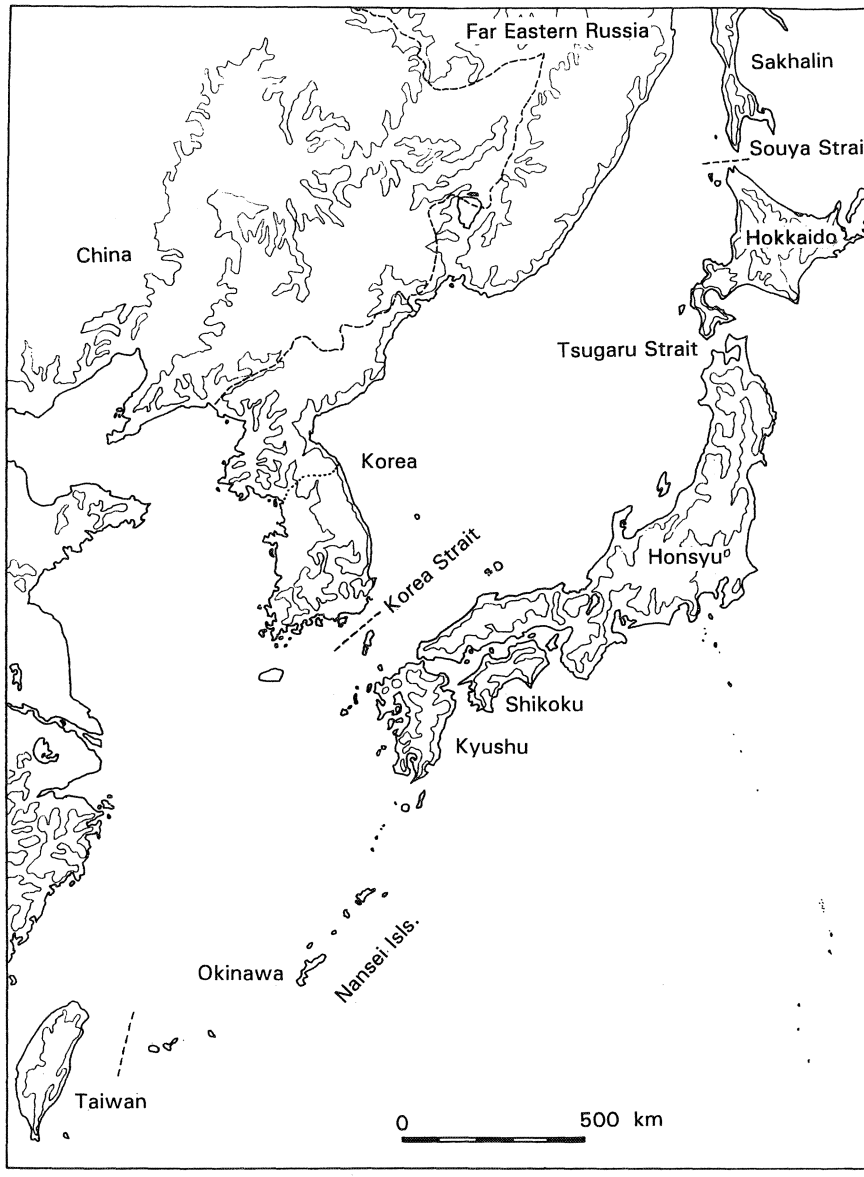

Figure 1.1 The location of Japan in Asia.

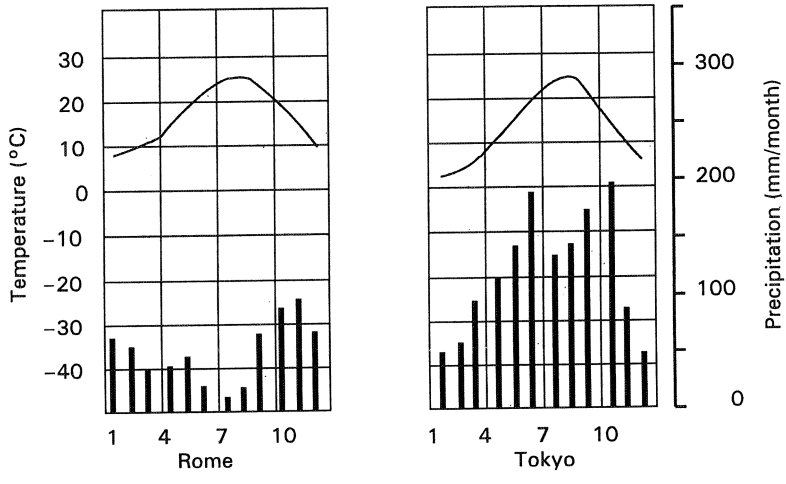

Figure 1.2 Annual cycle of temperature and precipitation changes in Tokyo and Rome.

Climate

The northernmost tip of Japan lies at latitude 45° N, and the southernmost tip, Okinawa lies at 24° N. Because of its north–south span, there is a wide variety of natural environments. Most of Japan falls within the temperate zone, whereas northern Hokkaido falls within the cool climate zone and Okinawa the subtropical zone. The country, surrounded by seas and ocean, receives moisture-laden air from every direction, whose passage is impeded by the central mountains. The result is the largest volume of precipitation (1000–3000 mm per year) among all the temperate countries, far exceeding that of southern European countries on the same latitude. In contrast to European countries, it frequently rains much in the summer because of its location at the eastern side of the continent (Fig. 1.2).

A country of forest

Such precipitation, especially in the summer, promotes the vigorous growth of vegetation, so that Japan also has the largest productivity of plant biomass in the temperate zone. Under such conditions, grasslands are never permanent but are gradually replaced by certain kinds of forests, the climax vegetation for the climate, through several successional phases. Japan's forests vary according to their latitudinal location: forests of *shining leaf trees* (a kind of broad-leaf evergreen of monsoonal East Asia) are found in southwestern Japan, deciduous broad-leaf tree forests in northeastern Japan, with coniferous forests occupying the northernmost

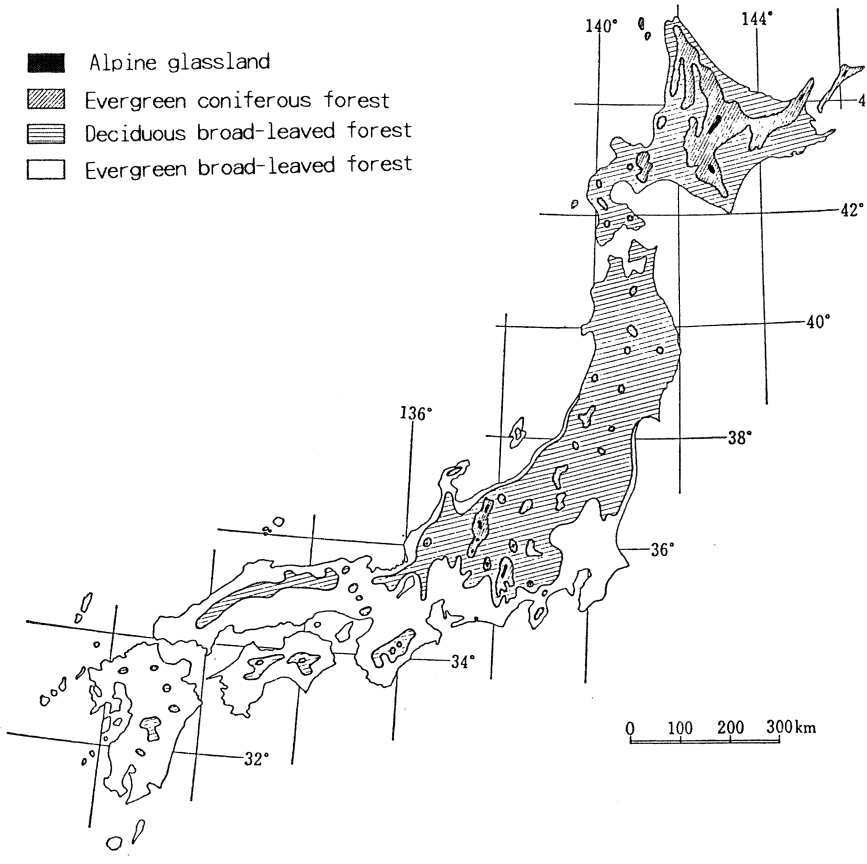

Figure 1.3 Present-day vegetation in Japan.

area and high mountains (Fig. 1.3). Forests still account for 70 per cent of all the land area of present-day Japan. The figure for the UK is 10 per cent. This figure is in part attributable to the existence of mountainous areas, which are not available for agriculture or other purposes, but also to the swift recovery of forests after their disturbance.

There are no natural grasslands in Japan. It is not that the climate is unsuitable, but rather that grasses are overwhelmed by trees in the struggle for survival. In areas with sufficient water, the struggle among plants is for sunlight, and grasses are prevented from growing by tall trees that obstruct the sunlight. Because most agricultural plants introduced into Japan, such as the various cereals, derive from grasses, it was difficult for them to survive in such a habitat. Moreover, these cereals were first cultivated far from Japan in different climatic conditions and consequently are weaker than Japanese indigenous grasses. Therefore, cereals require considerable human care to generate good harvests in Japan.

Agriculture

Japan has a total land area of 38 million hectares, about 1.5 times that of the UK. However, farmland accounts for only 5.3 million hectares, as compared to 18.6 for the UK. This is primarily attributable to the fact that 70 per cent of Japan's land area consists of steep mountains (Yomiuri 1993). The small plains and large population (about twice that of the UK), make the Japanese farmland area per person only 0.04 ha, about an eighth that of the UK. Despite this small figure, Japan has until recently produced most of its own agricultural requirements. (Self-sufficiency in food production is rapidly declining because of changing economic structures, in particular, the increasing export of industrial products and the increasing importation of agricultural products. However, rice, the staple food, continues to be mainly domestically supplied.) This is a result of Japanese farmers who have continuously been pursuing new plant varieties and better farming methods to obtain higher yields. About one-half of all farmland in Japan is wet-rice fields. Pasture land for stock farming accounts for only 10 per cent. The limited plains are used not for stock farming but instead as cultivated land for primary food production, especially as wet-rice fields, which are stably productive.

There are many environmental features that favour the development of wet-rice farming in Japan. These include plentiful summer rains, abundant streams, sloping plains and extensive mountainous areas around the plains, which function as water catchment systems, all of which permit the development of extensive wet-rice fields. Once the necessary earthworks were carried out, most of the plains could be converted into rice fields. Initially the fields centred around small streams, which could be easily controlled with the technology of the first farmers. Their efforts turned to increasingly larger streams and rivers, continuing up until quite recently. Extensive low-lying alluvial plains with large rivers have been developed into rice fields only since the seventeenth century, and at present are the main rice producing areas. Wet-rice fields are land areas artificially formed into flat terraces in order to maintain an even depth of water (Fig. 1.4). They require canals both for irrigation and drainage, and the irrigation canals often lead from reservoirs far away. Although wet-rice fields appear to be natural features, they are in many ways more akin to factories. Rice is the most important crop in East India, Southeast Asia, South China and Japan, all of which are situated in monsoon regions. In these areas rice has been cultivated by an astonishing number of methods according to both the climatic and geological conditions, as well as to the local engineering and construction technologies (Watabe et al. 1987). In Japan, however, one method predominates, and many Japanese think of it as the only way to cultivate rice. This is the method of transplanting rice to artificially prepared and soaked fields (Fig. 1.5) in which seedlings raised to a certain size in preparatory fields are transplanted to main fields that have been ploughed beforehand to bury and kill all weeds. The seedlings are then carefully tended and brought up with repeated weeding. An intensive form of agriculture, the amount of labour invested is counterbalanced by the excellent yield that it brings. Such high productivity was the primary reason why such limited arable land supported so dense a population. I

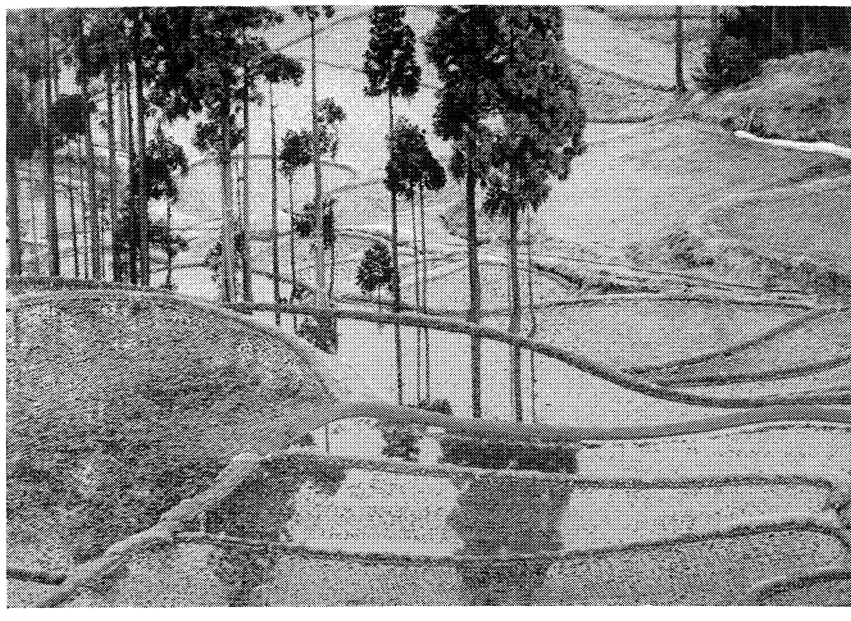

Figure 1.4 Terraced rice fields in a granary area.

Figure 1.5 Transplanting in traditional mode. Automatic transplanters have made this a scene of the past.

Figure 1.6 Evidence of the practice of transplanting: trace of seedling roots on excavated rice fields at Hyakkengawa–Haraojima (Okayama prefecture), Late Yayoi (Masaoka et al. 1980, 1984.)

think rice cultivation such as this has probably been the foundation of Japanese culture and has had a profound effect on many aspects and phases of it. Seedling traces found on excavated rice fields (Fig. 1.6; Masaoka et al. 1980, 1984) suggest that this method of rice cultivation was practised as early as 2,000 years ago. This evidence is from the Late Yayoi period although I think it may well have been adopted from the beginning of the Yayoi period (400–500 BC), because it is the method most suitable to the Japanese climate and because rice cultivation techniques must have been developing on the mainland over the course of 5,000 years from the beginning of rice agriculture to its adoption in Japan. At present, Japan is turning away from agricultural methods that suit the natural environment because of the economic emphasis on the export of industrial products and the importation of food and because politics and agriculture are closely linked. Despite such changes, rice cultivation is still of primary importance, whereas stock-raising remains relatively unimportant, as has been the case since the beginning of agriculture. The reason for this is Japan's natural environment.

Fish resources

At present Japan is the world's largest consumer of fish. An average Japanese consumes 70kg of fish a year as compared to 20kg per person in the UK (Miyake 1991). Japan accounts for the largest hauls and, together with the USA is the leading importer of fish. A good illustration of the extent to which Japanese have been involved with fish are ideograms referring to fish. Han characters from China are used in Japan. They are ideograms, although many of them are a combination of idiographic and phonemic symbols. The ideogram symbolizing fish is 魚, which originally derived from the shape of a fish. Each name for a particular fish is a combination of this ideogram and an additional phonemic symbol. Many characters representing the names of different fish were made in China like this. However, the Japanese felt that, after the Han characters were imported into Japan, there were not enough to designate all the varieties of fish. They therefore devised almost an equivalent number of original Japanese characters for them. The Japanese partiality to fish is related to the environment, with seas teeming with marine life and many rivers and inland lakes abundant with freshwater fishes. The remains of many different kinds of fish bones have been found in prehistoric shell middens, including evidence that globefish, which are delicious but even now difficult to cook because of their deadly poison, were eaten during the Jomon period (Kaneko 1973).

In contrast to marine and freshwater animal resources, land animals have not figured prominently as a primary food source until recently. Although arboreal animals such as deer and wild boar were hunted, especially during the Jomon period, significantly there were no indigenous grassland herbivores in Japan, and, with the exception of pigs, livestock was not raised for consumption. Horses and cattle were raised primarily as draught animals and were used for food only on rare occasions. Their significance as a food source was minimal, and for most of Japanese history fish has supplemented the shortage of protein. This is usually attributed to Buddhist proscriptions against violence towards humans or animals. However, there is no evidence of active stock-raising prior to the arrival of Buddhism in the sixth century AD, and the real cause seems lie in Japan's natural environment, with limited plains or natural pasture for grazing (Imamura 1987).

CHAPTER TWO

The periodization of Japanese archaeology

Special divisions or chronological periods have been created to reflect the unique sequence of Japanese pre- and protohistory. Neither the period names nor the divisions they signal are based on the same criteria. But although these divisions may appear contradictory, in actuality they mark the most fundamental stages of prehistoric development.

Before tracing the sequence, it will be useful to keep in mind the major divisions of Japanese prehistory, as they provide the framework for the discussion to follow. The major divisions in European prehistory – the Palaeolithic, Mesolithic, Neolithic, Bronze, and Iron Ages – are all applicable to China, a culturally advanced area close to Japan in East Asia. Some problems remain regarding the Mesolithic, but the others are generally applicable. However, they do not accord with Japan's prehistoric sequence, which developed in unique ways. The divisions presented here represent the most general viewpoint, although there are divergent opinions over specific dividing points and period names.

The Pre-ceramic or Palaeolithic period

The first division, the Pre-ceramic period, literally refers to a period before pottery. Pottery appeared in Japan a little earlier than 12,000 years ago. As this date corresponds to the end of the Pleistocene, there are many who use the term Palaeolithic synonymously with or in place of the Pre-ceramic period. Obviously, the Palaeolithic is an appropriate designation for a period characterized by hunting and gathering without pottery or agriculture. As will be discussed in the next chapter, however, the presence of ground stone tools seemingly contradicts the usual understanding of the Palaeolithic. Further, because Japanese archaeology does not otherwise follow the European divisions of Palaeolithic, Mesolithic and Neolithic, it makes the use of the term Palaeolithic alone somewhat odd. However, the term Pre-ceramic is also problematic in as much as it seems to suggest a period immediately preceding the appearance of pottery. Formerly, the Pre-ceramic period

was used in reference to sites that dated from 30000 bp to 12000 bp marking the emergence of pottery. More recently discovery of sites dating back to 200000 bp or more has necessitated the designation "Early Palaeolithic", making the term Pre-ceramic sound somewhat strange as a covering term for this entire period. Because of this, the designation Palaeolithic is gaining more support although some archaeologists have begun to use "Iwajuku period" after the place name where the first Palaeolithic or Pre-ceramic material was discovered.

The Jomon period

The next division is the Jomon period. I take the emergence of pottery as marking the beginning of this period, although others are of the opinion that the so-called Incipient phase of the Jomon period (12000–10000 bp) marking the earliest types of pottery should be excluded from this (Sugihara 1967, Serizawa 1968). Radiocarbon dates of approximately 12000 years bp have traditionally been given for the first appearance of ceramics. More recently, small amounts of pottery have been discovered in the last phase of some Palaeolithic sites, so that date for the emergence of pottery undoubtedly goes back further than 12000 bp, a question I return to in Chapter 4. Another problem in defining the beginning of the Jomon is its relation to the Palaeolithic. The Japanese Palaeolithic, which is synonymous with the Pre-ceramic period, ends during the Pleistocene, presenting the question as to whether or not we should recognize the pottery-producing culture of the final Pleistocene as Palaeolithic. However, the relationship between the end of Palaeolithic period, the emergence of pottery and the Pleistocene/Holocene boundary has not been sufficiently discussed within Japanese archaeological circles.

The term *jomon* means "cord-mark" on pottery in Japanese, although it is distinguished from another kind of cord-marking produced by a paddle and anvil technique, which is widely distributed in China and Southeast Asia. *Jomon* is an impressed pattern created by rolling a cord or a cord-wrapped dowel on the still-soft surface of a pot. This technique was developed not only as a form of surface treatment but also as a form of decoration during the Jomon period. Variations in the twist and the application of the cord yielded hundreds of varieties of *jomon* patterns (Fig. 2.1; Yamanouchi 1961). This is the origin of the Jomon period's name. It does not necessarily mean that all pottery of the Jomon period had this kind of decoration. Kyushu, for instance, is an area where *jomon* was absent during much of the Jomon period. Moreover, *jomon* decorative techniques are a feature of the pottery from the subsequent Yayoi period in northeastern Japan (Fig. 2.2). The important point is that the *jomon* pattern is only the source of the period's name and not the criteria on which it is based. What then are the defining features of the Jomon period? The Jomon period is, like the Palaeolithic, characterized by a hunting and gathering economy, but its beginning is defined by the emergence of pottery, and its end is marked by the emergence of full-scale agriculture, particularly wet-rice field farming.

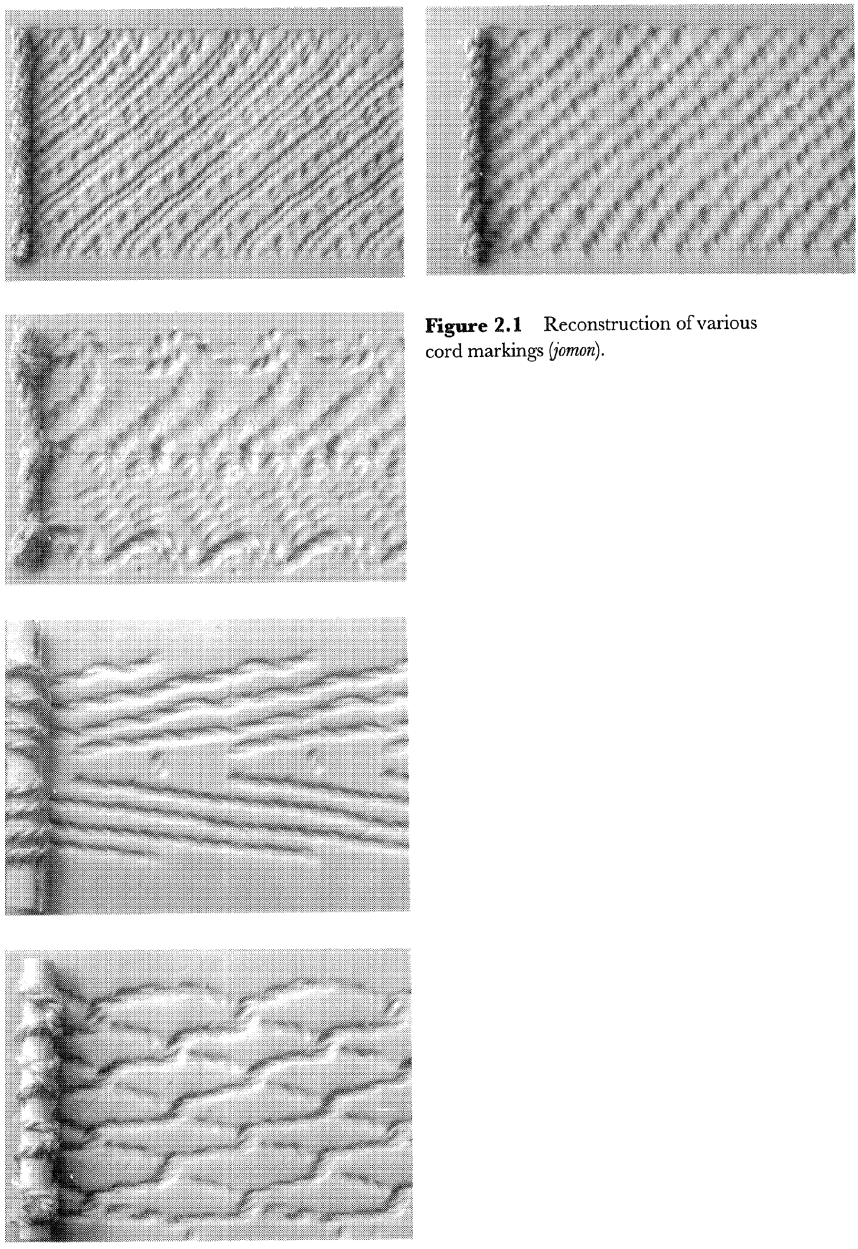

Figure 2.1 Reconstruction of various cord markings (*jomon*).

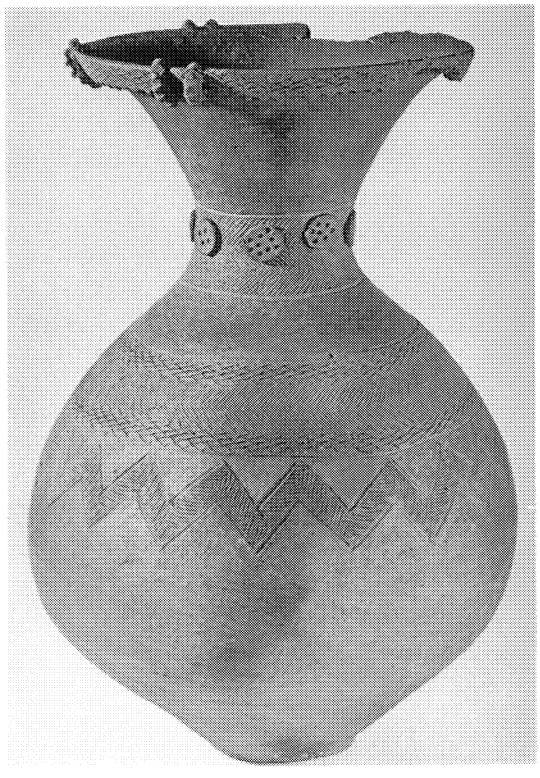

Figure 2.2 A Yayoi jar, decorated with cord marking.

The qualifier "full-scale" is necessitated by the fact that plant cultivation was already a part of subsistence during the Jomon period, and which some scholars have taken as agriculture. It is important to note, however, that although few archaeologists dispute the existence of plant cultivation in the Jomon period, very few regard it as important as it was in the subsequent Yayoi period. Therefore, the question of whether or not there was agriculture during the Jomon period depends both on an estimation of its importance among other subsistence activities, as well as on how to define cultivation and agriculture.

As discussed in the following chapters, the reason why many Japanese archaeologists distinguish "agricultural production" in the Yayoi period from "plant cultivation" during the Jomon period is the great wealth of evidence for Yayoi agriculture and its primary importance among subsistence activities. Rapid social developments during this period were undoubtedly also related to developments in agriculture. In contrast to this, the evidence for so-called "Jomon agriculture" is limited and its effects on society difficult to recognize.

If the Neolithic is defined by the presence of agriculture, and if any kind of plant cultivation for food production should be called agriculture, then the Jomon period, at least the latter half, may be appropriately regarded as Neolithic. Jomon culture, however, which well into the Holocene remained primarily dependent upon gathering, fishing, and hunting might better be assigned to the Mesolithic.

Nevertheless, apart from this economic base, the material culture evidence, such as the abundance of pottery and ground stone tools, ritual or symbolic objects, the remains of long-term sedentary settlements, and large-scale building works, all suggest a mode of life similar to that of other neolithic communities (Suzuki 1984).

As discussed in Chapter 8, of the variety of subsistence activities practised in the Jomon period, food gathering in forests is thought to have been the most important. Indeed, the most fundamental feature of Jomon culture was adaptation to temperate forests. Because Jomon subsistence was centred around useful trees rather than useful grasses, I am tempted to call the Jomon period an arboreal neolithic. An interesting suggestion in this regard is that during this period certain types of trees were encouraged to grow through the burning of forests (Fukui 1983, Hayashi 1992). However, at present, we cannot be certain about how trees were used. Even if it was ascertained that trees were artificially managed and controlled, could this be called agriculture?

In short, the Jomon cannot be labelled neolithic because its primary criterion, agriculture, is not recognized as its economic base. At the same time there are many features that distinguish Jomon settlements from mesolithic communities. Thus, the term Jomon seems best suited to indicate its unique characteristics.

The Yayoi period

The name Yayoi, designating the next period, comes from the location in Tokyo where a type of pottery characteristic of this period was found for the first time (Fig. 2.3; Tsuboi 1889). The primary feature of this period is agriculture, specifically wet-rice or paddy-field agriculture, as it is known in Japanese archaeology. Rapid social changes in the direction of state formation in this period are usually linked to the increase in agricultural production. There are few areas in the world where the emergence of agriculture brought about such rapid changes as in Japan. One reason for this is that the beginning of agriculture in Japan was much later than that in Continental Asia and as a result it was a highly developed form of agriculture that arrived in Japan. Since iron was developed in China shortly before the introduction of agriculture to Japan, iron and agriculture were introduced together into Japan. As wet-rice agriculture required the construction of rice fields, iron accelerated its development. Although the Yayoi period is similar to the Neolithic in marking the introduction of agriculture, bronze and iron tools were present from the beginning. In effect, Japan skipped over the Neolithic and Bronze age stages of development into the Iron age.

The late development of agriculture and metal in Japan stands in contrast to the stability as well as the overall complexity of Jomon culture, including the early development of ceramic technology, which makes it unique among other hunting–gathering cultures. Paradoxically, however, the stable and sedentary settlements and the annual subsistence patterns acquired over the long duration of the hunting–gathering economy contributed to the smooth transition and rapid development of agriculture, as will be explained in the following chapters.

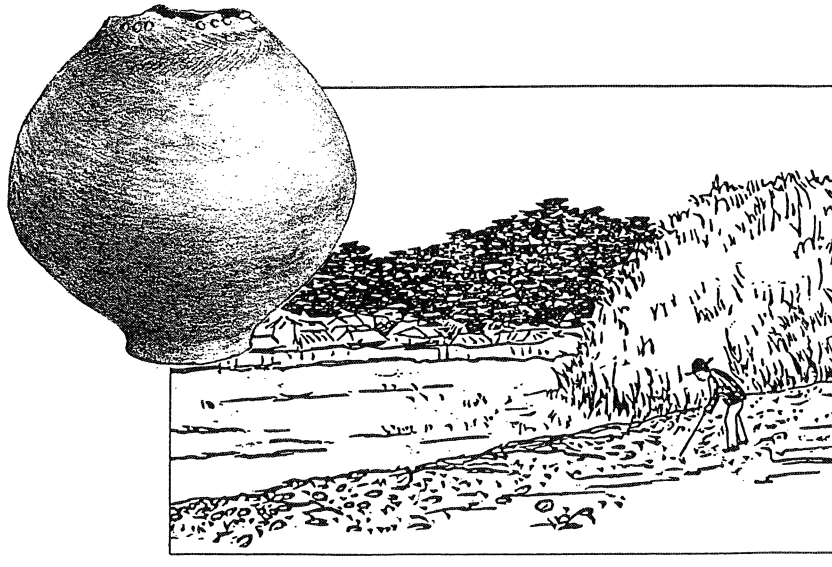

Figure 2.3 A sketch of the Yayoi shell midden at the time of discovery and the first specimen of Yayoi pottery (its top is missing) (Tsuboi 1889).

The Yayoi period was also a period of increasing social stratification and state formation. Approximately three hundred years after the beginning of wet-rice cultivation, indications of social stratification begin to appear in the archaeological evidence, especially in burials. In northern Kyushu, for instance, special burials with many bronze objects have been discovered, which tend to be located separately away from what appears to be common graves without furnished goods. Bronze artefacts during this period functioned as cult or prestige goods. Special burials with artificially constructed earthen mounds (*funkyubo*) also appeared in wide areas of southwestern Japan, including northern Kyushu. Some of these had a large mound and were also separately located.

The Kofun period

The Kofun period is distinguished from the Yayoi by a change from *funkyubo* mounded burials to the so-called *kofun* mounded tombs. The reasoning behind the division of graves into *funkyubo* (mounded burials) and *kofun* (mounded tombs) is that the difference between them is seen as indicative of important social transformation. Contrary to the *funkyubo*, which have many local variations both in the form of the mound and kinds of furnished goods, *kofun* display a remarkable uniformity in mound-form, burial chamber and equipment, covering pebbles, and the placing of *haniwa* or ceramic models of pots, stands and other utensils on the mound. In addition, bronze mirrors cast with the same moulds were distributed

among many *kofun* over the historical territory of Japan (Kobayashi 1961). This uniformity and extensive network seems to have been deliberately planned, and this change is seen as marking the establishment of a unified polity or alternately a coalition of powerful clans throughout Japan (Kondo 1983).

One of the oldest *kofun*, Hashihaka (see Fig. 14.11), which is a 278m long key-hole shaped mound, illustrates the jump in scale from the *funkyuubo*. This is seen as an epoch-making monument in the process of political unification.

Principles of period divisions

"Pre-ceramic" means "without pottery", "Jomon" is the name of a decorative pattern found on pottery, "Yayoi" is a site name, and "Kofun" is a type of grave (Table 2.1). The names given to Japan's prehistoric periods are inconsistent and confusing. But names are only a kind of symbol and are not themselves the content. The true contents are outlined above.

On the divisions of Japanese prehistory, Yoshiro Kondo argued as follows (Kondo 1986). The change from the Pre-ceramic to the Jomon was a technological one (the beginning of pottery), as evidenced in the appearance of pottery in the archaeological record. The change from the Jomon to the Yayoi was an economic one (the beginning of agriculture) as evidenced in wet-rice paddy-field sites, agricultural tools, and so on. The change from the Yayoi to the Kofun was a political one (the coalition of powerful clans throughout Japan) as evidenced in the change from *funkyubo* to *kofun*. Prehistoric and protohistoric Japan is not divided according to consistent criteria such as material technologies. Rather, the criteria themselves change from technological developments with little social significance to economic and finally political developments, each with increasing social significance, each period understood and expressed through the corresponding archaeological material.

Although the divisions of Japanese prehistory were not originally formulated with the aforementioned in mind, the efforts to grasp the most fundamental changes between them resulted in the present system. Y. Kondo gave systematic explanation to these divisions, which naturally arose in the course of study.

Pottery in the periodization of Japanese prehistory

Before Y. Kondo presented his synopsis, the late Sosuke Sugihara once insisted that Japanese archaeological divisions did not depend on material technologies, as in Western archaeology, but on pottery (Sugihara 1963, 1967); the Pre-ceramic, a period before pottery, followed by the Jomon, Yayoi periods based on Jomon and Yayoi pottery, and lastly by the Haji type pottery period, which is a synonym of the Kofun and early Historical periods. However, it is difficult to define Jomon, Yayoi, and Haji(ki) potteries as distinct ceramic assemblages according to well

Table 2.1 Periodization of Japanese archaeology.

Period	Date	Derivation of period name	Pottery	Ground stone tool	Bronze tool	Iron tool	Agriculture	Tomb of chief	Document	No. of subdivisions
Pre-ceramic (Palaeolithic)	~10,000 BC	Pre-ceramic	–	+	–	–	–	–	–	2, sometimes 3
Jomon	10,000 BC[a] ~2nd century BC[b]	Cord mark	Jomon type	+	–	–	?	–	–	6
Yayoi	5th century BC to 3rd century AD	Site name	Yayoi type	+	+[c]	+	+	+[d]	Recorded in China	4
Kofun	3rd to 7th centuries AD	Type of tomb	Haji(ki) type	–	+	+	+	+	Recorded in China	2 or 3
Historical	7th century AD~	Historical	Haji(ki) type	–	+	+	+	+	Contemporary record	

a. Possibly earlier than this.
b. Date of northern Tohoku. Jomon culture continued as Epi-Jomon in Hokkaido
c. Most were for ceremonial, not practical, use.
d. Developed during this period.

defined criteria. The earliest type of Yayoi pottery as distinguished by S. Sugihara, and which he correlated with the emergence of agriculture, has now been superseded by earlier types of Yayoi pottery, which once were taken as the final Jomon types and which correspond with earlier dates for the emergence of agriculture. This demonstrates the difficulty of periodization based on pottery types. Makoto Sahara, who gave up trying to define the Yayoi period by pottery typologies, defines Yayoi pottery as the pottery of the Yayoi period, which is defined by the existence of agriculture (Sahara 1975). Nevertheless, fundamental differences can be recognized between Jomon, Yayoi, and Haji(ki) potteries. Based on the current state of research, one can say that the beginning of agriculture seems to be simultaneous with the emergence of basic forms that feature Yayoi pottery although coexisting with Jomon remnant forms (see Fig. 10.6). Moreover, although it is difficult to pinpoint the precise time, the diffusion of several characteristic forms and following increase uniformity of pottery occurs around the time of the first *kofun* (Iwasaki 1991).

In any event, the role of pottery in providing a framework for the periodization of Japanese archaeology should be appreciated, because it was the original chronological scale with minute divisions on which the beginning of agriculture and the appearance of *kofun* are marked. Indeed, pottery chronology is one of the fundamental features of Japanese archaeology, and the temporally detailed orientation of the science is clearly impossible without it. Most Japanese archaeologists think deviations and occasional errors in radiocarbon dating are larger than the timescales of divisions made by pottery chronology. Therefore, they do not depend directly for their discussion on the absolute chronology provided by carbon dating but on the relative chronology of pottery sequence. However, they do recognize the indispensability of radiocarbon for absolute dates, especially for the period beyond recorded calendar years.

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CHAPTER THREE

Palaeolithic research on the volcanic islands

The first Palaeolithic site was discovered in Japan immediately after the Second World War, and, from then onwards, Palaeolithic research rapidly developed with the successive discovery of many sites. The Japanese Palaeolithic is characterized, among other things, by volcanic ash layers within which the majority of sites are found. These conditions provide the archaeologist with a wealth of evidence for constructing relative chronologies based on stratigraphy, and the many stone tool assemblages chronologically ordered in this way provide a firm foundation for further advances in Palaeolithic research.

The discovery of the Iwajuku site

Palaeolithic research made the most remarkable progress among all fields of Japanese archaeology following the Second World War. Up until then, even the existence of Palaeolithic sites had not been firmly established. Today about 5,000 sites from this period are known, hundreds of which have been fully excavated, resulting in the publication of thousands of excavation reports and articles.

The discovery of the first Palaeolithic site was made at Iwajuku (Gunma prefecture), shortly after the war, by Tadahiro Aizawa, an amateur archaeologist, and was later confirmed through excavation by a team of archaeologists from Meiji University in 1949 (Fig. 3.1, 3.2; Sugihara 1956). This was a great advance for Japanese archaeology, but it is surprising and embarrassing that the assumption that no humans lived on the Japanese Islands prior to the Jomon period should have hindered such research and discovery for so long. Previously, excavations would stop when the Jomon cultural layer was finished, but recent excavations have confirmed the existence of Palaeolithic material at many sites below layers containing Jomon material.

There are a few general features that characterize most Japanese Palaeolithic sites. One is that cultural remains are often contained within distinct volcanic ash layers. This is an ideal condition for constructing relative chronologies based on stratigraphy. By compiling sites with a succession of overlapping cultural phases in

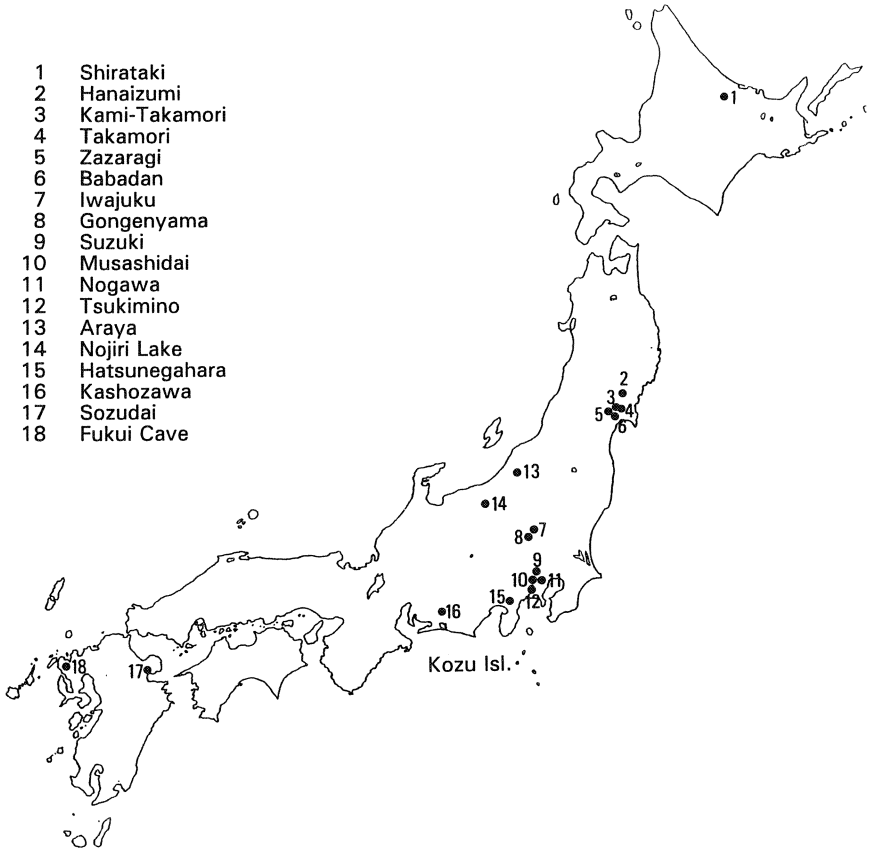


Figure 3.1 Palaeolithic sites referred to in the text.

conformity with the stratigraphical layers, the following progression of tool types was constructed for central Honshu within ten years after the Iwajuku excavation: stone axe (called hand-axe or oval tool originally) → knife-shape tool → leaf-shape spearhead → microblade (Fig. 3.3; Sugihara et al. 1965). Similar stratigraphical researches were carried out throughout Japan, each with different tool type progressions. The importance of volcanic ash layers for archaeology is that not only are they easily distinguishable from each other but they are also widely distributed throughout many sites. Thus, they provide a clear indication of the temporal relations among them, and through the analysis of variations in tool assemblages, which through stratigraphical correlation are known to be contemporary, provide insights into human behaviour. In short, volcanic ash layers have made it possible to put many assemblages into a clear temporal order as if they were at a single site. A typical example is the Musashino terraces region in the western suburbs of Tokyo, where a standardized stratigraphy has been established for layers III to XI in the Tachikawa Loam (the top part of the Kanto Loam volcanic ash) (Fig. 3.4;

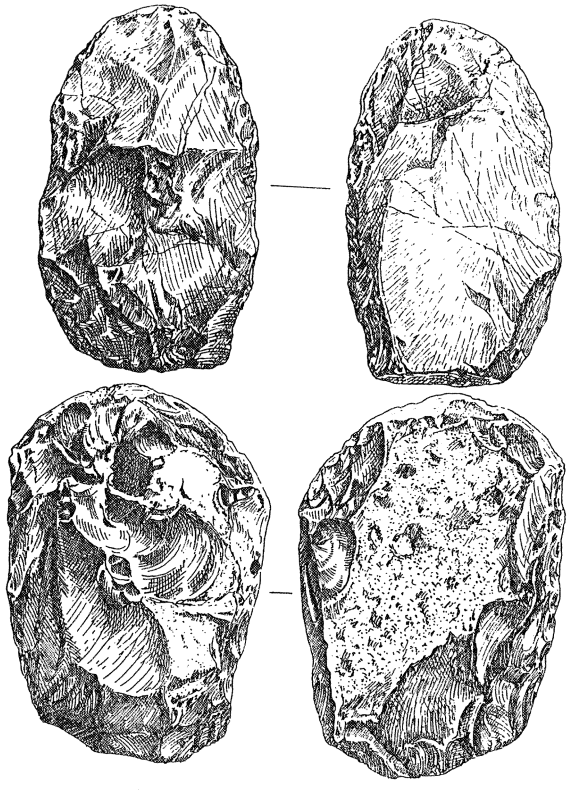


Figure 3.2 Stone tools unearthed from the lower layer of Iwajuku, which generated the controversy over the presence or absence of ground stone tools in the Japanese Pre-ceramic and its dating (Sugihara 1956).

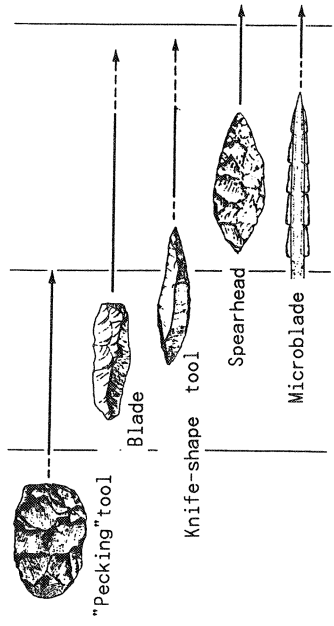


Figure 3.3 One of the earliest proposals to explain major tool development (Sugihara et al. 1965).

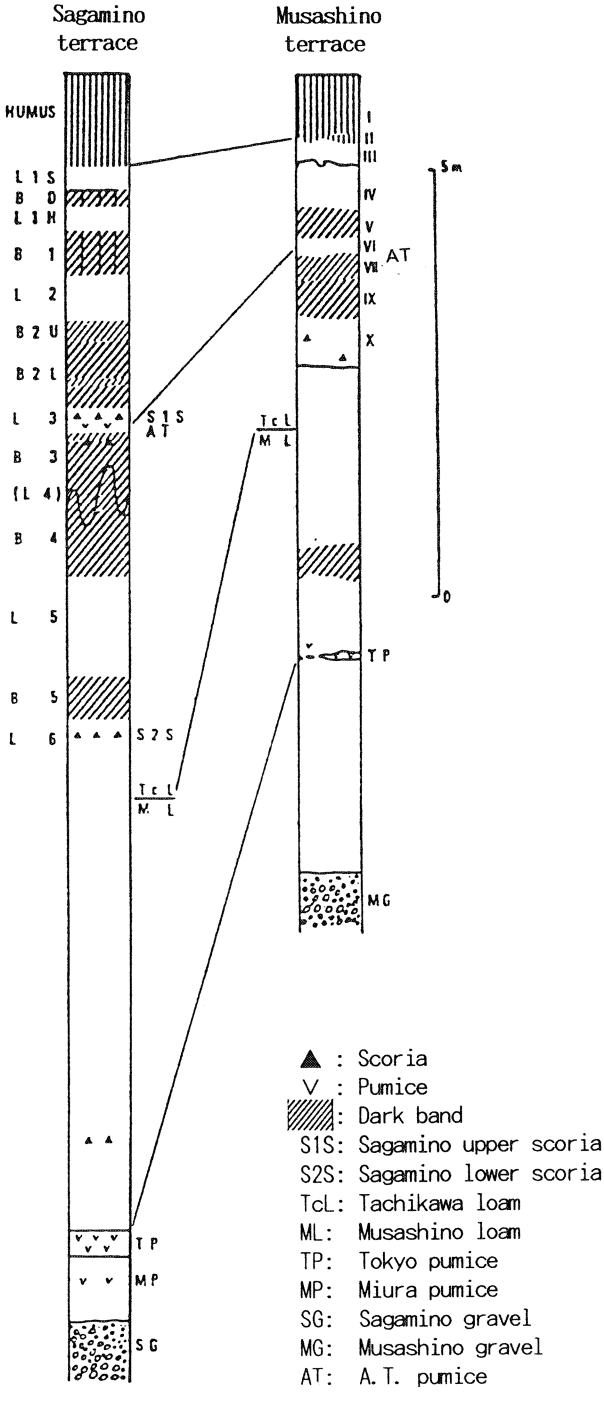


Figure 3.4
Standardized stratigraphical names of loam on the Musashino and Sagamihara terraces, as well as the correlation between the two (Suzuki & Yajima 1978).

Kobayashi et al. 1971). Because all excavations in this area basically follow this stratigraphical sequence, layer V of one site will be broadly contemporary with layer V of any another site in the same region.

The number of stone implements contained in a cubic metre of volcanic ash deposit is 10 or so at most. Various construction works accompanying the development of the Tokyo region and the legal obligation of developers to pay the expense of excavation has enabled many large-scale rescue excavations to be carried out. The result was the excavation of many sites, some of which had almost a dozen cultural phases. This brought about remarkable advances in Palaeolithic research. The aforementioned progression of major tool types was recognized to be not the product of the repeated replacement of one tool type after another, but the product of the continuing use of many kinds of tools, with a few types increasing and subsequently decreasing in number over time. Detailed morphological changes in stone tools were also clarified.

The extensive volcanic ash

The distribution of volcanic ash layers is varied, many with relatively small areas and a few with very extensive areas. The latter case is of course the most important for archaeology. The most representative among them is the AT (Aira–Tanzawa) pumice, which was erupted by the Aira Caldera in southern Kyushu. The eruption, which occurred 21,000–22,000 years ago, distributed volcanic ash as far as northern Honshu (Fig. 3.5). This pumice has been identified through mineral analysis as a very thin layer in layer VI of the Tachikawa Loam in the Tokyo region (see Fig. 3.4), and is so important for chronology that the Late Palaeolithic of Japan is divided into pre-AT and post-AT phases. Researches of pre-AT phases revealed an extensive distribution of similar stone tool assemblages throughout Japan, in contrast to post-AT phases, which were found to have distinct local variations. The representative tools of pre-AT phases are chipped or edge-ground stone axes and trapezoids or tools with a transversal edge like trapezes. Knife-shape tools also emerged in crude forms and developed into complete forms during this phase. This kind of tool became most common after the AT pumice.

Edge-ground stone axes of the Palaeolithic

There were two Palaeolithic cultural phases in Iwajuku, the first Palaeolithic site discovered in Japan. Among the tools from the earliest phase were two axe-like tools that appear to be either edge-ground or worn (Fig. 3.2). Although the excavator, Chosuke Serizawa, hesitated to judge the character of the edge, Sugao Yamanouchi judged it to be the product of intentional grinding. Including similar tools from other sites, he developed the theory that the Pre-ceramic period of Japan was not equivalent to the Palaeolithic in Europe and elsewhere, arguing that

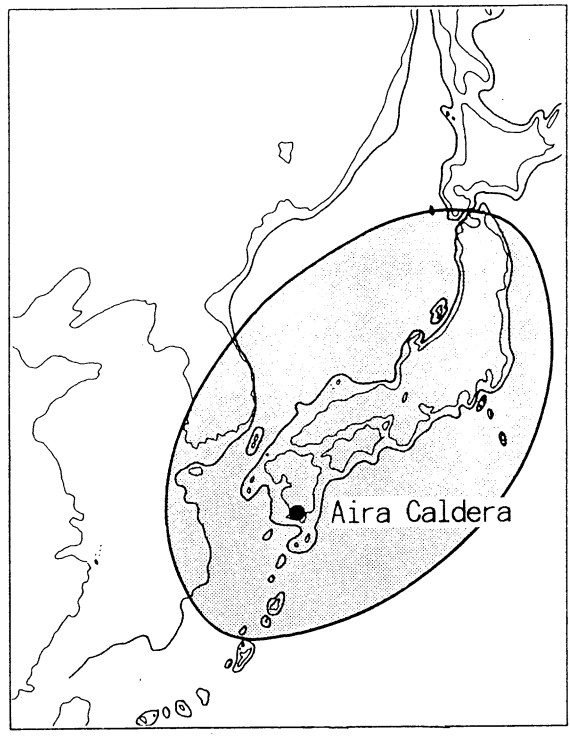


Figure 3.5
Distribution of AT pumice by an eruption of the Aira Caldera, 21000–22000 bp.

it was a Neolithic (following the old definition of tool types) without ceramics because it had ground stone tools (Yamanouchi & Sato 1962). This idea, as will be dealt with in the next chapter, combined with the problem of dating the beginning of the Jomon period and its pottery, aroused a fierce controversy concerning the position of Japan in the context of world prehistory.

Once large-scale excavations started from the 1970s, many axe-like tools with a ground edge were found in succession, many of which showed clear traces of intentional grinding. Even more surprising, such edge-ground stone axes were concentrated in the bottom, that is layers IX and X of the Tachikawa Loam and their equivalent in other areas. These layers have been radiocarbon dated from between 30000 and 25000 bp. More than a hundred such tools have been found from 30 sites throughout Japan, except in Hokkaido. At Musashidai (Tokyo City) two chipped and five chipped and ground stone axes were unearthed from layer Xb, dated around 30000 bp. Through refitting work, one of them, a small slender axe, was known to have been recycled from a wider ground-edge axe through a process of chipping and grinding again. Moreover, the curve of the ground edge of the reduced axe was found to fit the concave face of a whetstone with which it was discovered (Fig. 3.6; Yokoyama et al. 1984). Similar whetstones, which appear to have been used for grinding, were found from half a dozen sites. There is no doubt, then, that edge-ground stone tools were a part of the tool kit from 30000 to 22000 bp in the Japanese Palaeolithic.

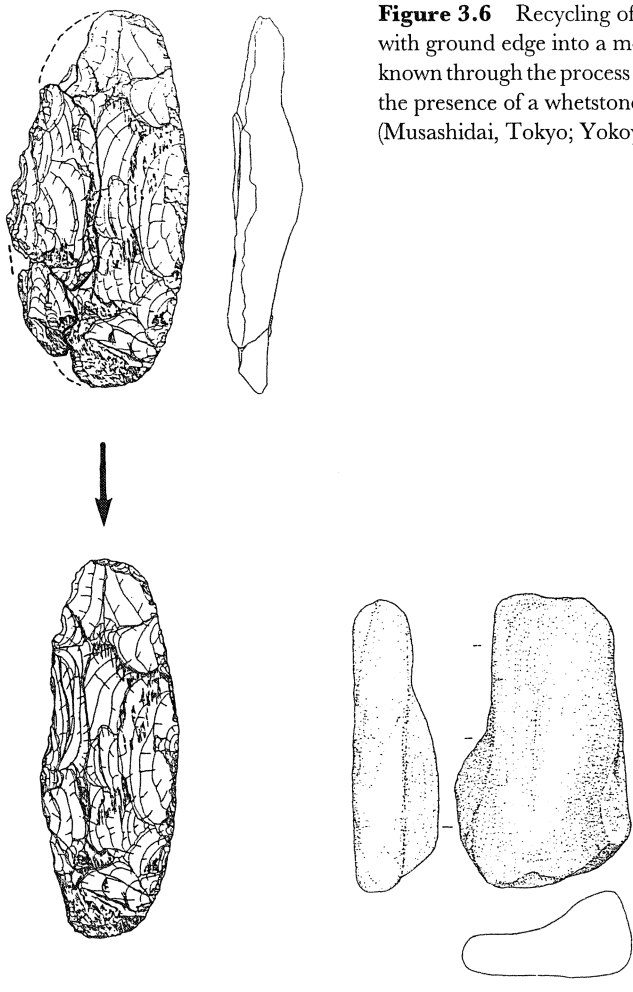


Figure 3.6 Recycling of a damaged stone axe with ground edge into a more slender one was known through the process of refitting flakes and by the presence of a whetstone found near the axe (Musashidai, Tokyo; Yokoyama et al. 1984).

However, such tools decreased in number in post-AT phases or the middle layers of the Tachikawa Loam and its equivalent. But at the top of the layer, *c.* 13000 bp, many large stone axes with a single edge or gouge appeared again in the context of Mikoshiba–Chojakubo culture (see Fig. 4.6; Hayashi & Fujisawa 1961, Yamanouchi & Sato 1967), which was once thought to represent the last stage of the Palaeolithic or Pre-ceramic, but recently very small amounts of pottery fragments have been discovered in some of their sites (Miyake et al. 1979, Ushirono 1976, Suzuki & Shiraishi 1980). Edge-ground stone axes of the culture have quite different forms from the early ones and the relation between the two groups is still not clarified.

A recent discovery of tar adhesion on an axe from Fujikubo–Higashi (Saitama prefecture) has enhanced the possibility that all these tools were hafted in some way and that they functioned as axes, although further use-wear study needs to be

done. It is worth noting that the first period with many axes, 30,000 to 22,000 years ago, corresponds to a comparatively less cold climatic phase in the last glacial stage, and dark layers of loam, caused by the comparatively good growth of vegetation and the deposition of humus sediments (Kurobe 1963), was formed during this time in the Kanto region. Thus, there appears to be a correlation between periods of vegetational growth and an abundance of stone axes.

The pursuit of "the Early Palaeolithic"

Always at the forefront of Palaeolithic research is the pursuit of older cultures. This pursuit is closely related to questions about the arrival of the first humans, and where they came from. In order to answer these questions, some excavations were carried out during the 1960s that generated a heated debate over whether or not the "stone tools" found were really of human manufacture and whether or not their dating was reliable, since most of the specimens were discovered under such conditions that stratigraphical correlation to standard sequence was difficult. Although genuine stone tools, confirmed by present criteria, had been discovered from some sites such as Gongenyama (Gunma prefecture; Maringer 1956), Kashozawa (Aichi prefecture; Komura et al. 1968) and Sozudai (Oita prefecture; Serizawa 1965), many naturally crushed "stone tools" had also been collected out of enthusiasm. This obscured the whole question and led sceptical archaeologists to dismiss the very existence of such early cultures. It was only after stone tools were found, from undisturbed secure layers below the Tachikawa Loam or its equivalent, that archaeologists accepted the possibility of such cultures dating earlier than 30000 bp. This problem was resolved at Zazaragi (Miyagi prefecture) in 1981 (Sekkibunka 1978–83) and was followed by the discovery of many sites with ideal stratigraphical conditions in the area around the site in the Sendai Plain (Miyagi prefecture). The lowest layer of the Babadan site goes back to 200,000 years ago (Fig. 3.7; Tohoku 1986–9) and the Takamori site was dated from 430,000 to 610,000 years ago by thermoluminescence, electron spin resonance and palaeogeomagnetic methods (Tohoku 1993). This date can be supported by the fact that there are as many thick layers between the cultural layers of Takamori and Babadan as between Babadan and the present.

To our surprise, two "hand-axes", "two cleavers", and two small tools found together in a small pit at Kami-Takamori (Fig. 3.8; Okamura 1995) in 1993 were stratigraphically correlated to the same age as Takamori. The "hand-axes" and "cleavers", although very similar in shape to such tools in the West, are too small to be taken as equivalents of Western Palaeolithic.

The designation "Early Palaeolithic" for these sites must be distinguished from the designation "Lower Palaeolithic" used outside of Japan. This is a local term created under special circumstances of the above debate to denote the boundary and differences between problematic earlier sites and sites of the established "Late Palaeolithic" after 30000 bp.

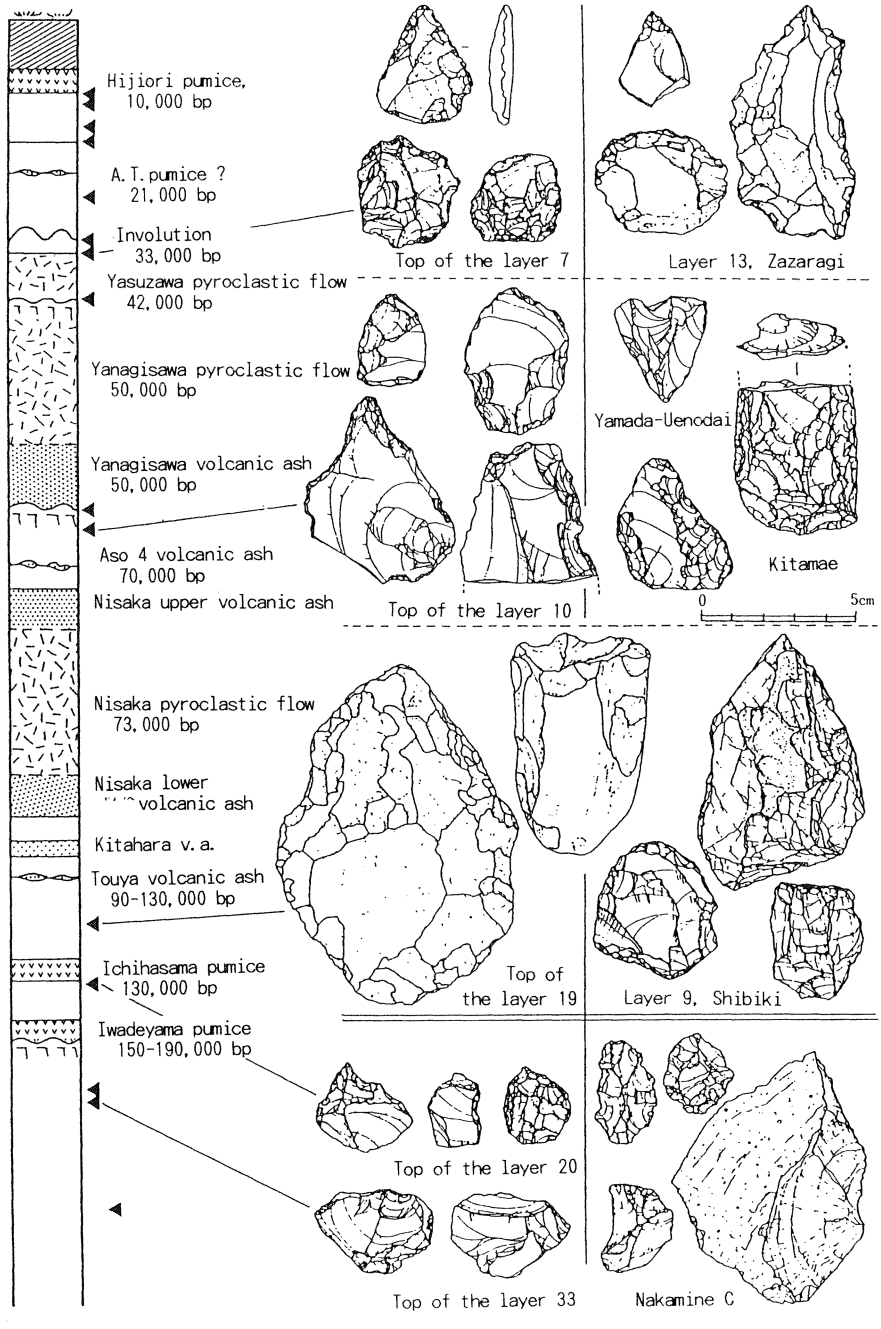


Figure 3.7 Stone tools from Babadan (left) and other temporally correlated sites, Miyagi prefecture (Tohoku 1986–9).

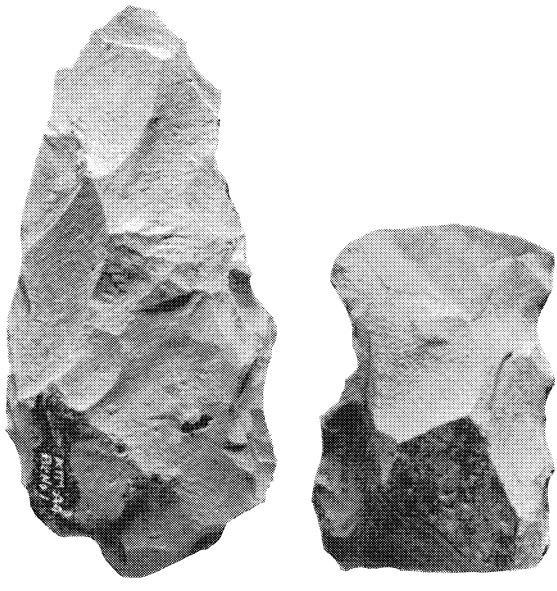


Figure 3.8 Stone tools from Kami-Takamori, Miyagi, *c.* 500000 bp (Okamara 1995).

Although changes in stone tool industries over this long time-span of the "Early Palaeolithic" necessitates the systematic naming of tools, some of the more typical tools are given here; hand-axe, cleaver, pick, many kinds of scraper, drill, and pointed flake. In the late stage of the "Early Palaeolithic" or "Middle Palaeolithic" (a term tentatively used by some scholars), other implements appeared, including axe-like tools without edge grinding and some kinds of flakes, which, judging from similar utilization modes of primary sharp edges to those of knife-shape tools and trapezoids, appear to be ancestral to those of the "Late Palaeolithic". These are particularly important since they link the "Early" and "Late" Palaeolithic into a domestic continuous sequence of stone tool traditions (Fig. 3.9; Anzai 1988, Sato 1990).

The palaeoenvironment

Although the extensive distribution of volcanic ash is favourable for research focused on stratigraphy and relative chronology, it does not favour research into the palaeoenvironment as human and animal bones are not preserved in the acidic soil. Some swampy Palaeolithic sites such as the Nojiri Lake (Nagano prefecture; Nojiriko 1984, 1987) and Hanaizumi (Iwate prefecture) yielded many animal bones, although rarely human artefacts, and these sites are not easily correlated with volcanic ash layers. Animal remains found there included extinct Asian indigenous species of deer, elephant, cow and horse (*Sinomegaceros yabei*, *Palaeoloxodon naumanni*, *Alces alces*, *Bos primigenius*, *Equus*, etc.). The discovery of sites located in

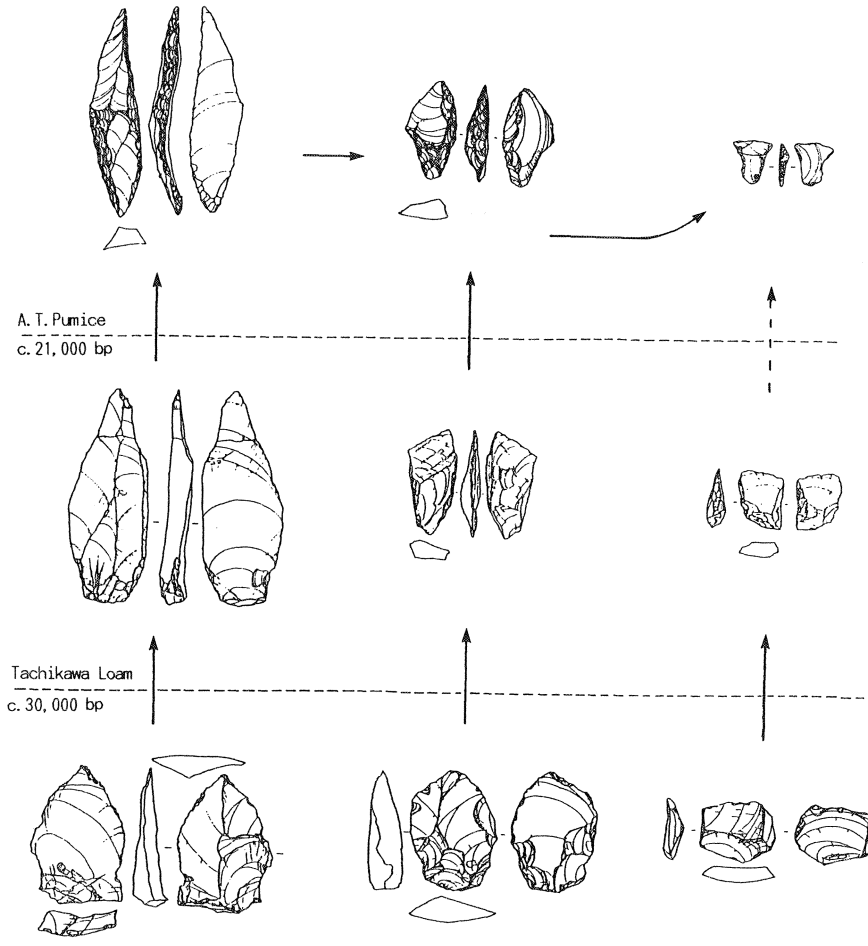


Figure 3.9 Development of knife-shaped backed tools and trapezes from flakes with primary edge or point as the functional part.

caves or rock shelters is also rare, and has contributed to the difficulty in clarifying relations among tool assemblages, fauna, and subsistence activities.

Because pollen is not preserved enough in acid soil, climatic change has been inferred from pollen analysis of sedimentary lake-floor deposits and correlated to archaeological sites by carbon dating. Such analyses suggest that the Palaeolithic climate was generally cool and comparatively dry, with a prominent interval of warm weather around 130,000 years ago, which corresponds to a phase of high sea level as well (Nasu 1985). Although it is difficult to reconstruct precisely the types of vegetation present, given the north–south span of the Japanese islands and the duration of the Palaeolithic, the vegetation is generally thought to have been a mixture of grassland and sparse woods. A reconstruction of the Palaeolithic landscape, by Yoshinori Yasuda, for 20,000 years ago is presented here (Fig. 3.10; Yasuda 1980).

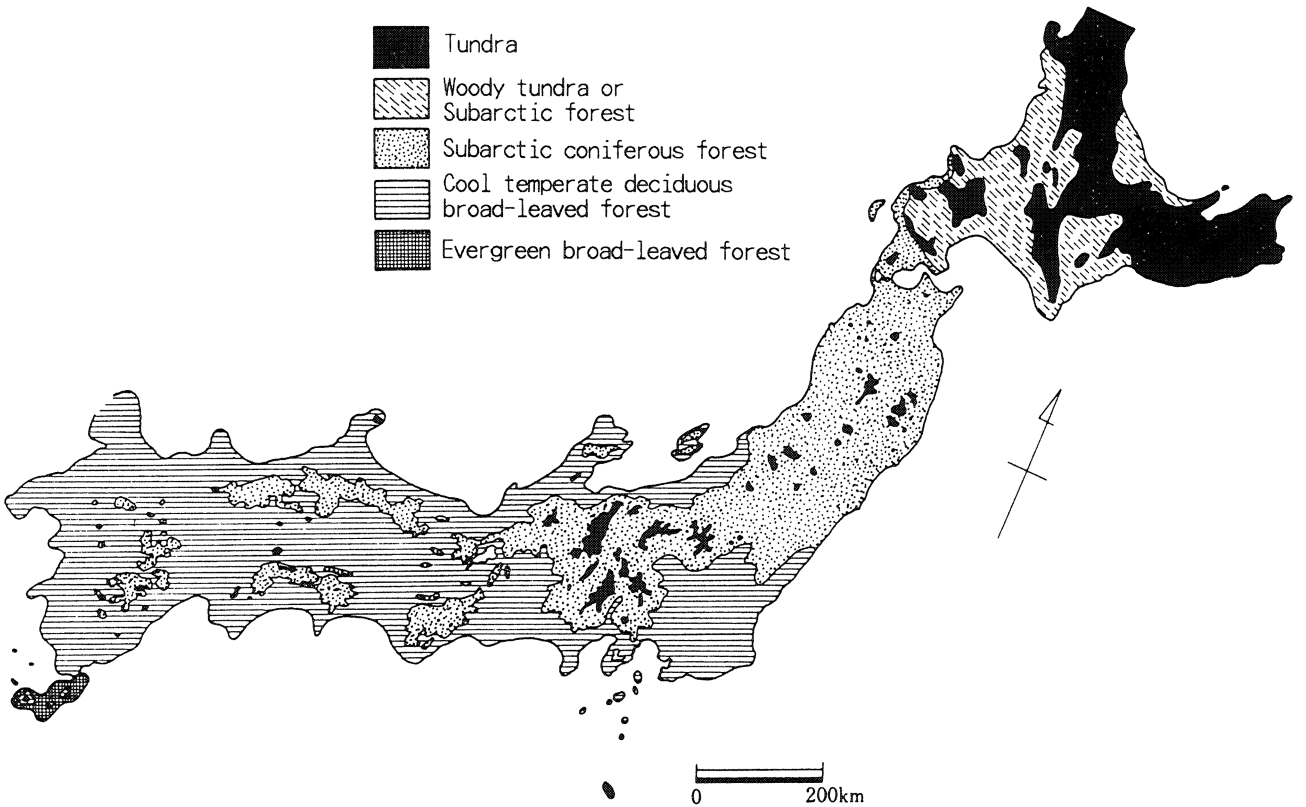


Figure 3.10 Reconstructed geography of vegetation around 20000 bp (Yasuda 1980).

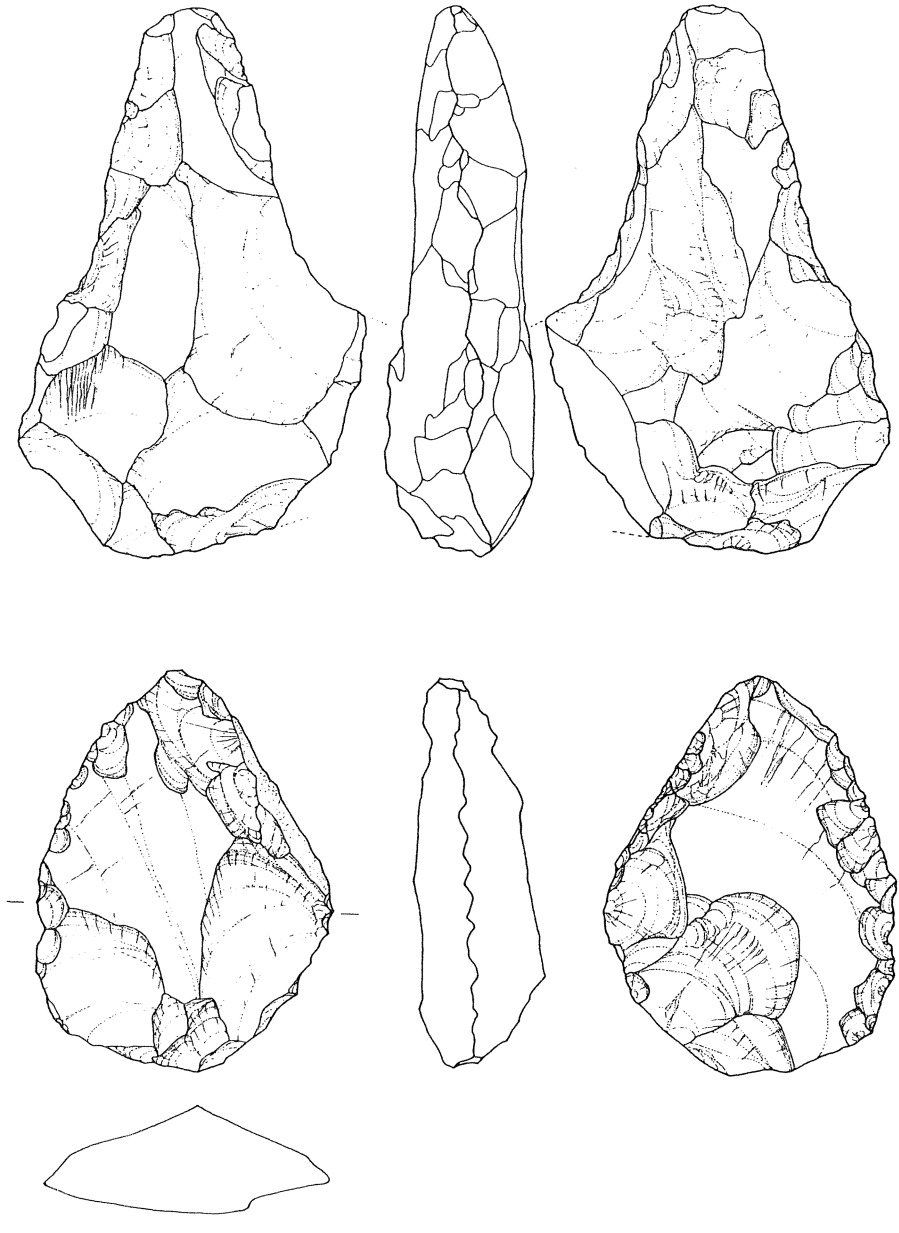


Figure 3.11 Hand-axes of the "Early" Palaeolithic, Gongenyama (Gunma) (Aizawa & Sekiya 1988).

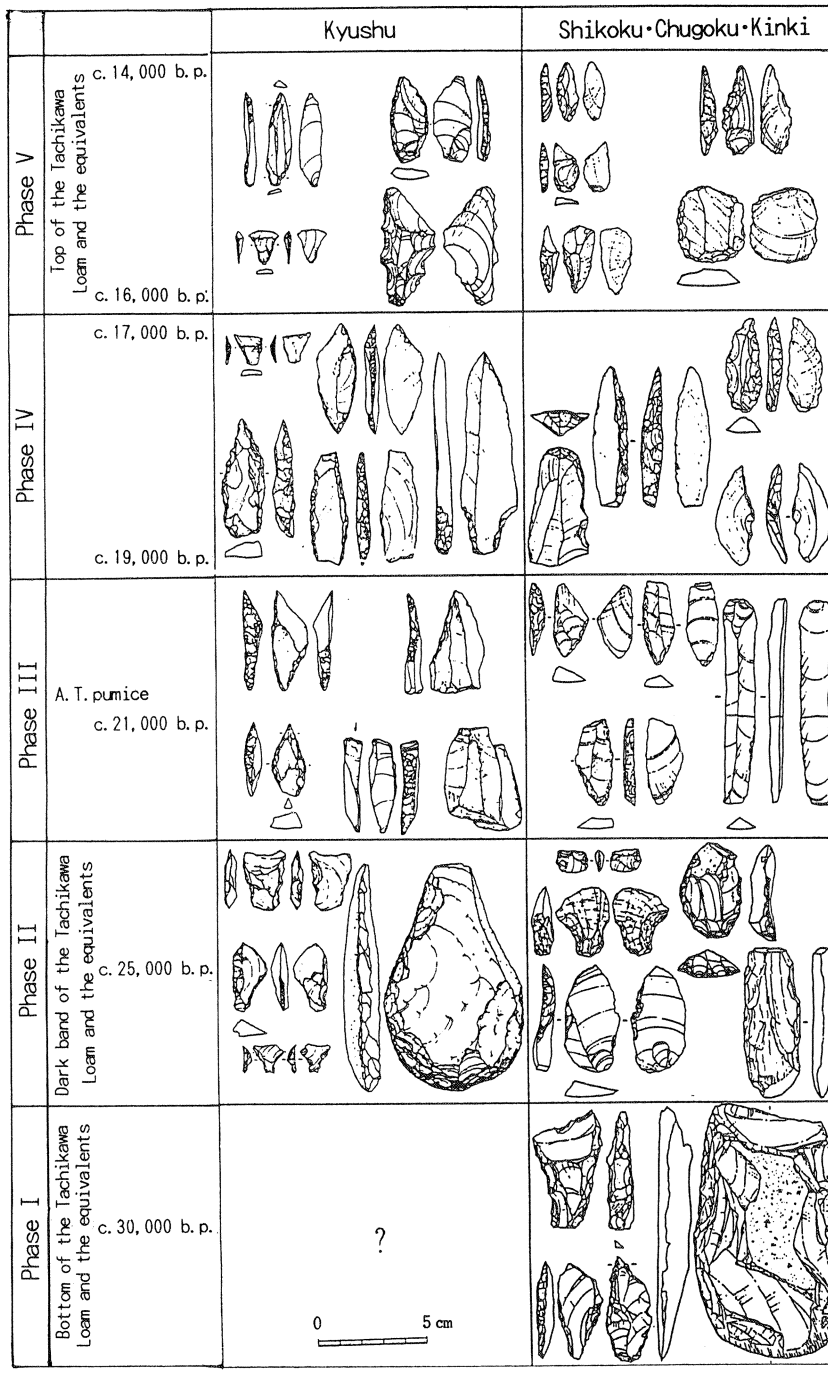


Figure 3.12 Temporal regional variations of knife-shape tool complex, Late Palaeolithic (Okamura 1990).

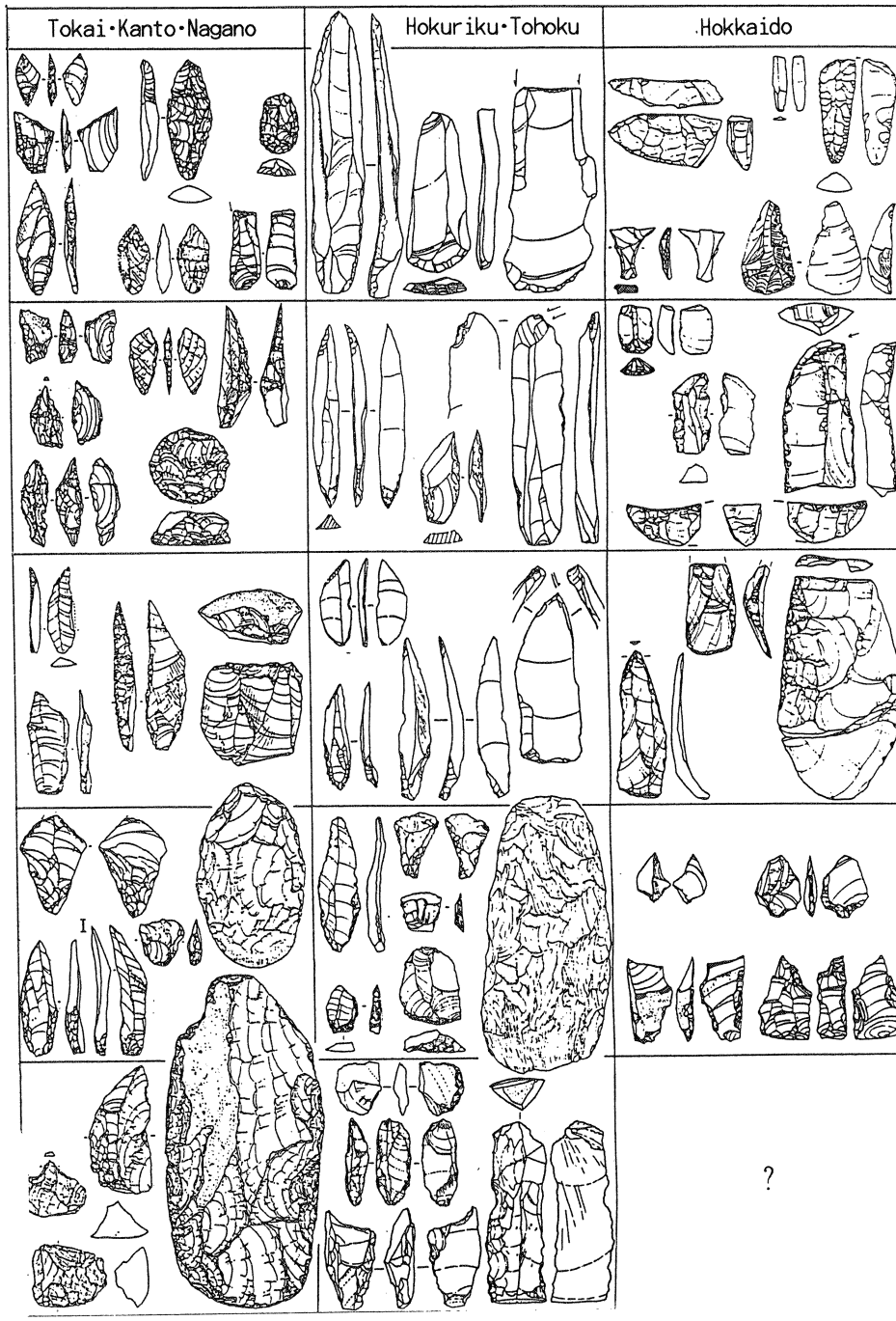


Figure 3.12 continued.

Contact with the mainland

For an island country such as Japan, the question of land bridges is fundamental and important for understanding the arrival of humans and animals, as well as for understanding cultural relations with the mainland. The Mamiya and Soya straits separating Hokkaido from the mainland are respectively only 20m and 60m deep. These easily cleared the surface waters during the glacial period, and the emergent land bridge enabled humans and animals to reach Hokkaido. Mammoth bones found in Hokkaido are just one example. In contrast to these, the Tsugaru strait between Hokkaido and Honshu, and the Korea–Tsushima Straits between Korea and Kyushu, are both 140m deep. At this depth, it is difficult to judge whether or not straits were replaced by a land bridge at the lowest ebb in the sea level. Formerly, these straits were seen as having been repeatedly open, with the repeated arrival and extinction of animals in the glacial period. However, recent re-examination of Pleistocene fauna, including small animals, revealed not only that the Middle Pleistocene fauna lasted without significant change until the Late Pleistocene but also that the newly arrived cold climate mammals of the late phase of the Late Pleistocene were limited in kind (*Equas, Alces alces, Bos primigenius, Bison priscus*). They did not bring about significant changes in the indigenous fauna (Kawamura et al. 1989). Even if these deep straits never dried up completely, the possibility of crossing the narrowed strait with primitive navigational techniques would have increased. In this respect, obsidian quarrying on Kozu, an island surrounded by deep sea to the south of Tokyo, is important. In particular, chemical analysis has confirmed that obsidian quarried on Koze was carried to Honshu as raw material for stone tools during the Late Palaeolithic. This suggests that Late Palaeolithic people had the ability to cross the sea (Suzuki 1973).

There are many questions to be clarified concerning the relationship between Japanese and mainland stone industries. Hand-axes were clearly present before 30,000 years ago in Japan (Fig. 3.11), as well as Chongongni, southern Korea (Kim & Chung 1979), and a relation between these hand-axes and those in the western half of the Old World has been suggested. However, the geological date of Gongenyama only a little earlier than 30,000 years ago and far later than Western hand-axes, has hindered us in taking them as equivalents to the Western ones. The above mentioned discovery of "hand-axes" from 500,000 years ago at Kami–Takamori (Fig. 3.8) seems to be carrying this problem into a new dimension.

Knife-shape tools, which were in common during the Late Palaeolithic of Japan (Fig. 3.12; Okamura 1990), are rarely found on the mainland. The site of Xiachuan, Shanxi province of China has backed blades similar to Japanese knife-shape tools (Fig. 3.13; Wang et al. 1978). However, these should not be taken as the ancestors to the Japanese ones, because the following process in the local development of tool types is known: obliquely struck pointed flakes of the final stage of the "Early Palaeolithic" → primitive type of knife-shape tools, that is, long flakes retouched in small areas at the end and base → complete knife-shape tools with blunting retouches on both sides of a blade (Fig. 3.9). Moreover, there are other local developments that took place from the Early to Late Palaeolithic, such as in

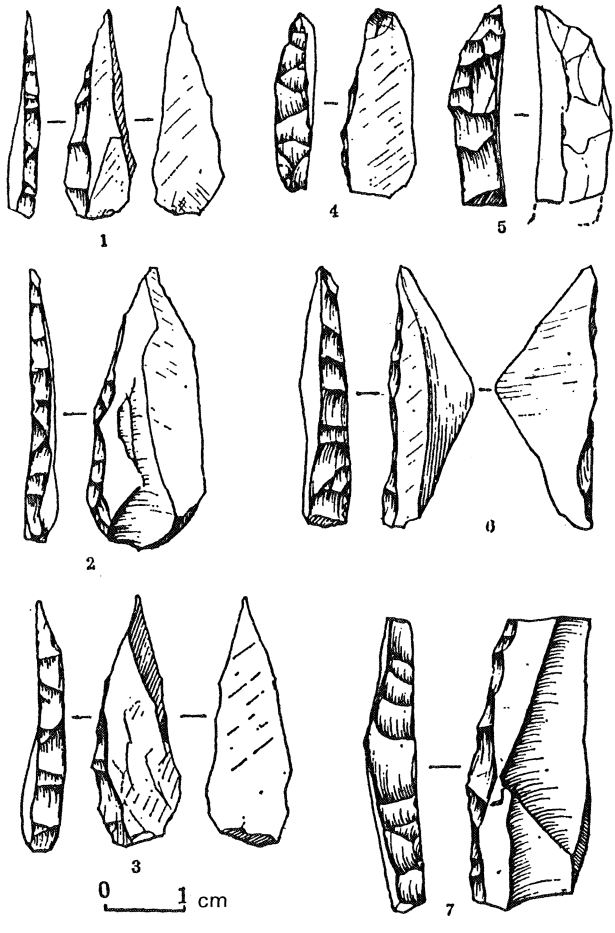


Figure 3.13
Knife-shape backed tools, Xiachuan, Shanxi province, China (Wang et al. 1978).

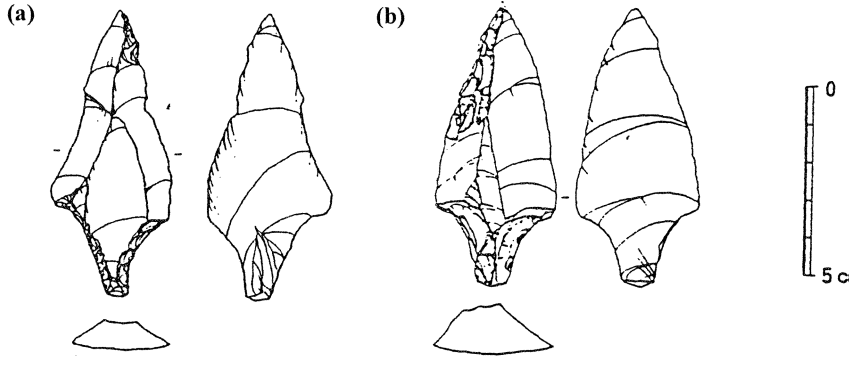


Figure 3.14 Knife-shape tool of the Suyanggai type common to Korea and Kyushu. (a) Suyanggai, Korea; (b) Tsuru, Oita, Kyushu. (Matsutuji 1989)

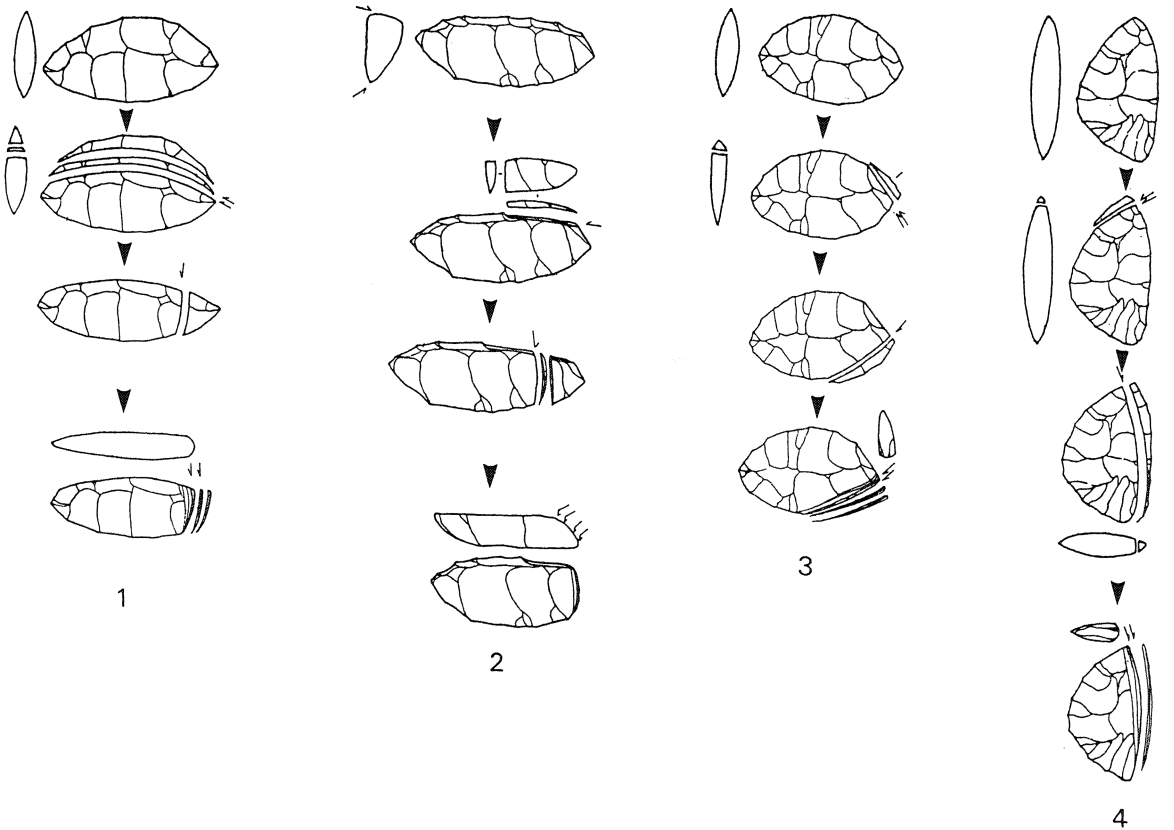


Figure 3.15 Process of microblade production by the Yubetsu and related techniques (Yoshizaki 1961, Kato & Tsurumaru. 1980).

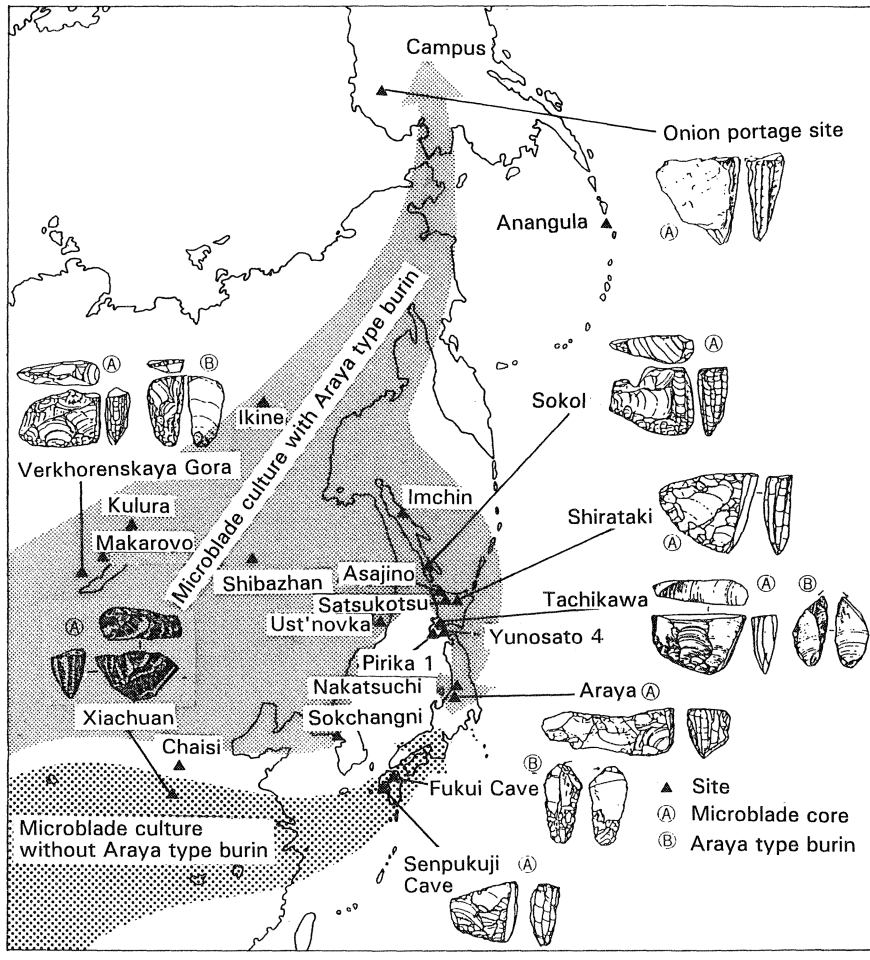


Figure 3.16 Diffusion of wedge-shape microblade core from the mainland into the Japanese islands (Yoshizaki 1986).

ground-edge axes and the change from small short flakes to trapezoids (Anzai 1988, Sato 1990). Thus, the relation between the knife-shape tools of China and Japan might best be understood as the result of similar requirements in terms of tool types and similar technical backgrounds in tool production, both of which encouraged the independent creation of similar tools at different places over an extensive area. There is also evidence for diffusion, such as the Suyanggae type knife (or tanged flake point), which was distributed both in Korea and Kyushu across the Korea–Tsushima Straits (Fig. 3.14; Lee 1984, 1985, Matsufuji 1989).

During the last stage of the Late Palaeolithic, a microblade industry prevailed throughout much of Japan. This was clearly a diffusion from the mainland, where such industries had appeared earlier. At this stage, however, there was a very extensive cultural area characterized by similar types of microblade, of which

Japan was a part rather than the receiving end of influence from mainland cultures. The chronology and tradition of microblades have primarily been characterized on the basis of core types with the most attributes. Wedge-shape cores peculiarly developed during this stage in East Asia. They are classified into many types, both by their form and by the process of core preparation (Fig. 3.15; Yoshizaki 1961, Kato & Tsurumaru 1980). Many types of wedge-shape cores are distributed both on the mainland and Japan (Kimura et al. 1993). Wedge-shape microblade cores are divided into two major traditions in Japan, one of which, accompanied with Araya-type burins and without pottery, spreads from Hokkaido to Okayama prefecture, mainly through coastal areas of the Japan Sea, and the other, often accompanied by pottery and without Araya type burins, is distributed in Kyushu. The former combination is also found throughout northern China, Siberia and Alaska, whereas the latter with cores produced by the Fukui technique is also found at Mandalri, Korea, several sites of the middle reach of the Yellow River, and Xiqiaoshan, Guangdong Province of China (Fig. 3.16; Kato & Matsumoto 1984). As will be discussed in Chapter 4, the latter type is important in relation to early (although not the earliest) pottery in Japan, but its mainland counterparts are not known to have had pottery.

CHAPTER FOUR

Earliest pottery and the dates controversy

^{14}C dating placed both Japanese ground stone tools and pottery as the earliest in the world. However, it was not unusual for archaeologists to view such dates sceptically since it did not seem plausible that such advances could have been achieved so early in the remote islands such as Japan. Thus, a controversy arose between those who rejected radiocarbon dating while adhering to the traditional independent method of archaeology and those who depended on scientific methods for dating. In short, it became a question of fundamental attitudes and orientation to archaeology.

Relative chronological study of Jomon pottery

A continuing problem in Jomon research is the pursuit of the earliest pottery. Discovery of the earliest pottery is necessary to reveal how the Jomon period began, and to bring to light the state of the ceramic technology introduced from the mainland and the accompanying cultural components. At least, that is what is expected. However, it is impossible to discuss the true origin of Jomon pottery before we discover the earliest type of pottery in Japan. Although apparently approaching this goal, it has not yet been completely realized.

I will begin with a brief history of the relative chronological study of Jomon pottery. I would note first of all that original archaeological studies had been carried out prior to the introduction of Western archaeology and anthropology, although it bears no direct relation to the chronological study of pottery. Sekitei Kiuchi (1724–1808) and Teikan To (1732–97) were among those who took such studies, collecting, classifying, and compiling catalogues of stone tools (Fig. 4.2; To 1807), as well as discussing who had made them.

Japanese scientific archaeology began with the excavation of a shell midden at Omori (Tokyo City) by the American biologist Edward S. Morse in 1877 (Fig. 4.3; Morse 1879). Two years later, another excavation of a shell midden at Okadaira (Ibaragi prefecture) was carried out, this time by Japanese students who had learned from E. S. Morse (Iijima & Sasaki 1883). The pottery from this site was

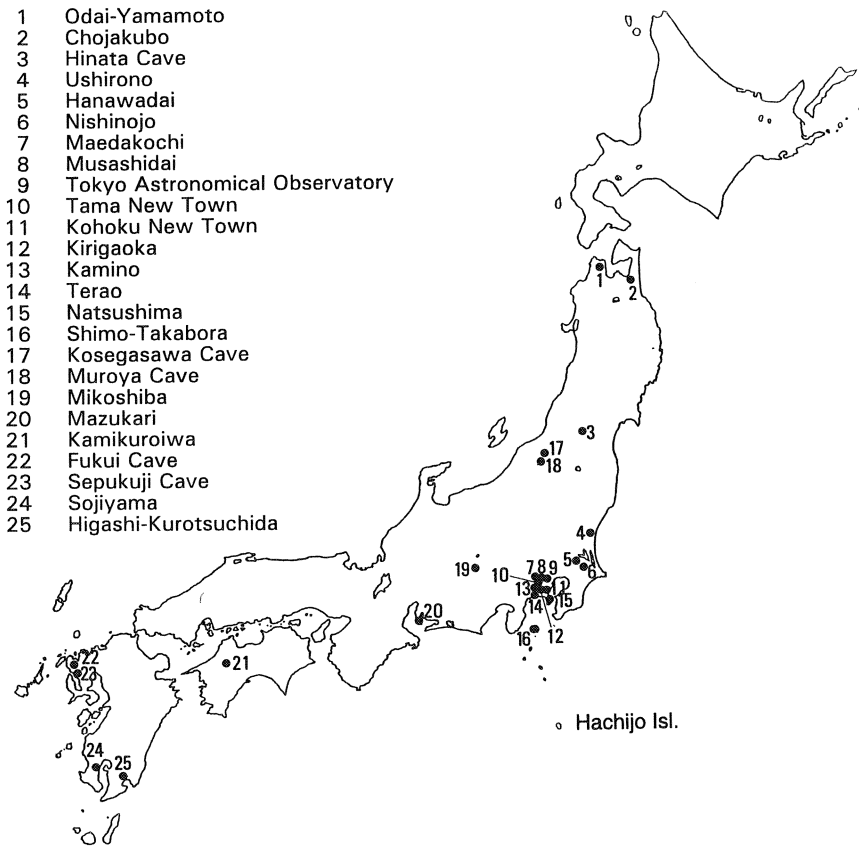


Figure 4.1 Incipient and Initial Jomon sites referred to in the text.

generally thicker than that from Omori and later came to be called the "thick type" as opposed to the "thin type" from Omori. Yayoi pottery, as later it came to be called, was discovered for the first time in a town of the same name in Tokyo in 1884 (Fig. 2.3; Tsuboi 1889).

For a while, archaeological debate concentrated on the question of the racial identity of the people who had left the Jomon and Yayoi potteries; this was the so-called period of racial debate. Ryuzo Torii, who made a comprehensive survey of this question, attributed Jomon pottery to the modern Ainu race and Yayoi pottery to the Yamato race, that is, the historical and present-day Japanese. He went on to suggest that the thick type of Jomon pottery was left by hunting tribes based in inland mountainous areas, and the thin type by fishing tribes living in coastal areas (Torii 1920).

Although R. Torii was finishing his theory in the 1910s, a new movement began with a different methodology. This was chronological research, the aim of which was to put pottery in temporal order through stratigraphy. Hikoshichiro Matsumoto, a palaeontologist, pioneered this work with careful excavation of several

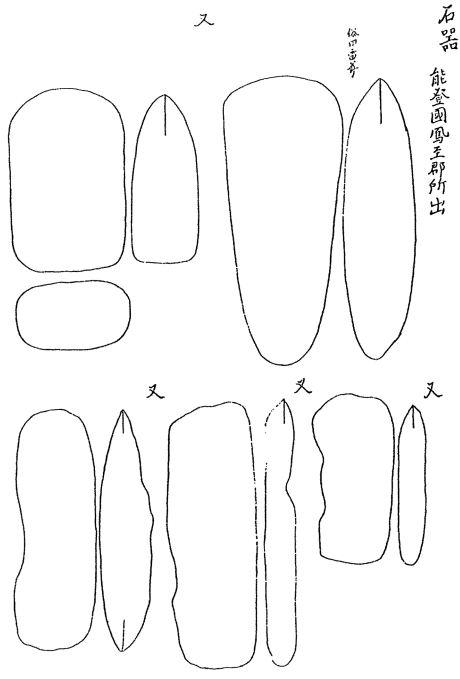
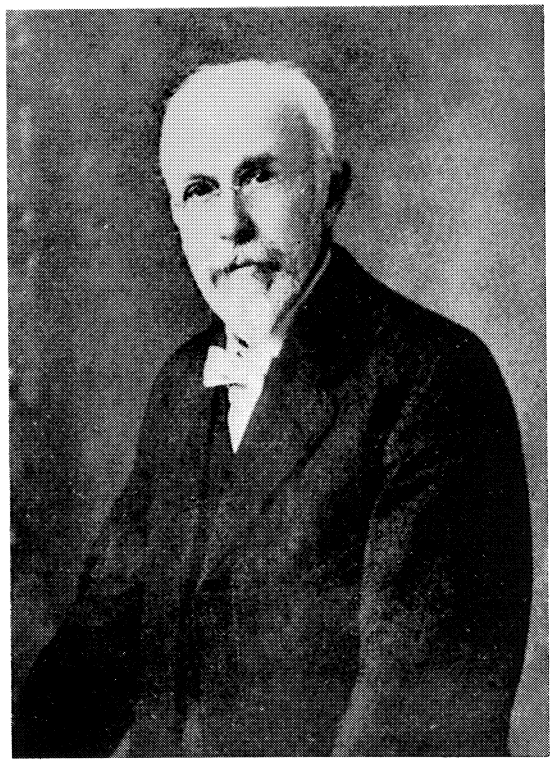


Figure 4.2 Some of the figures contained in the *Catalogue of antiquity* by Teikan To (1807).

shell middens in the Tohoku district. Not preoccupied by racial interpretations, he dealt with pottery objectively, as if it was standard fossils, and examined the temporal relations in it by stratigraphic evidence (Matsumoto 1919).

This method had a strong influence on young students, who, in their turn, applied the method to an excavation at the Kasori shell midden (Chiba prefecture) in 1924. At location B of the site, Kasori B type pottery was contained in a layer lying on the top of another with Horinouchi type pottery. At location E, the Horinouchi type was found above that of the Kasori E type. Thus, the sequence Kasori E → Horinouchi → Kasori B from early to late was established (Table 4.1; Yahata 1924). Kasori E and Kasori B were respectively a variety of the thick and thin Jomon pottery types. Consequently, the two types of pottery that Torii had attributed respectively to inland hunters and coastal fisher folk were placed in different temporal positions. This result further encouraged the development of chronological research. As early as 1928, Sugao Yamanouchi reported the following order: pottery with fibre in the body → Moroiso type without fibre → Katsusaka and Otamadai types → Kasori E type → Horinouchi type → Kasori B type → Angyo type (Yamanouchi 1928). This was the original form of the chronological sequence of the Kanto district. In 1932 he added five earlier stages – Mito → Tado lower → Tado upper → Shiboguchi → Kayama – ahead of the above chronology (Yamanouchi 1932). In 1937, in his paper titled "Main divisions and subdivisions of Jomon pottery", Yamanouchi proposed five major divisions throughout Japan with the aim of putting the increasing number of types in order (Yamanouchi 1937). He was also able to demonstrate local equivalent types to those of the Kanto and



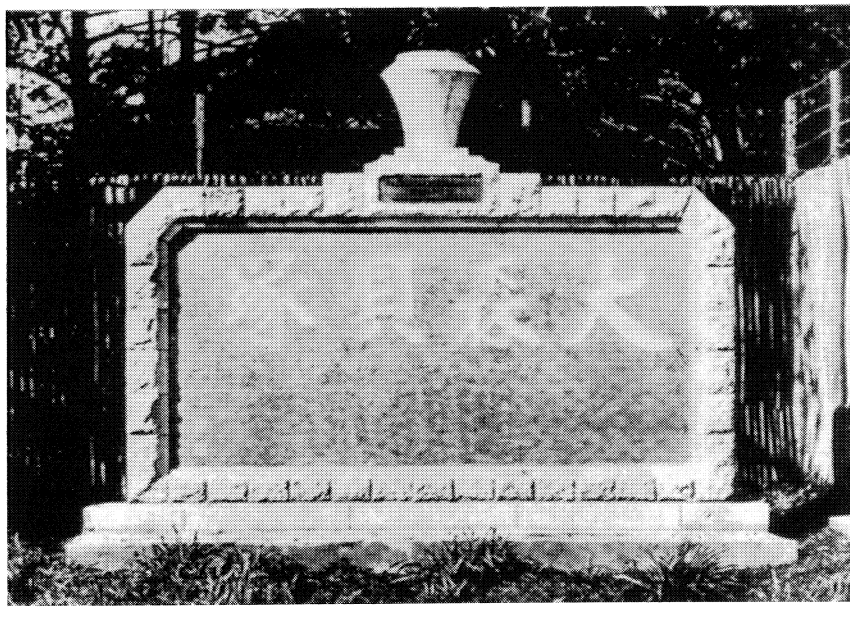


Figure 4.3 E. S. Morse and the monument erected at the Omori shell midden site.

Table 4.1 Development of relative chronological study of Jomon pottery.

Kasori S M 1924	Yamanouchi 1928	Yamanouchi 1932	Yamanouchi 1937	Natsushima 1950	Muroya, Hukui 1960–62		
			Final: Angyo 3, Angyo 2			Fifty types	Final (VI)
Kasori B			Late: Angyo 1, Kasori B2, Kasori B1				Late (V)
Horinouchi			Horinouchi				
Kasori E	Kasori E		Middle: Kasori E2, Kasori E1				Middle (IV)
	Katsusaka/ Otamadai		Katsusaka/ Otamadai				
	Morioso		Early: Juusanbodai, Morioso B, Morioso A				Early (III)
	Fibre-tempered		Kurohama, Sekiyama, Hanazumi				
		Kayama, Shiboguchi, Tado upper, Tado lower, Mito	Initial: Kayama, Shiboguchi, Tado upper, Tado lower, Mito	Tado lower			Initial (II)
				Inaridai, Natsushima, Igusa	Igusa		
					Muroya lwr, Cord impr., Nail imp., Linear appl.		Incipient (I)

Tohoku district, which were the leading areas of research. These five major divisions were later revised into six stages in order to deal with newly discovered types and were called the Incipient, Initial, Early, Middle, Late, and Final phases. I shall designate them here by their numerical position in order to avoid confusion (Table 4.1).

Since Yamanouchi's proposals, Jomon research has primarily focused on constructing a more detailed pottery chronology throughout the country and on positioning all sites and artefacts onto the chronological table. Good or bad, the overconcentration in this field in Japanese archaeology has continued to the present. By 1970 about 50 types had been placed in chronological tables from each of the dozen regions. Many of such types are being divided into further temporal subdivisions.

Pursuit of the earliest pottery coincided with the construction of an overall chronology. In 1941 and 1944, pottery of the Inaridai and the Igusa sites was reported

in succession. These Inaridai and Igusa types were thought to occupy the oldest position because of their crude appearance and their stratigraphical position at the bottom of the black humus layer. Jomon pottery is always found within the humus layer of any site. These types are generally called the Yoriitomon series, a name referring to a characteristic cord mark applied by rolling a cord-wrapped dowel on the surface of the pot. The internal relation between the two types was clarified by excavations at Daimaru in 1951 by C. Serizawa and at the Natsushima shell midden in 1955 by S. Sugihara and others. The following succession of types was established by stratigraphy: Igusa → Natsushima → Inaridai → (blank) → Tado lower (Sugihara & Serizawa 1957). However, it was not the stratigraphical result but the corresponding radiocarbon dates that created a sensation. Prior to this carbon–14 dating had scarcely been applied to Jomon pottery. The dates given to the Natsushima-type pottery taken on samples from accompanying shell and carbon were respectively 9450±400 bp and 9240±500 bp, which were the oldest among any dates given to pottery in the world.

Excavation of the Iwajuku site had been completed in 1949. Hence, the origin of the Jomon culture was to be pursued on two fronts: ascent from the Jomon side and descent from the Palaeolithic side. Moreover, despite the astonishingly early date from Natsushima, pursuit of even earlier pottery did not slacken. Excavation of the Hinata Cave (Yamagata prefecture) in 1955 yielded many new kinds of pottery types, such as those decorated with linear appliqué, nail impression and cord impression. The latter type of decoration aroused the special interest of S. Yamanouchi, because it was produced by the successive pressing of a short cord onto the surface of the pottery, in contrast to common *jomon* cord-marking, which was achieved by the rolling of a cord. S. Yamanouchi suspected that the former might be the original form of the *jomon* cord mark. However, the chronological relationship between these kinds of pottery could not be clarified because of the lack of stratigraphical evidence.

Excavation at the Kosegasawa Cave (Niigata prefecture) in 1958–9 yielded similar kinds of pottery as well as great quantities of stone tools, which attracted the attention of the excavator, Kozaburo Nakamura, because there were many kinds of stone tools, such as scrapers, spearheads, and tanged points, which had been scarcely known from other Jomon contexts (Fig. 4.4; Nakamura 1960). Muroya Cave, located 9km up stream from Kosegasawa, was also excavated by K. Nakamura in 1960–62. An important fact was ascertained that there was a new type of pottery that resembled the cord-impression pottery from the Hinata and Kosegasawa Caves and was found beneath a layer containing the Igusa-type pottery, the oldest type of the Yoriitomon series (Nakamura 1964). As a result of this discovery, pottery from Hinata, Kosegasawa, and other additional sites was consigned to the earliest position, although the interrelationship among the types was not clear, replacing the Yoriitomon series, which had previously occupied the earliest position for 20 years.

Around the time of the Muroya excavation, C. Serizawa excavated a cave at Fukui (Nagasaki prefecture). There the nail-impression type and the linear-appliqué type were found from upper and lower layers respectively and both were

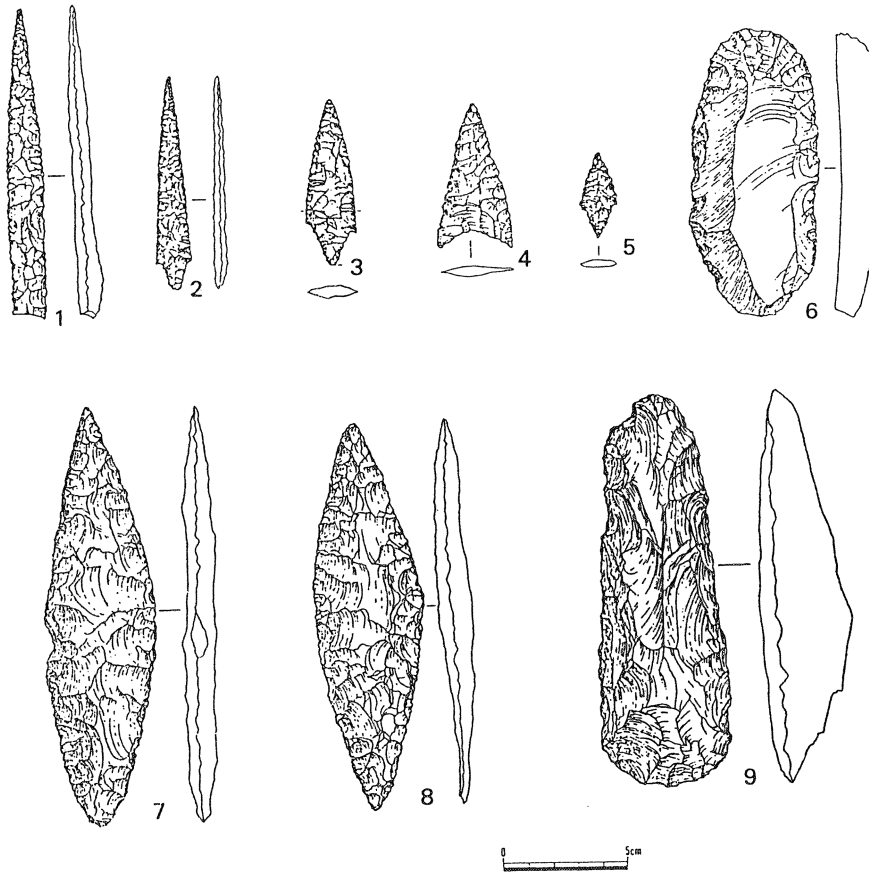


Figure 4.4 Typical stone tools of the Incipient Jomon from Kosegasawa, Niigata. 1: slender point; 2,3: tanged point; 4,5: arrowheads; 6: end-scraper; 7,8: spearheads; 9: unifacially edge axe (adze) (Nakamura 1960).

accompanied by a microblade assemblage. The layer beneath these two layers contained only a microblade assemblage (Kamaki & Serizawa 1965). Based on this, C. Serizawa suggested the following sequence for the emergence of pottery in Japan: microblade without pottery → microblade with the linear-appliqué pottery → microblade with the nail-impression pottery. Although cord-impression pottery was not found there, he was sure that it followed nail-impression, and he insisted that pottery was born within the microblade culture. As research progressed and extended, however, three areas with quite different combinations of artefacts were seen (Table 4.2). In northern Kyushu, as we have seen, a combination of the linear-appliqué or nail-impression pottery with microblades was known. In Honshu and Shikoku, such pottery types were not accompanied by microblades but by tanged points. In Hokkaido, in turn, tanged points existed without pottery. Thus, it is clear

Table 4.2 Combinations of stone tools and pottery types around the time of the emergence of pottery.

Northern Kyushu		Honshu		Hokkaido	
Stone tools	Pottery	Stone tools	Pottery	Stone tools	Pottery
			Yoriitomon series, 9500–8500 bp		No pottery ?
			Muroya lower		Rare
			Cord impression		
Microblade	Nail impression		Nail impression		
				Tanged point	No pottery
Microblade	Linear appliqué 12000 bp	Tanged point	Linear appliqué 12000 bp		
		Chojakubo–Mikoshiba assemblage	Pottery in rare cases	Chojakubo–Mikoshiba assemblage ?	No pottery
Microblade	No pottery	Microblade	No pottery	Microblade	No pottery

that in all areas except Kyushu, microblades did not continue until the emergence of pottery, and there is an important stage of Mikoshiba–Chojakubo culture between microblades and linear-appliqué pottery in Honshu.

The earliest pottery, the linear-appliqué type was dated by radiocarbon methods taken on samples of carbonized material at 12500±350 bp and 12700±500 bp for the Fukui cave (Kamaki & Serizawa 1967) and at 12,165±350 bp for the Kamikuroiwa Rockshelter (Ehime prefecture), Shikoku (Esaka et al. 1967). These dates fit well with those of the Natsushima type pottery, because the former linear-appliqué is earlier than the latter Natsushima by four major types of pottery (linear-appliqué, nail-impression, cord-impression, and Muroya lower) each divided into subtypes. Nevertheless, the problem of the very old dates of Jomon pottery as compared to other areas of the world was intensified (Fig. 4.7).

Controversy over the dating of Japanese prehistory

These early dates, together with the problem related to the edge-ground stone tools of the Pre-ceramic period, aroused a fierce controversy. (In this section, I use the term Pre-ceramic instead of Palaeolithic because the question of whether or not the pre-Jomon period is equivalent to Palaeolithic or non-ceramic Neolithic of other areas of the world is being dealt with.) S. Yamanouchi, who established the major structure for the whole of Japanese prehistory, and his devoted student Tatsuo Sato, rejected such extraordinary dates and led the opposition group. This controversy involved not only the date of Jomon pottery but also the date of the preceding Pre-ceramic period. In their joint paper "The age of the Jomon pottery" published in 1962 (Yamanouchi & Sato 1962), they pointed out the existence of edge-ground stone tools in the Pre-ceramic context and attributed them to a non-

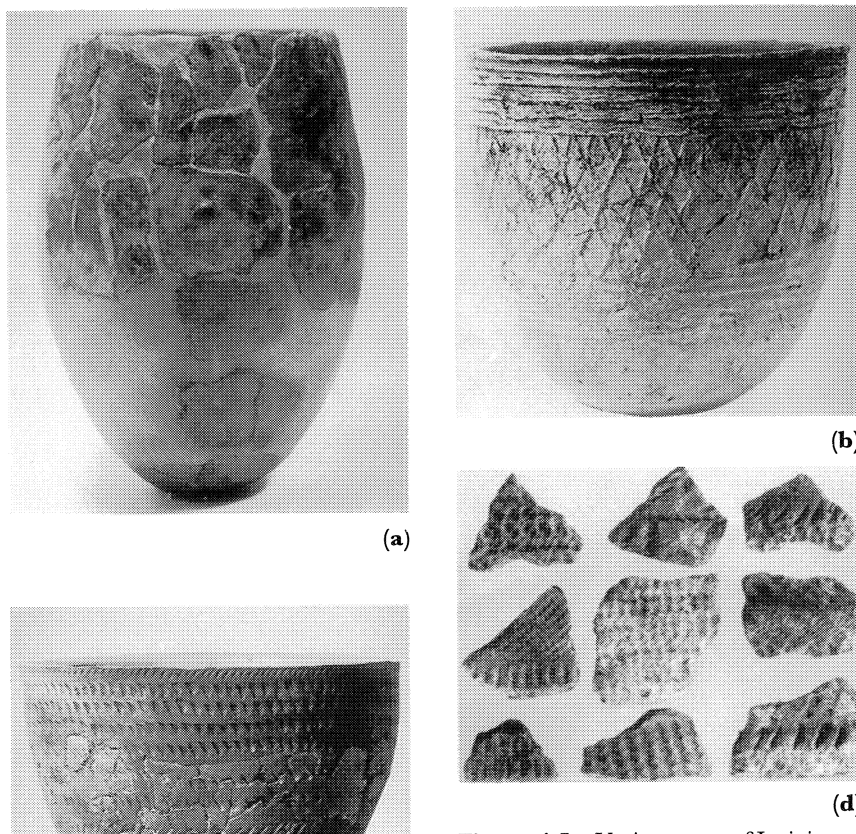


Figure 4.5 Various types of Incipient Jomon pottery: (a) bean-appliqué, Senpukuji Cave, Nagasaki; (b) linear-appliqué, Kamino, Kanagawa; (c) nail-impression, Shinmachi, Iwate; (d) cord-impression, Kosegasawa Cave, Niigata.

ceramic Neolithic (according to the old definition based on material technology) in the Holocene rather than to a Palaeolithic technology of the Pleistocene. They then discussed the origins of each culture of the Pre-ceramic period. They attributed the origin of the edge-ground stone axes of early Pre-ceramic to the Hoabinhian of Indochina and the next knife-shape tools to the Toalian of Sulawesi in Indonesia. Whereas these two were seen to come from the south, later cultures in particular microblade and Mikoshiba–Chojakubo, were seen contrast to come from Northeast Asia. The Mikoshiba–Chojakubo culture, which occupied the last stage of the Pre-ceramic period was very important for S. Yamanouchi and T. Sato because it gave an absolute date to the Pre-ceramic/Jomon boundary. It had edge-ground gouges (Fig. 4.6) and ground single-edge axes, large spearheads, scrapers and burins, both made by retouch on blades. They attributed the origin of this culture to the Isakovo phase (4000 to 3000 BC) of the Baikal chronology in Siberia,

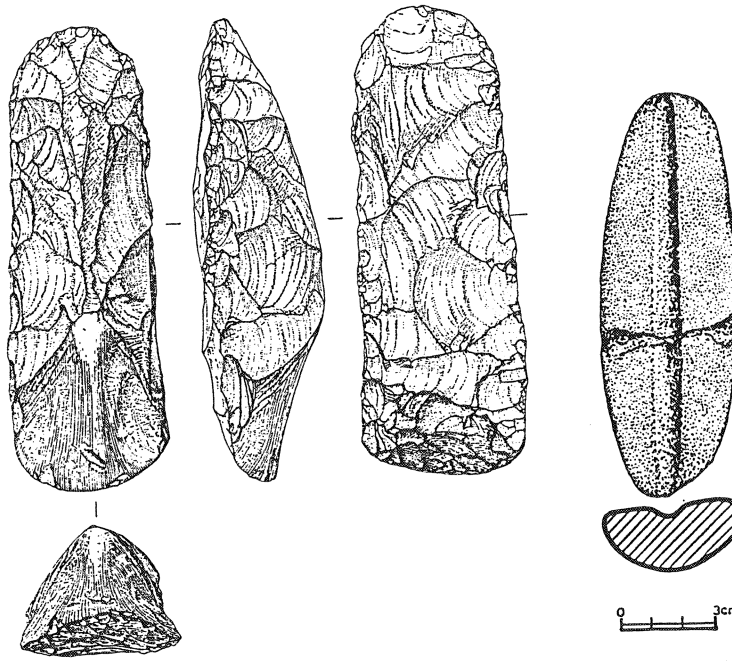


Figure 4.6 An edge-ground stone gouge from Chojakubo, Aomori (left), and an arrow-shaft smoother from Hananoko, Gifu (right).

based on common characteristic axe types. They insisted that the beginning of the Jomon period could not precede 3000 BC because the last stage of the Pre-ceramic period could not be earlier than the Isakovo phase. S. Yamanouchi also suggested the arrow-shaft smoothers (Fig. 4.6) as another clue for the date of the Jomon period. He discussed that such types of stone tools were limited to the Incipient (I) phase of the Jomon period and that throughout the world there were no such tools known before 2500 BC. On this basis he gave a date of 2500 BC to the beginning of the Jomon period (Yamanouchi 1968). He also linked the so-called Jomon marine transgression to that of Littorina IV of northern Europe and insisted that his date was supported by a worldwide natural phenomenon.

Behind Yamanouchi's theory was his comprehensive understanding of world prehistory and his confidence that two major epoch-making inventions could not have been made in islands such as Japan, far from the Asian continent. His pride as an archaeologist moreover made it difficult for him to depend on the "oracle" of scientists. In contrast to Yamanouchi, most Japanese prehistorians followed what scientific research indicated. The controversy between the pro-carbon dating group and the pro-Yamanouchi group was in effect a debate between those who obtain dates at the beginning of research and those who arrive at a date after all the research is completed. Yamanouchi's attempt to resolve the problem by his own method should be appreciated.

Unfortunately, there was no guarantee that the method would lead him to the right conclusion. It is necessary to point out that there is much evidence of envi-

ronmental conditions that do not fit the date proposed by Yamanouchi but which support the radiocarbon dates. First, volcanic ash layers containing Pre-ceramic stone tools are known to have been deposited during periods of cold climate. Although pollen is not preserved in volcanic ash, climate reconstructed through pollen analysis of swamp deposits can be linked to human sites by relating key beds of volcanic ash sandwiched in the swamp deposits (Tsuji et al. 1985). These periods of cold climate are not attributed to the Holocene but to the Pleistocene. The Tachikawa loam, which is contemporary with the Pre-ceramic period, is known to stretch beneath the alluvium of the Tokyo Bay, reaching a depth of 40 m and more under the present sea level (Endo et al. 1983). Such pure volcanic ash could not have been deposited in the sea, and thus must be a layer formed during a period of low sea levels, namely the Pleistocene. The Mazukari shell midden of the Initial (II) Jomon, on the other hand (which will be introduced in Ch. 6) was clearly formed during a period of low and rapidly rising sea levels. This condition cannot be attributed to any period other than the early Holocene.

Besides natural phenomena there is also archaeological evidence, the most decisive being the distribution of microblade assemblages. This technology continued from the late Pleistocene into the Holocene in extensive areas of East Asia, especially far eastern Russia and northern China. It also appeared in Japan, but over a comparatively short time during the final stages of the Pre-ceramic period and on into the Incipient (I) Jomon in Kyushu. Characteristic wedge-shape microcores for the production of microblades are seen among these Japanese assemblages. Such cores are also found in continental sites and are thought to date from the final stage of Pleistocene to early Holocene by local scholars (Kimura et al. 1993). There are many varieties of wedge-shape microcores that are distinguished not only by shapes but also by manufacturing processes (see Fig. 3.15; Kato & Tsurumaru 1980). Contemporaneity of Japanese and mainland wedge-shape microcores is clearly evidenced both by the correspondence of many kinds of microcores and the common association with characteristic Araya-type burins. If the dating by mainland archaeologists is right, then the final stage of the Pre-ceramic period of Japan cannot be dated, as Yamanouchi suggested, to the middle Holocene.

In China, radiocarbon dating began following the resumption of archaeological research after the interruption of academic activities as a result of the Cultural Revolution. Based on such dating, the beginning of agriculture was placed at between 7000 to 8000 bp and the emergence of pottery as close to or over 10000 bp (Xianrendong, Jiangxi Province (Jiangxi 1976), Zengpiyan, Guangxi Province (Guangxi 1976), and Nanzhuangtou, Hebei Province (Baoding PAPCP at al. 1992)). Although pottery as old as that in Japan has not been found, the situation in which Japanese pottery alone occupied such an early date was lessened. Moreover, radiocarbon dates correspond well with the relative chronologies constructed by stratigraphical and typological methods in both Japan and China (Fig. 4.7; Wanatabe 1966). Recently, some potsherds were discovered with wedge-shape microcores, as well as a radiocarbon date of 12960±120 bp at Gasya in the Amur valley, in the far east of Russia (Okladnikov & Myedvyedyev 1983). This date is quite appropriate to the core type. The combination of the same stone tool type and similar

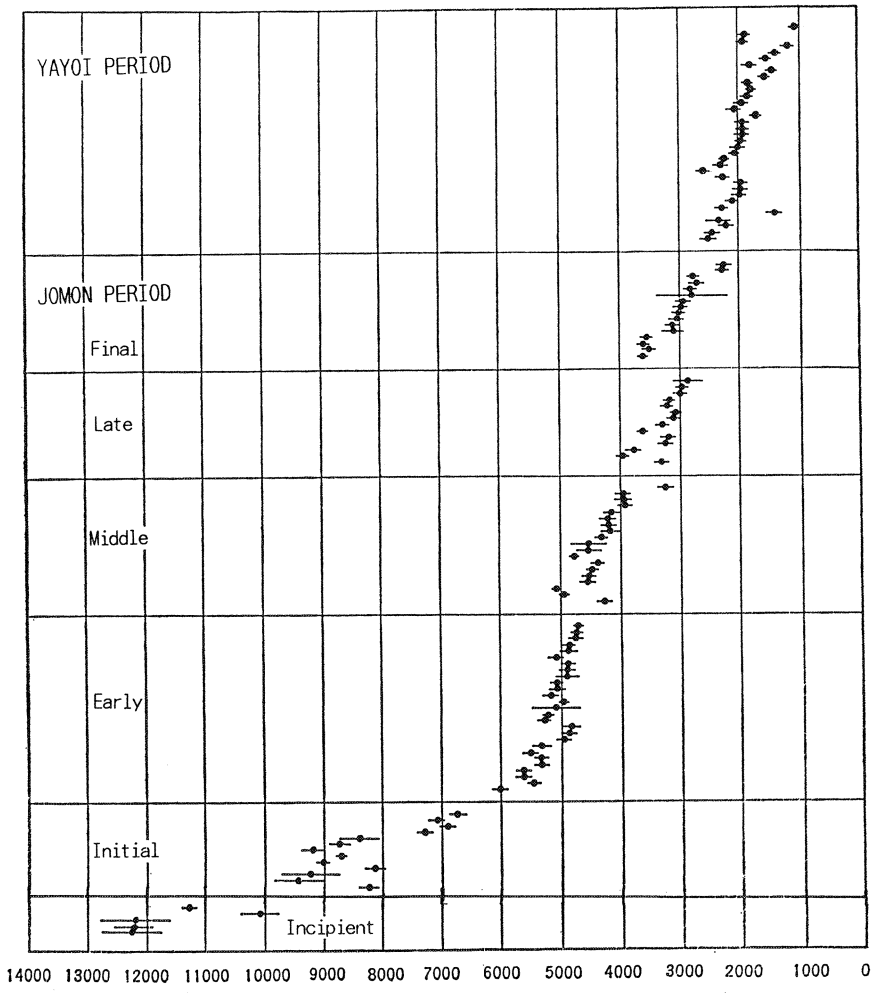


Figure 4.7 Radiocarbon dates of Jomon, Yayoi periods (Watanabe 1966).

pottery, however, needs to be reconfirmed at other sites before the date can also be reliably applied to the pottery.

Yamanouchi was more familiar with the overview of world prehistory than any other Japanese archaeologist. This overview, of course, was not unlike the one envisioned by Western archaeologists at that time. It was on this basis that he rejected the carbon dates from Japanese sites. However, this overview was itself overthrown by the progress of research beyond Europe and the Near East. World prehistory could not be assumed to be a mere amplification of the prehistory of the Western world. Japanese prehistory gave no small shock to this older perspective of world prehistory.

Japanese pottery goes back further

A new type of pottery was found during the excavation of the Senpukuji Cave (Nagasaki prefecture, Kyushu), which began in 1975 (Aso et al. 1985). Pottery with bean-like appliqué was reported to have been unearthed, together with microblades from a layer beneath that with linear-appliqué pottery. However, some criticized the stratigraphical evidence as being unclear, and suggested that the pottery should be recognized as a variety of linear appliqué. In 1975 two sites of the Mikoshiba–Chojakubo culture, Odaiyamamoto (Aomori prefecture; Miyake et al. 1979) and Ushirono (Ibaragi prefecture; Ushirono SRP 1976) yielded small plain fragments of pottery coincidentally within the year. The culture had been placed at the end of the Pre-ceramic period in Honshu and Hokkaido. In 1977, small amounts of pottery, this time with a pitted-band pattern, were found at Terao (Kanagawa prefecture; Suzuki & Shiraishi 1980). The chronological position of the site is problematic, but some features, although considerably degenerated, of Mikoshiba–Chojakubo stone tools suggested that this was the final stage of the culture. Further, the pottery itself was thought to be ancestral to linear appliqué from the viewpoint of sequential changes in pattern design (Otsuka 1989). Since then, linear-appliqué pottery has no longer been considered as occupying the oldest position.

Among a few dozen Mikoshiba–Chojakubo sites, there are only five known to have pottery, and even in these five sites the amount of pottery is very small. However, it does not follow that all sites with pottery are later than all those sites without pottery. It is more likely that pottery was used in very small quantities and on rare occasions, so that only a few sites have it.

Another difficulty relates to material from the Kamino site (Kanagawa prefecture; Aida & Koike 1986), where small plain fragments of pottery were found with spearheads, microblades, and microcores beneath the layer containing linear-appliqué pottery. Such a combination of pottery and microblades had not been known except in southwestern Japan. The type of microcores from Kamino are wedge-shape cores produced by a technique analogous to that of Fukui, which had also been seen only in Kyushu. In short, similar combinations to that of Fukui and Senpukuji Caves in Kyushu were found in central Honshu. The puzzling thing was that the pottery, and naturally also the microcores that accompanied them, are most certainly older than those from the Kyushu sites, because the linear-appliqué pottery from the upper layer of Kamino corresponds with the same linear-appliqué type from those Kyushu sites. Thus, the difficult question is the relation between the Kamino lower assemblage and the Mikoshiba–Chojakubo culture.

It is evident that the emergence of pottery in Japan goes back to earlier than 12000 bp if the date given to linear-appliqué pottery is correct. Since the linear-appliqué pottery no longer occupies the earliest position, we cannot consider the origin of pottery based on this type. At present, the earliest known pottery seems to have been made and used in very small quantities on rare occasions. Pottery technology was known, but it was rarely used. The inferred nomadic life of the first Jomon groups largely dependent on hunting seems to have neither required nor

allowed for the transport of much of the fragile pottery. Although the use of pottery became common from the beginning of the linear appliqué, its use was still limited when compared with stone tools or with the pottery of later phases. Large-scale use of pottery began about 9000 bp at the stage of the Yoriitomon series of pottery types in the Initial (II) Jomon phase, although the frequent use of pottery seems to have begun earlier in southern Kyushu, as will be discussed in the Chapter 5. On the other hand, in Hokkaido, the use of pottery started later, from the middle of the Initial (II) Jomon (Table 4.2). Apart from the actual beginning of pottery technology and manufacture, the general use of pottery started earlier in the south and later in the north, seemingly following the spread of warm climate in the post-glacial age. It was almost as if hibernating buds came into flower as the warm climate extended northwards.

The original aim and pursuit of knowledge about the beginning of pottery in Japan has now encountered an unexpected situation. At present, the data suggests the indigenous invention and development of ceramic technology in Japan. Although the possibility of mainland origins remains, we still await the discovery of pottery as old as that in Japan. The Isakovo phase of Baikal for the origin of Mikoshiba–Chojakubo culture is out of the question, because of the late date of the former. However, the abrupt appearance of the latter with its peculiar tool-kit suggests its foreign origin, and we do know that pottery emerged in or just after the microblade cultures when Japan had exceptionally strong links with the mainland.

CHAPTER FIVE

Establishment of the Jomon economic system and stable settlements

In China, agriculture began by at least somewhere between 7,000 and 8,000 years ago. Foxtail millet and rice were respectively cultivated in northern and southern China. Almost contemporaneous was another movement in Japan, marked by an increase in the number of settlements and an intensification of their scale. The composition of stone tools suggests this development was based on plant foods, although there is also evidence of fishing in bays and on the open sea. This movement began earlier in the south and later in the north, suggesting that rising temperatures and changing patterns of vegetation gave rise to this phenomenon. In short, we see the establishment of the Jomon economic system.

Origins of agriculture in China

In order to provide a point of comparison with developments in Japan during this period, an examination of the origins of agriculture in China is necessary.

Early evidence of foxtail millet dates back to 7000 bp at several sites, including Cishan and Peiligang in the Yellow River Valley (Shao 1982), and that of rice dates back to 8000 bp at Pengtoushan and other sites in the middle and lower reaches of the Changjiang Valley (Ren 1982, Nakamura 1991). Much research remains to be done, including detailed botanical examinations and the explication of the processes that led to domestication. Moreover, the actual origin of Chinese agriculture has yet to be ascertained. Nevertheless, judging from the tools used in farming and processing cereals, such as the stone sickles and querns (Fig. 5.2), bone spades (Fig. 5.3) found in northern and southern areas respectively, and the large settlements and functionally diversified pottery forms of both areas, the abundant cereal remains found at these sites are thought to be the product of some form of cultivation beyond the level of gathering natural seeds. Thus, agriculture in East Asia began in two areas, the comparatively cool dry Yellow River Valley and the warm

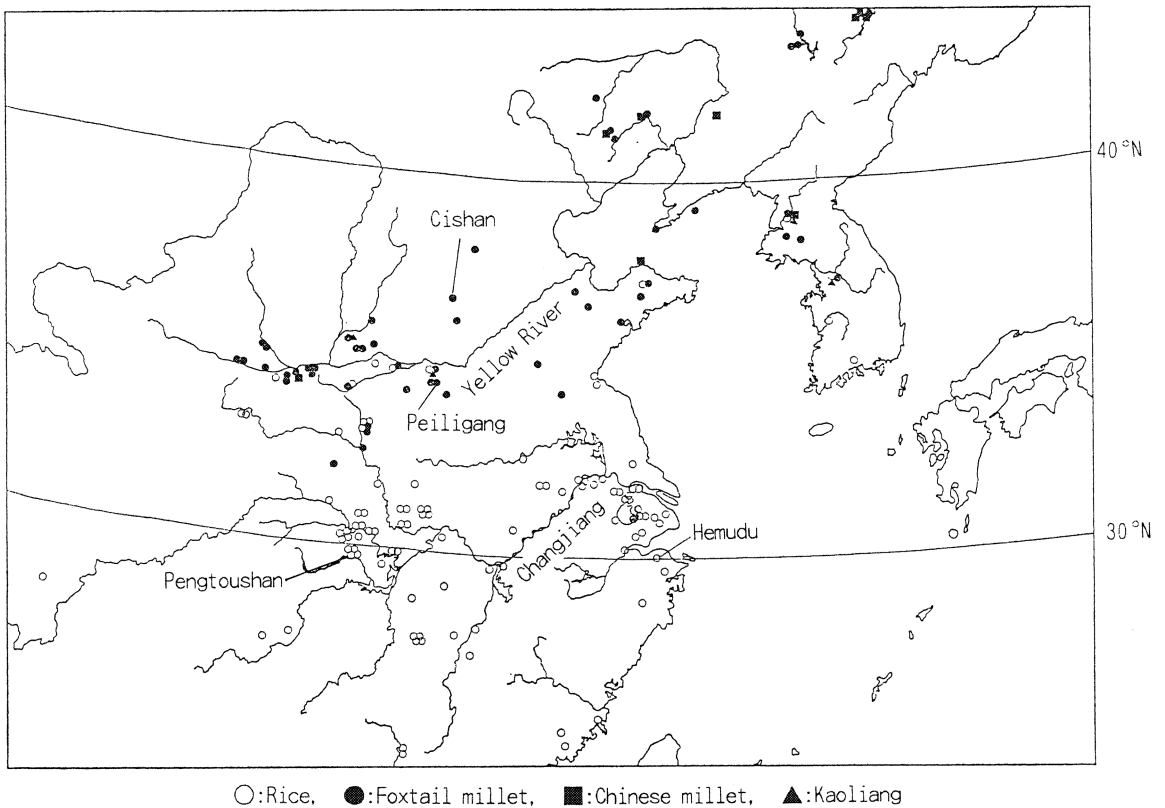


Figure 5.1 Distribution of cereal remains in Neolithic China (Matsumara 1991).

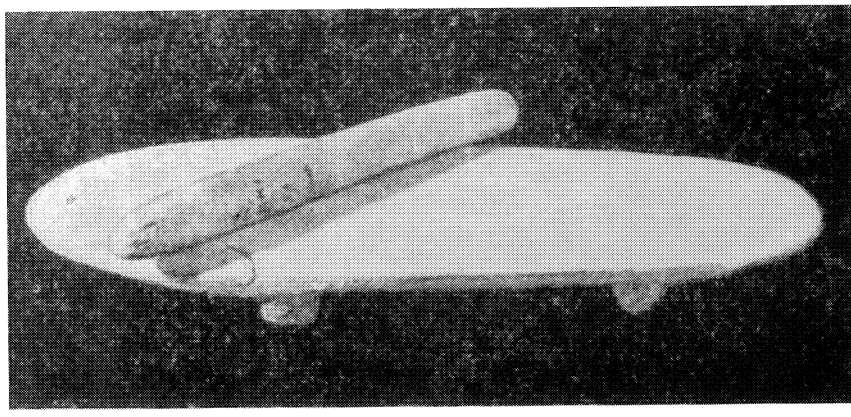


Figure 5.2 A stone quern and a pestle from Peiligang, an early farming site in the Yellow River Basin (Kaifeng DBCP 1987).

humid Changjiang Valley, each developing around, and dependent on, differe cereals suitable to the respective climates, foxtail millet in the former and rice in the latter (Fig. 5.1; Matsumura 1991). Moreover, such early dates, together with the kinds of cereals cultivated, militate against diffusion from western Asia and suggests independent agricultural origins.

Meanwhile, the oldest known pottery in China is from Xianrendong, Jiangxi Province (Jiangxi 1976), and Zengpiyan, Guangxi Province (Guangxi ADWPCP 1976), which, after allowing for the effect of inert carbon dissolved in waters in limestone, has been dated to between 8000 and 9000 bp (Beijin UHD et al. 1982). More recently, some pottery fragments were discovered from a layer dated to 10000 bp at Nanzhuangtou, Hebei Province (Boading PAPCP 1992). Their simple

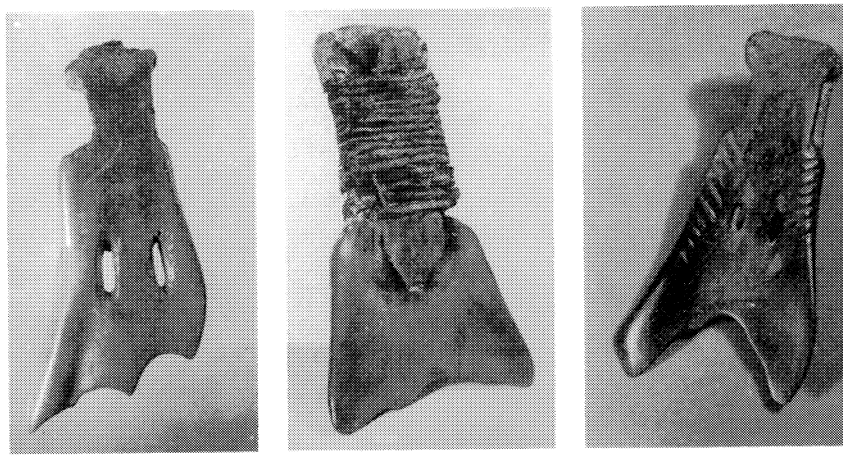


Figure 5.3 Bone spades from Hemudu, an early farming site in the Changjiang Basin (Ren 1982).

forms, as well as (with the exception of Nanzhuangtou) their location in caves with the abundant remains of collected shellfish and hunted animals, suggest these were not agricultural communities. Although the real origin of Chinese pottery, as well as agriculture, cannot be ascertained at present because of insufficient evidence, it appears that pottery originated before agriculture and that the establishment of agriculture and the elaboration of the pottery tradition rapidly developed over a relatively short period of time in the early Holocene.

From the Incipient (I) to the Initial (II) phase

To return to Japan, the phase from the emergence of pottery to before the Yoriitomon series is called the Incipient (I) phase and is followed by the Initial (II) phase. Significant changes in subsistence and settlement patterns are seen between the two, such as an increased dependence on plant foods, increased dependence on marine resources, and an intensification in the scale of settlements, all of which imply a stable life.

The primary features of Incipient (I) Jomon sites are as follows: small-scale settlements with few pit-dwellings, if any, and without firm structures; high frequency of habitation sites in caves and rockshelters; large quantities of stone tools compared with that of pottery, a high percentage of hunting tools such as spearheads or tanged points (see Fig. 4.4), with a correspondingly low percentage of plant-food processing tools such as grinding stones, hammer stones and pitted stones.

Many salmon bones were also found at an Incipient Jomon site at Maedakochi (Tokyo), providing evidence of a subsistence activity other than hunting (Miyazaki 1983). At this site, located near the junction of the Tama and Aki Rivers, salmon, which went up stream in the autumn, were intensively caught and probably processed for preservation. Evidence of the mass production of spearheads was also unearthed. These tools seem to have been either prepared for the coming hunting season or used for catching and processing salmon. At present, we have no evidence of sea fishing. It is difficult to know whether it was practised during the Incipient Jomon or whether, following the 40–50 m rise in sea levels, all such traces have been submerged.

Compared to the number of sites with linear-appliqué potteries, the number of sites with nail-impression or cord-impression pottery was in decline. I suspect it may be explained by the comparatively cold climate of the Younger Dryas stadial (11000 to 10000 bp), although climatic oscillation of the terminal Pleistocene in Japan has not been sufficiently clarified.

Only in southern Kyushu does a different picture emerge during the Incipient phase of linear-appliqué. Despite thick volcanic ash layers, which cover and obstruct the discovery of early cultural layers, including those from the Incipient Jomon phase, and despite the comparatively slow progress of archaeological surveys, many Incipient Jomon sites have been discovered in southern Kyushu. Indeed, a much denser distribution of sites of this phase is assumed for that region than for the Tokyo region, where intensive surveys have been carried out.

One of them is the Sojiyama site of the linear-appliqué stage (Kagoshima prefecture; Amamiya et al. 1992). Two pit-dwellings were found with fairly substantial structures and characteristic fire-pits with ventilation shafts. Among the artefacts, there was a considerable quantity of pottery, twelve arrowheads that are not found from contemporary sites in other regions, five grinding and hammer stones, two pitted stones and four grinding slabs (Fig. 5.4). This collection of artefacts is much different from that of normal Incipient Jomon sites in other areas and, on the whole, is similar to that of later Jomon sites, and suggests that plant foods already played an important role in southern Kyushu at that time. One other piece of evidence that supports the assumed importance of plant foods is a storage pit for acorns, which was unearthed at Higashi–Kurotsuchida (Kagoshima prefecture; Kawagachi 1982). All of this suggests the spread of stable life based on plant foods from the south, which accompanied rising temperature and the fluorescence of the temperate forest.

Acorns from Higashi–Kurotsuchida were those of deciduous oaks. Although the colder climate had passed and it was getting warmer, deciduous forests, which are distributed in northeastern Japan at present, at that time extended south into what are the evergreen broad-leaved forests of present-day southwestern Japan. Whereas acorns of the *shining leaf* variety of evergreen only require leaching, acorns of the deciduous variety require special processing to remove the tannic acid. This is done either by boiling them for several hours or by neutralizing them with a wood ash solution. Storage of deciduous oak acorns at Higashi–Kurotsuchida suggests that such techniques had already been acquired, whereas the increasing quantities of pottery (as mentioned in Chapter 4) implies that pottery was closely involved with the processing of plant foods.

As outlined in the next section, this change, which appeared first on volcanic ash terraces under warm climatic conditions in southern Kyushu, appeared in an even clearer way in the Kanto region around Tokyo during the Yoriitomon series of pottery marking the beginning of the Initial (II) phase.

Yoriitomon series of pottery types

Around 9,000 years ago, a series of pottery types called the Yoriitomon series appeared in central Honshu. It occupies the early part of the Initial (II) Jomon phase. During this phase, the number of sites increased rapidly. Some of these sites have many pit-dwellings. At the Musashidai site (Tokyo City), for instance, 19 pit-dwellings were distributed along an arc within the excavated area (Fig. 5.5; Hayakawa et al. 1994). If this area is assumed to be one section of a circle, then it can be suggested that the basic circular arrangement of dwellings in large settlements during the Jomon period was established at least by this time.

More than 200 pit-dwellings have been unearthed from all sites of the Yoriitomon series in the Kanto region. This number is quite large when compared to the ten, including doubtful cases, reported from all Incipient (I) Jomon sites throughout

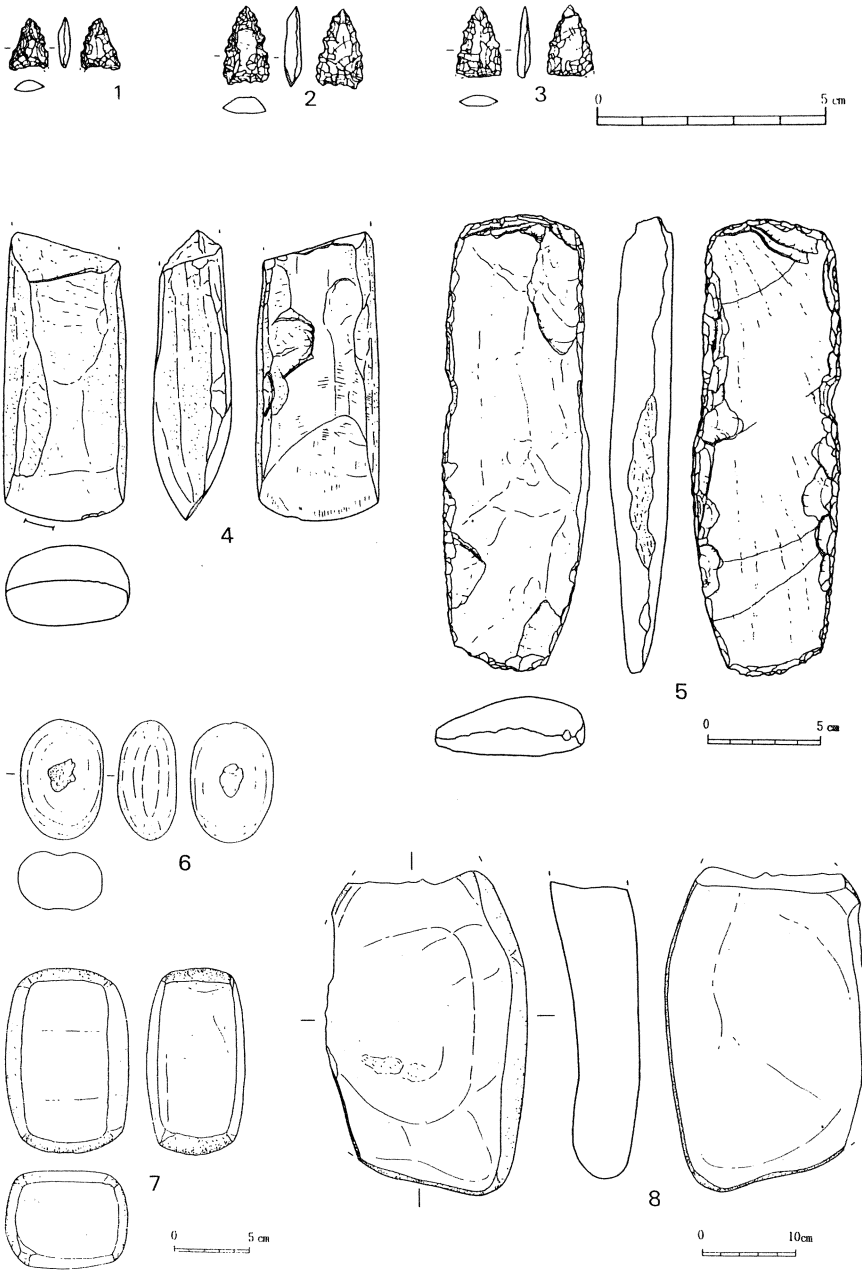


Figure 5.4 Stone tools from the Soujiyama Incipient Jomon site, Kagoshima (Amamiy 1992).

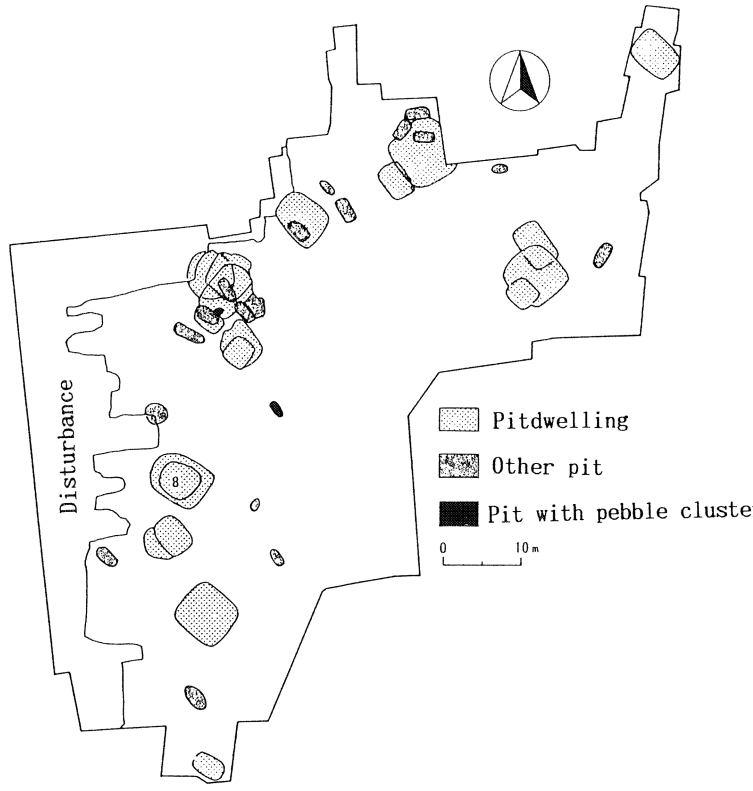


Figure 5.5 Distribution of pit-dwellings in Musashidai, Tokyo City (Hayakawa et al. 1994).

Japan. However, there was not only an increase in the number and size of settlements but also significant changes in subsistence patterns.

Tokyo Astronomical Observatory site and plant foods

An interesting example from this phase is a site at the Tokyo Astronomical Observatory (Imamura et al. 1983). This site is located on the southern edge of the Musashino terrace, where sites are densely clustered. A rescue excavation was carried out there prior to construction of a meridian circle. I took part in this research, since the observatory belonged to the University of Tokyo. Ten cultural phases were recognized, including eight Palaeolithic, one Initial (II) Jomon and one Early (III) Jomon. My concern here is with the Initial (II) Jomon phase. Three pit-dwellings associated with the Inaridai type of pottery of the Yoriitomon series were found in the comparatively small excavated area of the planned construction site. Undoubtedly, there were more unexcavated pit-dwellings, since our excavation area seemed to cover only one section of the settlement.

One interesting case is pit-dwelling 3, which is rectangular, measuring 8.2–8.4m (Fig. 5.6). This is a comparatively large dwelling by Jomon standards. Post-

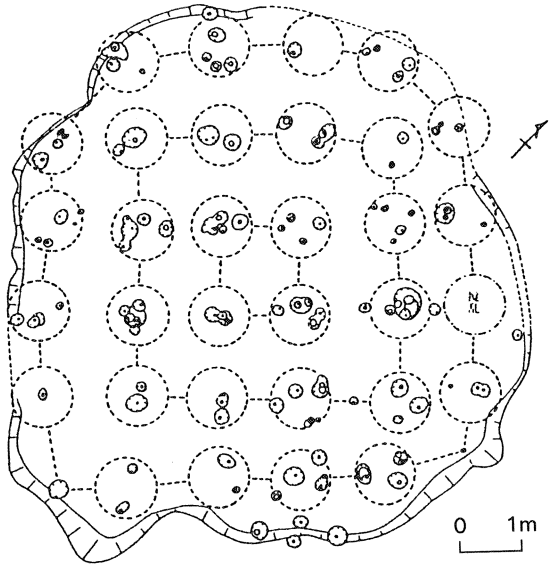


Figure 5.6 Distribution of post-holes in pit-dwelling 3 of the Initial Jomon Tokyo Astronomical Observatory site (Imamura et al. 1983).

holes are not large, measuring 10–20 cm in diameter, and they are clustered in groups of three to five holes, arranged in such a way as to mark out three concentric squares. This clustering of post-holes cannot be explained by the successive building of new dwellings at the same spot, nor by building extensions, but rather by the duration of the dwelling during which time old posts were either replaced by new ones or were reinforced by new posts placed alongside the old ones. This indicates the long stable life of those who occupied it.

What was the economic base that supported this stable life? Neither animal bones nor plant remains were preserved in the acidic soil and, in terms of stone tools, a few arrowheads are the only indication of hunting gear. However, there are 538 grinding and/or pitted stones, 64 grinding slabs and 185 stamp-shape tools, most of which were presumably used for processing plant foods (Fig. 5.7). This clearly shows how important plant foods were at this site.

The Natsushima shell midden and fishing

Another major change observed in the Yoriitomon series is evidence of sea fishing. The Natsushima shell midden referred to previously provides good evidence for this (Sugihara & Serizawa 1957). It is located in a small bay of Yokosuka (Kanagawa prefecture). There were three shell layers of different phases. The lowest one with Natsushima-type pottery of the Yoriitomon series is dealt with here. The major shell species were oyster (*Crassostrea gigas*) and ribbed cockle (*Tegillarca granosa*), whereas clam (*Meretrix lusoria*) and short-necked clam (*Tapes japonica*), common in shell middens of later phases, were not seen. This was not because of cold sea temperatures but rather because of different environmental habitats. Whereas the muddy sea floor found in the interior part of bays is a favourable habitat for oyster and cockle, the sandy floor in the middle of bays is favourable for clam and short-

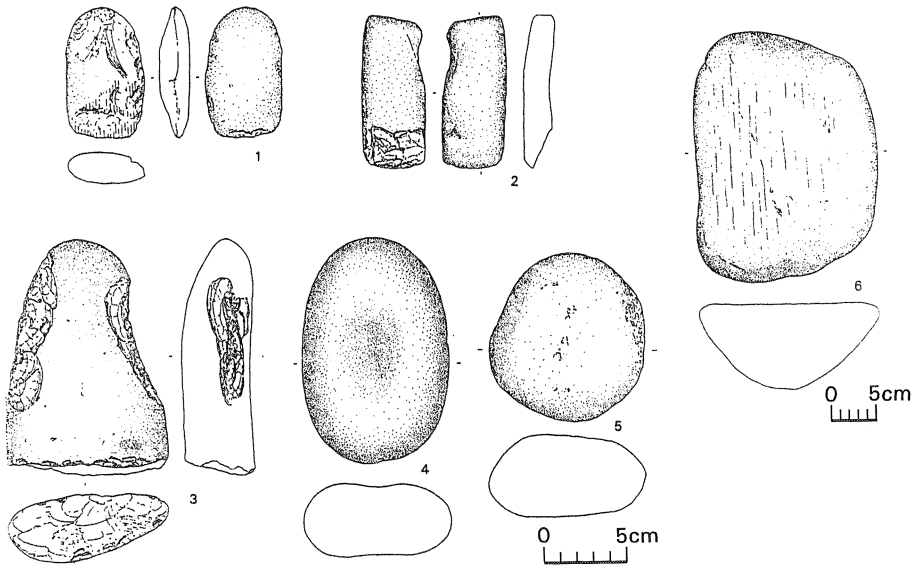


Figure 5.7 Stone tools from Tokyo Astronomical Observatory site (Imamura et al. 1983). 1: edge-ground stone axe; 2: edge-chipped stone axe; 3: stamp-shape tool; 4: pitted stone; 5: grinding stone; 6: grinding slab.

necked clam. Around the time of the Yoriitomon series, the sea level was rising rapidly and spreading into river valleys, which were created by erosion during the Pleistocene. These submerged valleys had muddy floors in the interior, but not sandy floors, because sand is usually sedimented under steady sea levels. Thus, shell species and sea environment correspond very well. Among mammal bones were those of the wild boar, racoon dog, hare and dog, which may have assisted in hunting. Dog burials are often found in Jomon shell middens, where bone material is preserved. Among the birds were pheasant and duck, and among fishes were tuna (*Thunnus thynnus*), mullet (*Mugil cephalus*), black porgy (*Acanthopagrus schlegeli*), sea bass (*Lateolabrax japonicus*) and bartailed flathead (*Platycephalus indicus*). Three fish-hooks made of antler provide evidence for this type of fishing (Fig. 5.8). Stone tools included arrowheads, grinding stones, grinding slabs and many pebble tools. Pebble tools were made by chipping flat pebbles on one or more edges, and some of them have a ground edge.

There are only a few shell middens with the Yoriitomon series pottery, such as the Nishinojo shell midden (Chiba prefecture; Nishimura et al. 1955), and Hanawadai shell midden (Ibaragi prefecture; Yoshida 1948). The Nishinojo shell midden is located in the lower reaches of the Tone River. This area is low and could have been among the first affected by the rising sea. Most of this shell midden consists of freshwater clam(*Corbicula japonica*), which suggests it was still a period of low sea levels because the *Corbicula* lives in brackish water, with only a little exposure to salt water. As well as the evidence for fishing in the bay, there is evidence for open sea fishing such as the Shimo–Takabora site on Oshima Island in the Pacific.

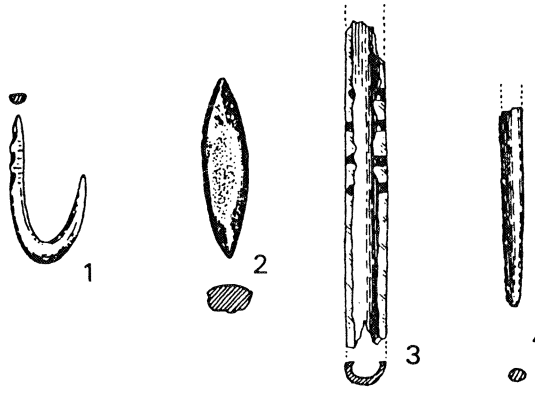


Figure 5.8 Bone and antler tools from the Natsushima shell midden (Sugihara & Serizawa 1957).

The Shimo–Takabora site and open sea fishing

The Shimo–Takabora site (Shimotakabora SRP 1985), located on the western coast of volcanic island called Oshima about 50km south of the Tokyo region, is dated by the presence of Hirasaka-type plain pottery (*c.* 8500 bp), which immediately followed the Yoriitomon series. The habitation layer is 2–3m above the present sea level, but would have been about 20m above the sea level at the time of occupation, although tectonic instability on such volcanic islands makes such an estimation very uncertain.

Excavation was restricted to a small area because of its location on the cliff face. One pit-dwelling was unearthed. Preservation of bone was good, because the thick volcanic ash layer deposited soon after the dwelling's occupation and abandonment protected it. The variety of fish, such as tuna (*Thunnus thynnus*), brutal moray (*Gymnothorax kidako*), rock bream (*Oplegnathus fasciatus*), opaleye (*Girella sp.*), mackerel scad (*Decapterus sp.*), horse mackerel (*Scomber sp.*), parrotfish (*Leptoscarus japonicus*), as well as sea turtle and dolphin, tells of active fishing on the open sea.

Arrowheads and dog remains also provide evidence of hunting activity, and the remains of wild boar among the bone suggest it was the game. The boar's sizes estimated from the bone are a little smaller than those found on Japan's major islands and they are thought to have lived for some time on this island. This presents a problem as to how wild boars came to live on Oshima and other islands of Izu during the Jomon period. The farthest island, for instance, on which the remains of many wild boar were found in an Early (III) Jomon site, is Hachijojima, which is 180km to south of the coast of Honshu (Nagamine et al. 1987). However, wild boar cannot swim such distances. Moreover, these islands have all been formed by volcanic eruption from the sea bed, and the deep sea surrounding the islands separated them from Honshu even in the Pleistocene. If the wild boar had been butchered and carried from Honshu for consumption, the absence of bones of deer and other animals is unexplainable. The only possible explanation is that men carried wild boar to the islands, whence some of them escaped or were freed, and subsequently bred and multiplied on the islands. As will be seen in Chapter 7, Jomon people often captured wild boars alive in pit-traps.

Establishment of the Jomon economic system

It may be too hasty to conclude that sea fishing began in the Yoriitomon phase simply because it is the first available evidence of sea fishing. The sea level of the Incipient (I) phase was 50–30m lower than present; hence, coastal sites, if any, would have been eroded or submerged under the sea. If a few shell middens were formed close to the coast during the Incipient Jomon, there is very little chance of their discovery. The completed fish-hooks from Natsushima, the highly developed fishing of Shimo–Takabora, and the salmon fishing of the Incipient site of Maeda-kochi, all suggests the existence of a former trial period.

In any event, most of the basic economic features of the Jomon period were in place by the end of the Yoriitomon stage. These were, the major dependence on plant foods, marine fishing in the bay and on the open sea, hunting with bows and dogs, the keeping or at least the transporting of wild boar, the abundant use of pottery, common use of pit-dwellings, and the circular arrangement of houses in large settlements. Some of these, as previously discussed, were recognized in the Incipient (I) Jomon of southern Kyushu, and the emergence of pottery in Hokkaido was later than the Tokyo region. The correspondence between these features and the northward spread of warm climate is hardly surprising or accidental (Fig. 5.9; Yasuda 1980, Miyoshi & Yano 1986). This movement in Japan, as well as the respective origins of millet and rice agriculture in China, should be understood as one of many phenomena occurring in communities throughout East Asia, as well as in other areas of the world in the post-glacial epoch.

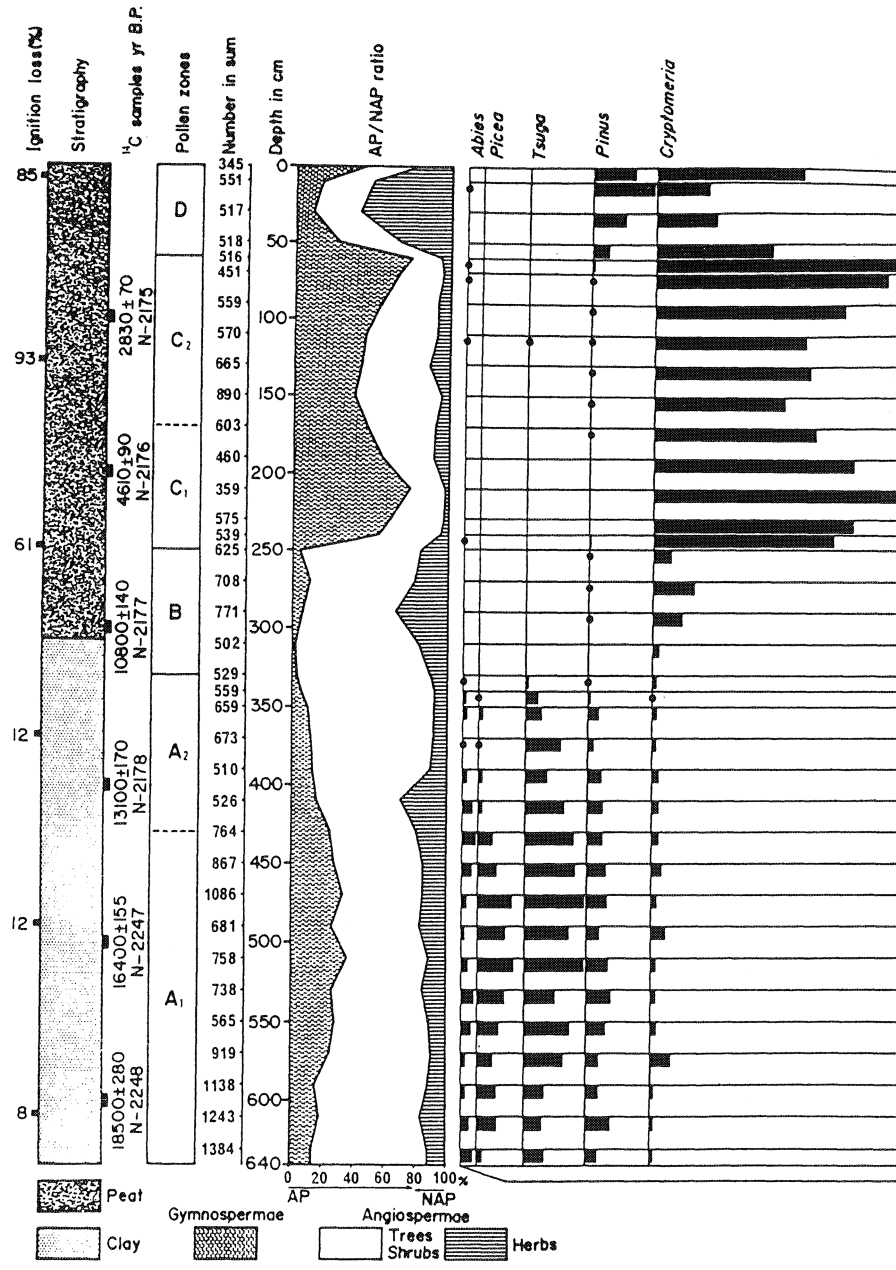


Figure 5.9 Pollen diagram from Ohnuma Moor, Hyogo (Miyoshi & Yano 1986).

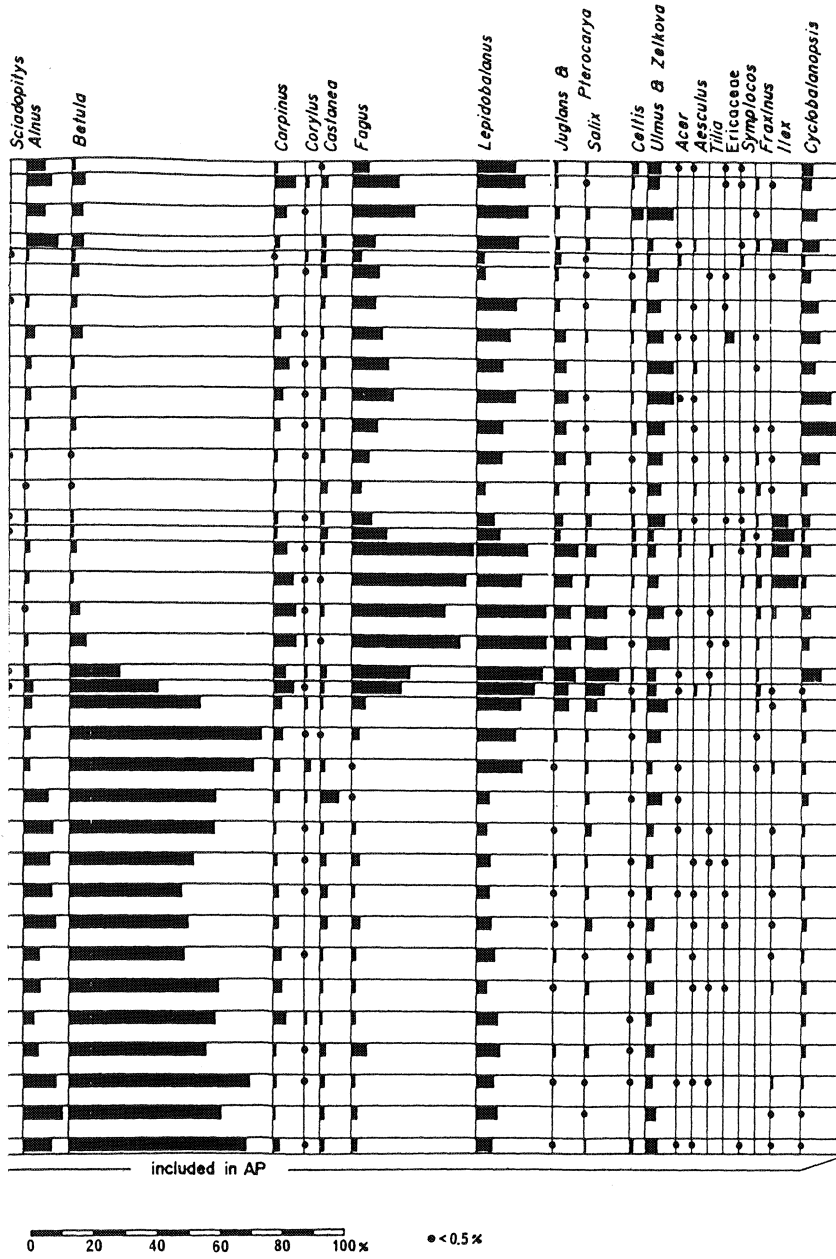


Figure 5.9 continued.

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CHAPTER SIX

Marine transgression and fishing

Coastal valleys, which had been deeply eroded during the Pleistocene, were subject to post-glacial transgression by the rising sea, resulting in zigzag coast lines of rias in many areas of Japan. Marine fishing, one feature of Jomon subsistence, flourished in this environment. The Mazukari shell midden, which was deeply submerged by the then rising sea and buried under the alluvium, provides an important record of the changing marine environment.

The rising sea level

A study of the alluvial formation of Osaka bay by Yasuo Maeda (1980) provided excellent data on post-glacial rising sea levels. This area is second only to the Tokyo region for density of urban and industrial development. Consequently, abundant data on alluvium have been obtained through many borings prior to construction work and through subsequent digging by caissons (high-pressure air chambers used in digging into unsubstantial alluvium) for foundation bases on the bedrock beneath the alluvium. When a boring or caisson encounters a layer containing the remains of tidal-zone mollusc species, that level is known to have been that of a beach. Thus, the level of the sea at that point can be measured against the present-day sea level and dated by radiocarbon methods on wood or shell samples contained in the layer. Marking such points on a graph, with the vertical axis representing sea levels and the horizontal axis representing age, Y. Maeda plotted the curve of fluctuating sea level from the final Pleistocene into the Holocene (Fig. 6.1). In order to adjust the curve to absolute levels, local tectonic movements must be accounted for, but it is very difficult to estimate exactly such comparatively small vertical movements. Indeed, similar fluctuation curves have been drawn for many coastal areas of Japan, which generally show a very rapid rise in sea levels from the late Pleistocene into the middle Holocene. It reached its highest level, 2–3 m higher than the present sea level, about 6,000 years ago, and then gradually lowered again (Ota et al. 1990). Another small rise around 4000 bp has been noted in several other areas (Maeda et al. 1983).

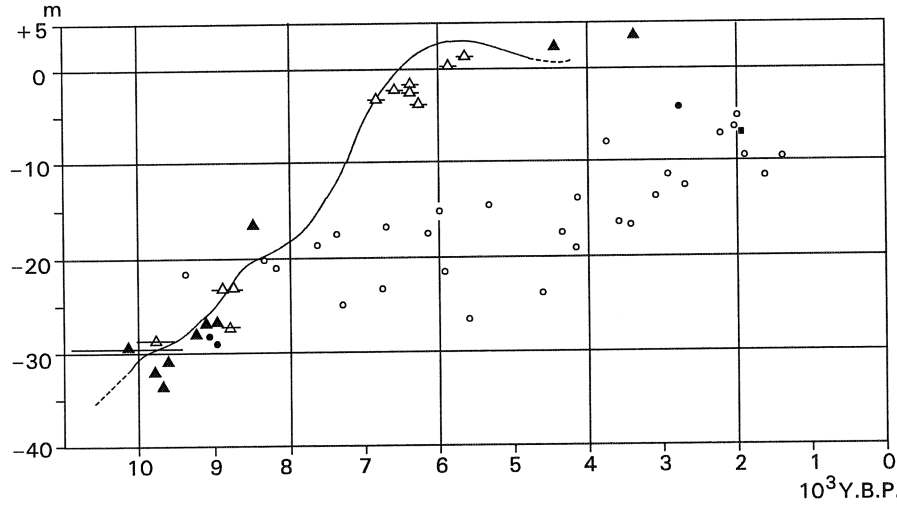

Figure 6.1 Rising Holocene sea level in Osaka Bay (Maeda 1980). Δ: molluscs of the intertidal zone; o: molluscs under the tidal zone; ▲: peat or wood in freshwater sediment.

Distribution of shell middens in the Kanto Plain

Almost half of the 2,000 shell middens known in Japan are distributed in the Kanto district (Tokyo and peripheral prefectures). Sea levels reached their highest point around 6000 bp. This date corresponds to the beginning of the Early (III) Jomon phase (Fig. 6.2). In fact, the shell midden discovered farthest inland, with evidence of a nearby sea, in the Kanto Plain is dated from this age. This is the Shinoyama shell midden (Tochigi prefecture), located 70 km inland from the present sea coast (Okamoto & Tsukada 1962). The shells are distributed into a horseshoe shape, which measures 100 m by 70 m. Shells mainly consist of freshwater clams (*Corbicula japonica*), which inhabit brackish waters. There are also small quantities of a variety of seashell species, such as thin-shelled surf clam (*Mactra veneriformis*), oyster (*Crassostrea gigas*), ribbed cockle (*Tegillarca granosa*), clam (*Meretrix lusoria*), rock shell (*Rapana thomasiana*), short-necked clam (*Tapes japonica*), razor clam (*Solen strictus*) and abalone (family *Haliotidae*), as well as mud snail (*Cipangopaludina malleata*), which live in fresh water. Black porgies (*Acanthopagrus schlegeli*), whose preferred habitats are bay interiors and estuaries, were predominant among the fish bones. Although reconstruction of subsistence patterns based on the few recovered stone tools is difficult, there are many bone fish-spears characteristic of fishing gear used in bays or fresh water.

From this period on and with each succeeding phase, the distribution of shell middens retreated towards the present-day coast. This was the result of receding sea levels as well as the rapid deposition of alluvium.

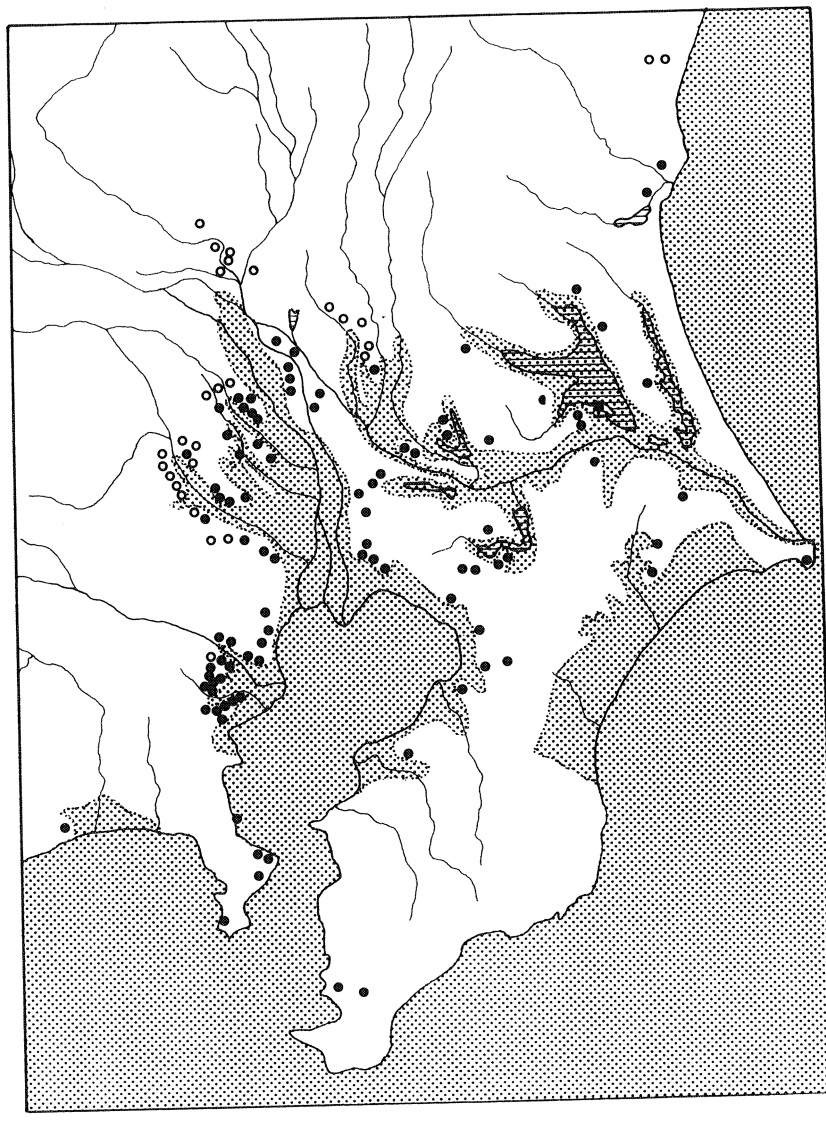

Figure 6.2 Reconstructed coastline of the late Initial and Early Jomon period, based on the shell middens consisting mainly of seashells (●) and freshwater shells (○) (after Esaka 1973).

The Mazukari shell midden

Shell middens, which were abandoned near the coast of the low sea before 6000 bp, must have been eroded or submerged by the rising sea and buried beneath the alluvium. Such shell middens, if they existed, were thought unlikely to be found.

In 1978, the construction of the New Chita Railway, which was to run through the Chita peninsula (Aichi prefecture), was under progress at Utsumi valley near the tip of the peninsula, where an elevated station was being constructed. The valley is filled with alluvium and it was necessary to place the base of the pillars of the station on the solid bedrock beneath the soft alluvium. After thick pipes had been driven into the soft fragile alluvium, machines began removing the soil in them. Unlike the construction work carried out with caissons, direct observation below the ground surface was not possible here, so that all observations and inferences were made on the basis of the spoil brought up by the machines. It was not unusual for shell debris to come out, since they were digging alluvium. However, Katsutoshi Yamashita, a local school teacher noticed in among the spoil heap shells usually associated with shell middens. He also found fragments of Jomon pottery. This convinced him of the existence of a shell midden at the construction spot. Together with his colleagues, during intervals when he was not teaching, he continued his observations in order to ascertain the place and depth of the shell midden. In addition, he collected potsherds, stone and bone tools, shell and animal bones from the excavated soil. Thus, he realized that only soil from one area of the construction site and from the depth of 15 m from the ground surface contained artefacts and the kinds of shells associated with other shell middens. The collected pottery was restricted to that of the Kozanji type, which is placed at the middle of the Initial (II) phase.

Although only an amateur archaeologist, his ability was comparable to other specialists, as had been evident previously in research that he carried out in the surrounding areas. The discovery of this Mazukari shell midden was the fruit of Yamashita's diligence and insight. In order to clarify the character and environment of this shell midden, he requested more than a dozen specialists to examine and study the shells, animal bones, crab shells, plant remains, diatoms, foraminifers, palaeogeography, alluvium and volcanic ash, as well as to undertake radiocarbon dating. In order to ascertain the underground conditions clearly, he added the tenth boring to supplement the former nine, which had been done as preparatory research prior to construction. This provided samples for dating, as well as evidence for detected Akahoya volcanic ash in the alluvium. An important chronological marker, the Akahoya ash was distributed over an extensive area by the eruption of a volcano in southern Kyushu in 6400 bp. A cross-section of the bedrock, shell midden and alluvial formation was reconstructed on the basis of the above data (Fig. 6.3; Yamashita et al. 1980). It shows a small terrace on which the shell midden was left 14 m below the present ground surface or 10 m below present sea level. Examination of shells and foraminifers enabled a clear reconstruction of the process of alluvial sedimentation as follows (Fig. 6.4):

1. *8600–7000 bp* A bay was formed through marine transgression. Species of shell and foraminifers, which inhabit the mud floor of the bay interior, lived at the point where boring 10 was taken. The shell midden was formed around 8200 bp and was submerged under a swiftly rising sea around 7700 bp.
2. *7000–5500 bp* The valley was deeply submerged by a rise in sea level. The depth of the water at the point of boring 10 reached about 10 m. A delta-like

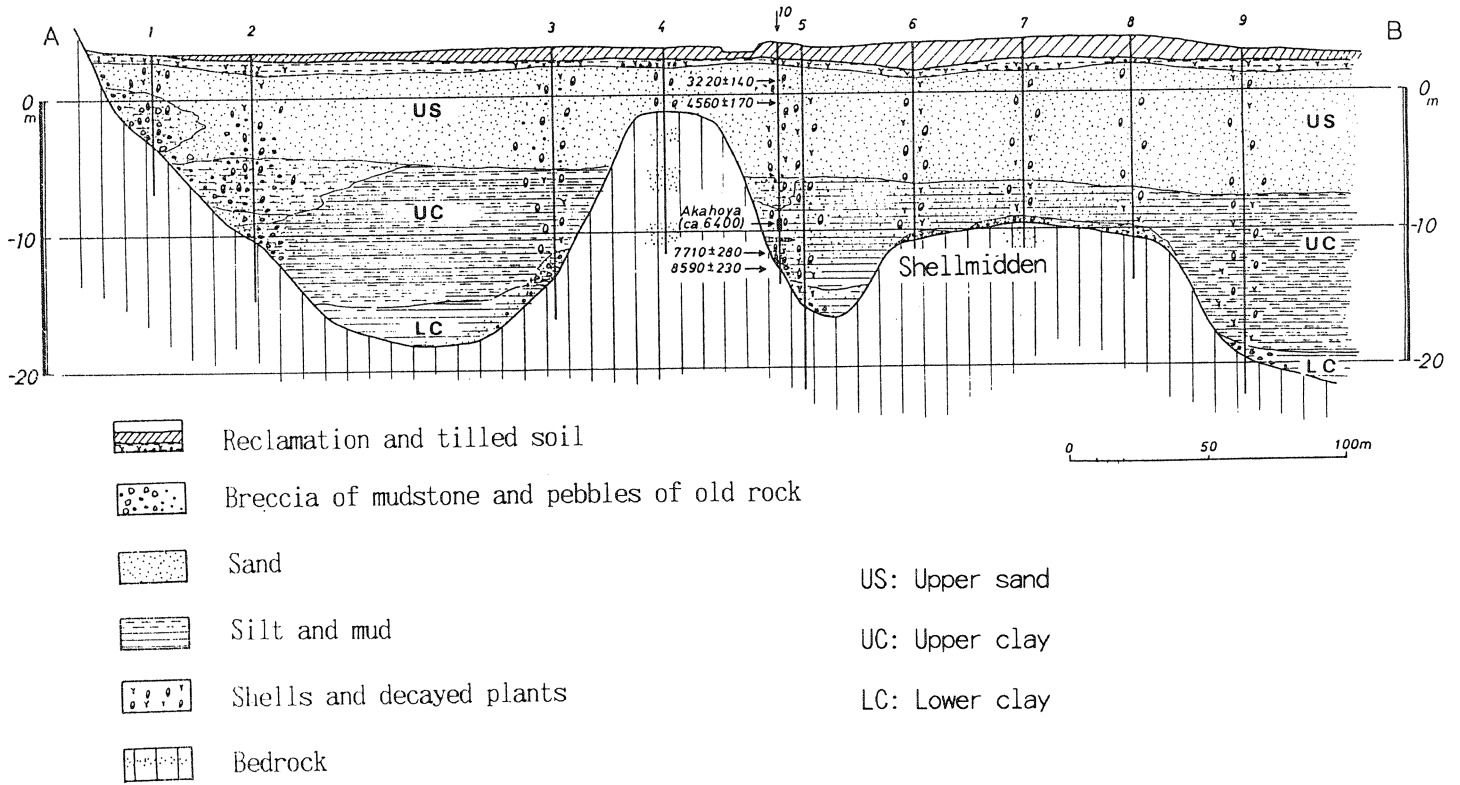

Figure 6.3 Section of deposits around the Mazukari shell midden (Yamashita et al. 1980).

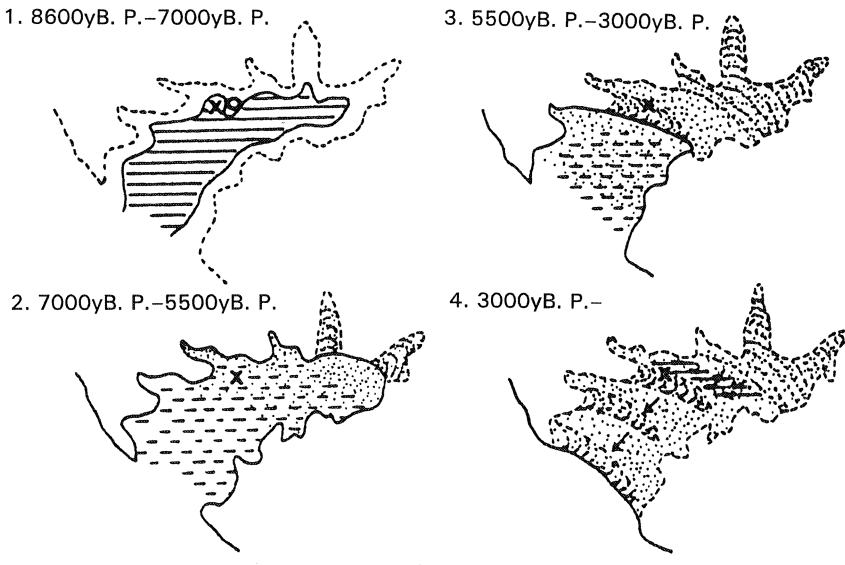

Figure 6.4 Changes in Utsumi Bay, and geological deposits (Yamashita et al. 1980).

deposit advanced from the interior of the valley, with the ratio of sand in the sediment increasing at the same spot. Among the foraminifera there were some species that inhabit tropical or subtropical seas, providing evidence of comparatively warm water.

3. *5500–3000 bp* The sea level remained stable for a while at the highest level, and then lowered gradually. Sedimentation progressed rapidly, with coarse grains carried by swift coastal currents. A sandbar was formed at the boring point. Shell species during this period were periwinkle (*Umbonium monififerum*), clam (*Meretrix lusoria*), and thin-shelled surf clam (*Mactra veneriformis*), all of which inhabit the sandy floor of the bay centre. The interior of the bay emerged from the water at about 3000 bp, where the Hayashinomine shell midden of the Late Jomon was formed.
4. *3000 bp to the present* The bay continued to be filled with alluvial sediments and the receding sea left two sandbars.

These data from the Mazukari and other shell middens in this small bay clarified relative oscillation of the sea level there, including a small rise in the Late Jomon period (Fig. 6.5; Maeda et al. 1983). Similar changes in contemporaneous marine environments are evidenced by species of shell and foraminifera reported from other coastal areas of Japan, especially from the Tokyo bay area (Matsushima 1970). Thus, the level of 10m below present sea level, and the radiocarbon date of 8330±260 bp for the Mazukari shell midden and its submergence date of 7700 bp, roughly correspond both with sea level changes in the Osaka bay area and the many curves established for other areas. They also correspond with sea level changes in many other parts of the world although the Japanese data tend to be a little earlier.

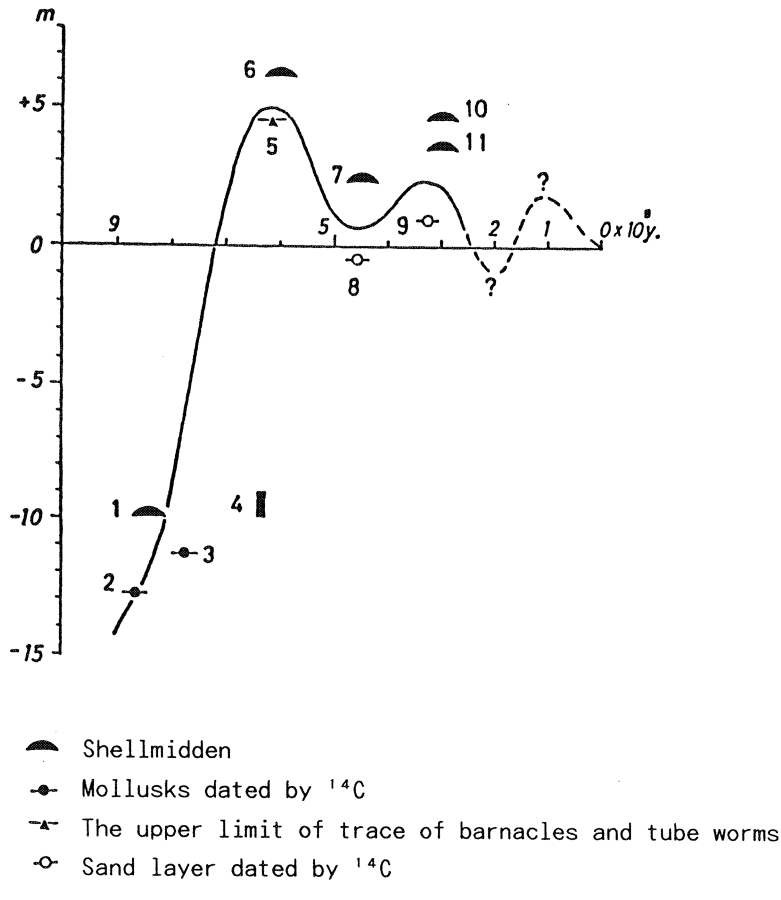

Figure 6.5 Relative sea levels after 9000 bp in the former Utsumi Bay, Aichi (Maeda et al. 1983).

Various fishing activities of the Jomon period

The many kinds of fishing gear and fish bones recovered from Jomon sites provide evidence of a variety of fishing methods and tools (Fig. 6.6), which vary both across different environmental boundaries, such as coastal inlets or open sea, and across different periods and regions. In the Kanto district, which had many bays and inlets, most of the evidence suggests inlet fishing methods, such as the use of nets to catch large quantities of small fish. This was not the only type of fishing in the Kanto district, and there is also evidence of fishing on the open sea in some areas of the Kanto, where sites at such places as the Miura peninsula, the tip of the Boso peninsula and the Izu islands face the open sea.

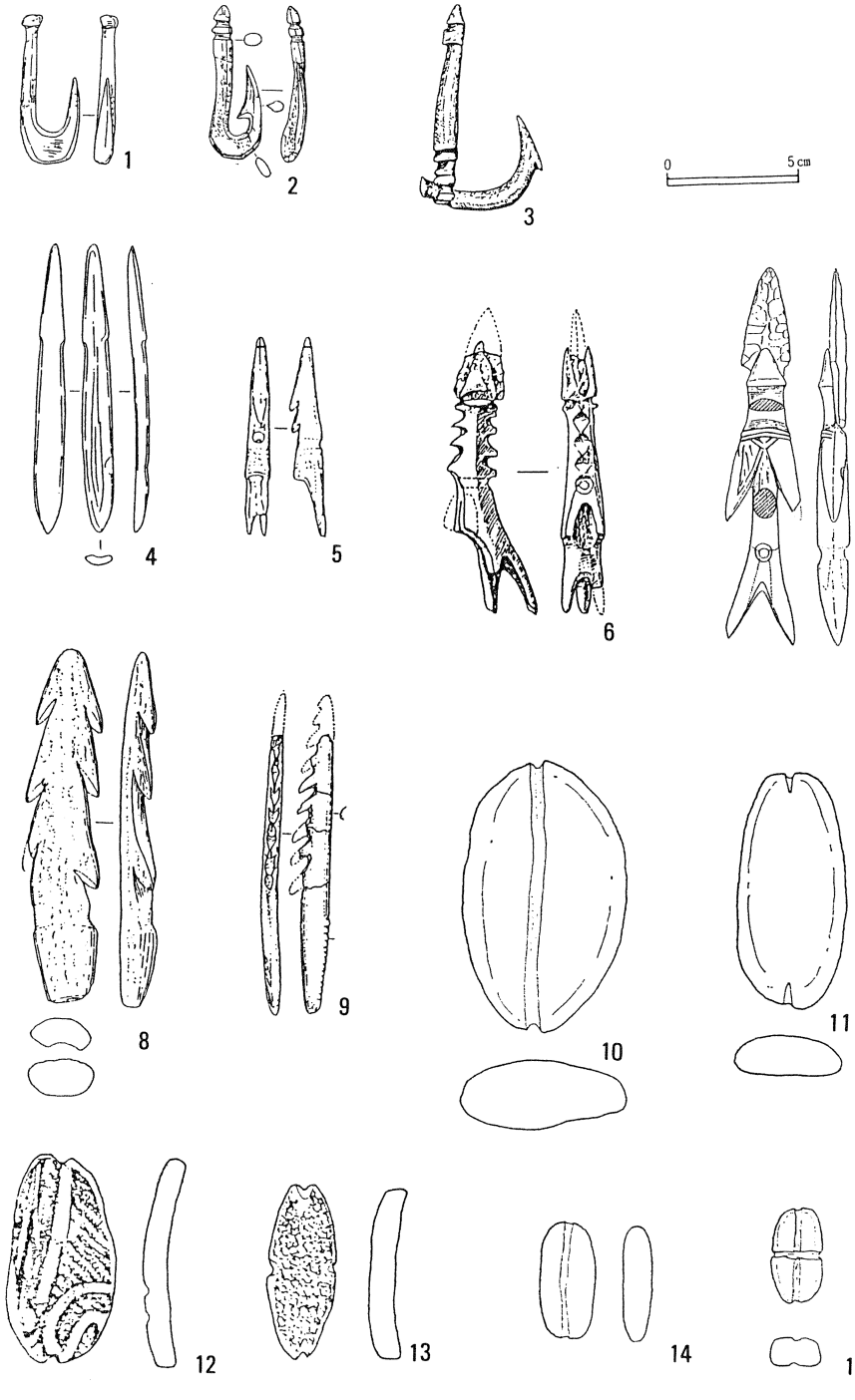

Figure 6.6 Variety of fishing tools of the Jomon period.

However, it is difficult to provide a complete summary of Jomon fishing, which developed over a long period of time and in a variety of environments. Therefore, I will enumerate only briefly the major methods employed. Fish-hooks are a common occurrence after their first appearance in the Natsushima shell midden at the beginning of the Initial (II) Jomon. They vary in size and form, but most of them were made of deer antler. On large fish-hooks, some as long as 10 cm, the shaft and hook were made separately and then joined together, their size suggesting that very large fish were caught by this method. In some shell middens in the Kanto district, where fishing in bays and inlets prevailed, an abundance of small fish bones, such as those of sardines, halfbeak and small horse mackerel, were recovered through sieving and water flotation (Komiya 1981). These small fish would not have been caught individually but in groups or schools with a net. The discovery of such nets is very rare, but stone and ceramic weights are very common among Jomon artefacts (Fig. 6.6). They are classified into several kinds as follows: flat oval pebbles with chipped notches at both ends, similar types of pebbles but with rubbed grooves, grooved potsherds and purpose-made ceramic weights. The former are present in many sites from the Initial (II) Jomon in the Hokkaido and Tohoku districts. Although some are of the opinion that they were used as weights for weaving coarse mat-like material, it is reasonable to suggest that they functioned as net sinkers, because of their common distribution in coastal sites. Floats made of pumice for nets as well as for angling have also been discovered. Fish spears made of bone were also used, although usually only in inlet and bay areas, and harpoons made of antler or bone were used mainly on the open sea. Early specimens of the latter are found, beginning from the Initial (II) phase in Hokkaido and Tohoku districts, and were continually being improved up until the Final Jomon. Different types of harpoons were developed in the Hokkaido, Tohoku, Kanto and Kyushu districts. They were some of the most distinct localized tools.

There are some sites, such as the Shomyoji shell midden (Kanagawa prefecture; Yoshida 1960), or the Mawaki site (Ishikawa prefecture; Mawaki SRP 1986), located by an inlet connected to the open sea, where the remains of many tuna and dolphin were found. Jomon people, taking advantage of the topography, appear to have driven the tuna and dolphins into the inlet, where they were caught. Fishing in dugout boats and with harpoons on the open sea is inferred for sites without these special topographical features but where the bones of large fish such as tuna or bonito appear.

One rare discovery was a fish weir, constructed in a stream found in a Late (V) Jomon site at Shidanai (Iwate prefecture; Kudo et al. 1982). Built on the floor of an old river beside the settlement, it consisted of convergent fences and an oval enclosure, the entrance of which is directed up stream (Fig. 6.7). Bamboo basket traps are not known prior to the Yayoi period.

There has been a continuing debate over the role of salmon and trout. Previously, many salmon went up stream in the autumn in Hokkaido and Tohoku districts. A similar situation is assumed for the Jomon period, although the slight difference in temperatures at that time must have affected the distribution of available rivers. In a discussion of the major foods of the Jomon period, S. Yamanouchi

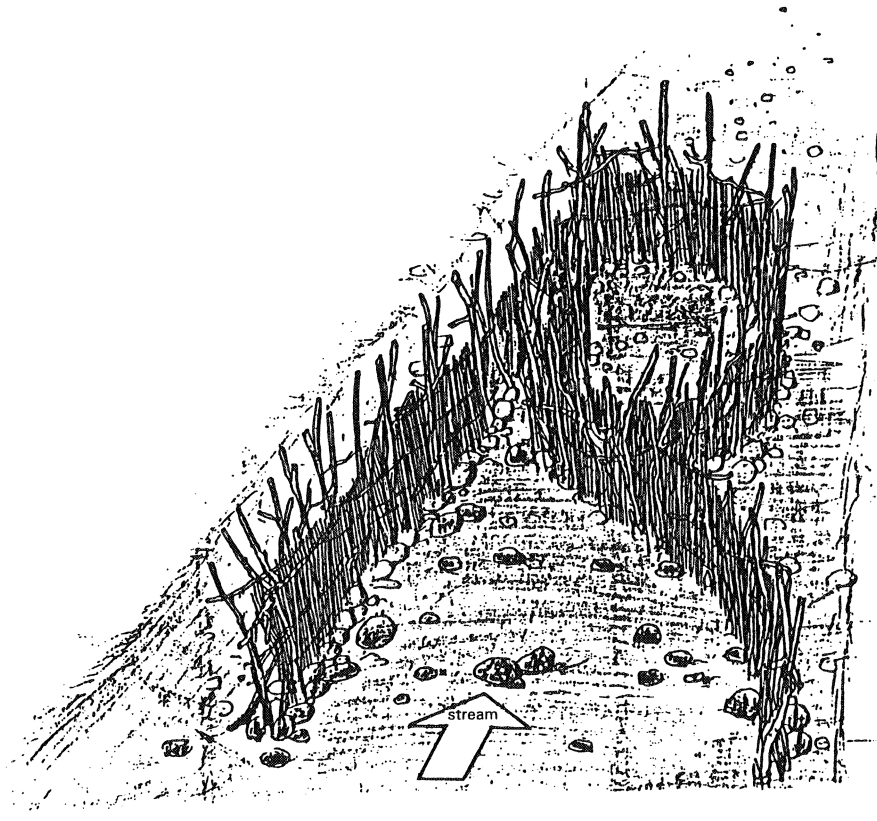

Figure 6.7 Reconstruction of fish weir recovered at Shidanai, Iwate (Iwate Prefecture Museum 1986).

(1969) drew comparison with California Indians who lived in an area within the same latitudes as that of the Jomon, hypothesizing that, as in northern California, acorns and salmon were the major foods in northeastern Japan, whereas in southwestern Japan it was only acorns. He explained the large number of Jomon sites in the former and the comparatively small number in the latter by the difference of available staple foods (Yamanouchi 1969). However, Makoto Watanabe (1973) pointing out the lack of salmon bones in shell middens, criticized this idea as a hypothesis lacking concrete evidence. Nevertheless, since sample sieving began, salmon bones have been reported from several sites in Hokkaido, Tohoku and coastal areas of the Sea of Japan (Fig. 6.8; Matsui 1985). A large quantity of bones were found at an Incipient Jomon site at Maedakochi, Tokyo (Miyazaki 1983) and an Epi-Jomon site at Ebetsubuto, Hokkaido (Fig. 15.1; Takahashi et al. 1979). The rare discovery of salmon bones may be attributed both to its special processing for preservation and to its fragility. Salmon and trout possibly played a great role in northern Japan, especially, if as surmised, it was preserved for consumption in the winter and spring. Although accepting the importance of salmon fishing, this alone does not fully explain the success and prosperity of the Middle Jomon – the highest

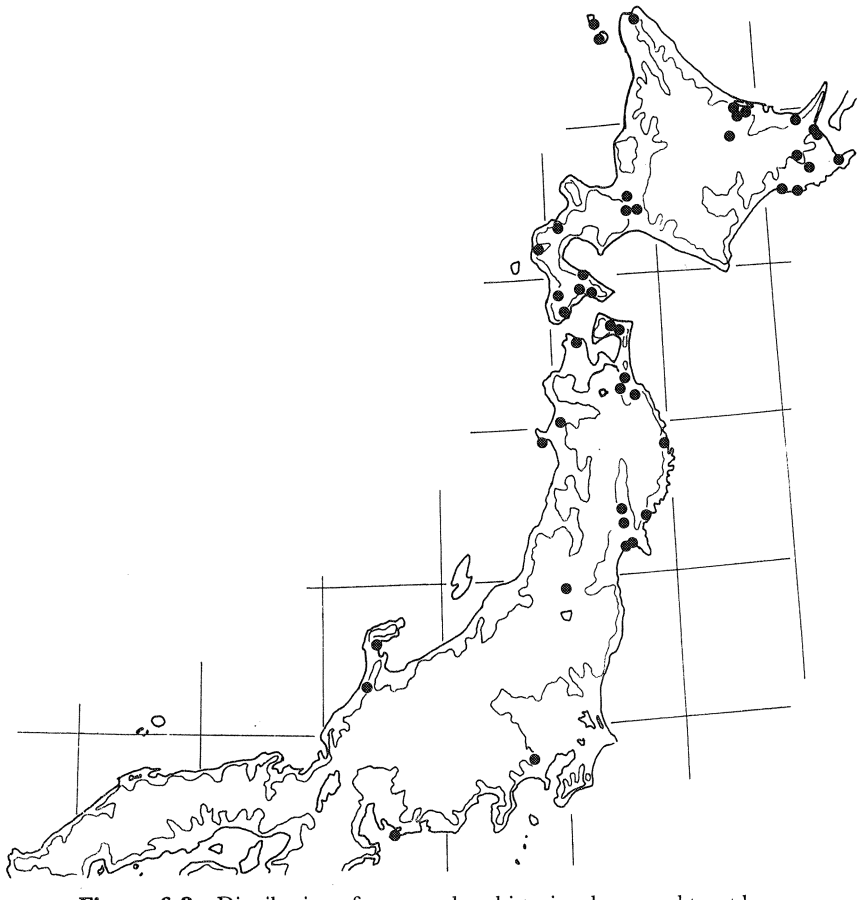

Figure 6.8 Distribution of recovered prehistoric salmon and trout bones.

point of Jomon culture – since many large settlements were located in areas where salmon could not have gone up stream. Some rivers in these areas had estuaries located on the warm southern coast, and whose temperatures were even warmer than they are at present.

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CHAPTER SEVEN

Pit-traps and Jomon hunting

The discovery of pit-traps has provided Jomon research with primary evidence of hunting activities in open fields outside settlements. Hunting, one of the most important subsistence activities of the Jomon economy, did not remain static in terms of either the methods employed or its importance in the subsistence economy of the Jomon period. Paradoxically, the comparative importance of hunting as a subsistence activity declined precisely during those prosperous periods that are characterized by an increasing number of settlements, and an enlargement in their scale.

The Kirigaoka excavation

In 1970 I took part in a rescue excavation prior to a planned housing development in the Kirigaoka area of Yokohama City (Kanagawa prefecture). In those days, economic development and the accompanying construction of factories, roads, railways and houses had resulted in the destruction of many archaeological sites. Legal regulation against site destruction was enacted and the number of rescue excavations increased rapidly.

As a rescue excavation, the Kirigaoka excavation did not have a specific scientific aim, apart from recording with as much detail as possible any existing prehistoric settlements in the 3km^2 development area. Nine locations with possible archaeological sites were identified through survey and, following trial excavations, seven of them were fully excavated over the next 12 months. These sites were a little different from normal settlement sites, in that they had artefacts from very many phases of the Palaeolithic, Jomon and Yayoi, but very small quantities of each. No pit-dwellings, common both in Jomon and Yayoi sites, were found, although several oval pits, 1.5m long and 1 to 1.5m deep, were discovered. This feature gave me the idea that this area could once have been the hunting fields frequented by prehistoric people who left small amounts of artefacts but no pit-dwellings. The oval pits appeared to have functioned as pit-traps. Some of them had small but very deep post-holes on the bottom, which appeared to have been the bases of implements such as wooden spears.

When normal excavations at the seven locations were finished, we planned an additional project to shed light on the function, age and usage of the pits. The first requirement was to find as many pits as possible, since the relation between the topography, distribution and direction of the pits was expected to provide proof of our pit-trap theory. In order to fulfil the above aims, an extensive irregular area 350m long and 150m at its widest point, including a hill ridge, hill slopes, a flat terrace, and three depressions at the head of small valleys were selected for excavation. As it was too extensive an area to be dug manually, bulldozers were used to remove the black humus layer over the reddish brown loam, Only black patches in the loam where the pits had filled up with humus were excavated in the usual way by hand. When removal of the black humus layer was finished, as many as 116 oval pits were exposed on the surface of the loam. By the time the excavation was completed, many types of pits had been discovered. As summarized in Figure 7.1, the pits were classified mainly by the types of device at the bottom, which were inferred to have been employed in the pit-traps.

The relationship between the pits and topography was understood as follows (Fig. 7.2). Pits were scattered throughout the excavated area, with no concentration in one or just a few areas. Therefore, the distribution showed no preference in microtopography. Some pits were located even on steep slopes. This mode of distribution is very different from those of pit-dwellings, burial pits or storage pits in normal settlements, suggesting a quite different function. For the most part, pits were orientated perpendicularly to contour lines, but in areas around valley-heads, pits were orientated like arrow marks to the depressions. These orientations could be explained as following animal paths, which tended to go up and down gentle slopes and then turn down into the valley. Such an arrangement was seen as supporting our hypothesis.

There was no direct evidence with which to date the pits, probably because of their location away from settlements. Most of them have been roughly dated, however, to the Jomon period, because they have been dug from around the level of the ground-surface of the Jomon period. Although the most reliable material for dating in Jomon research is pottery, only 14 pits had small potsherds in their fill. These potsherds are considered to have fallen into the pit from the ground surface as the pit naturally filled up with soil. Therefore, not only contemporary but also earlier potsherds could have fallen into them. However, there must have been little or no chance for later potsherds to fall into them, because such small pits are filled up in a few decades. We observed that pits abandoned after our excavation were naturally filled to half of their depth within one year. Pottery recovered from the pits, classification of the pits, and a few cases in which there were overlapping pit types provided clues for dating. Most of the pits were dated to the late stage of the Initial (II) Jomon. Some of them were dated earlier, although exact dates are not known. One of the 14 pits with potsherds was dated to the Early (III) Jomon, and another was dated to the Historical period on the basis of the soil fill (Imamura et al. 1973).

These pit-traps were not merely deep pits but are thought to have been provided with some type of device to prevent a fallen animal from escaping. Such techniques are best understood for Type E. It has a long oval form at the surface of the

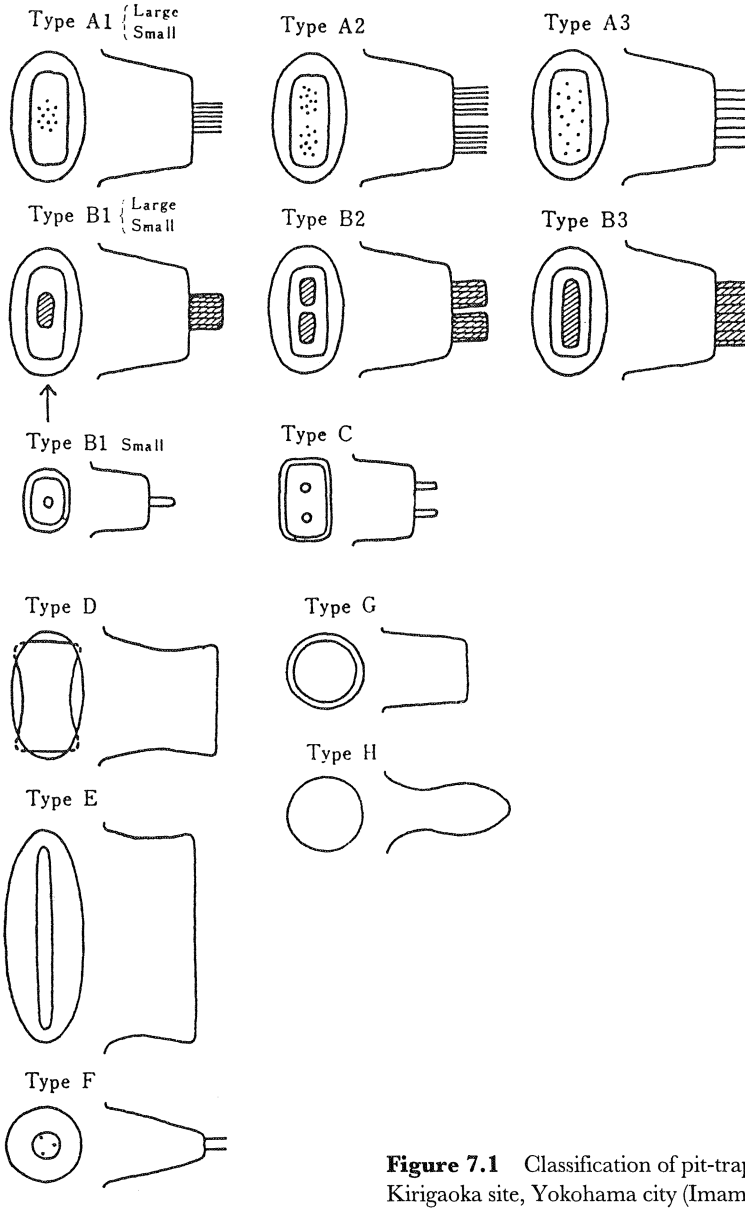

Figure 7.1 Classification of pit-traps of the Kirigaoka site, Yokohama city (Imamura 1973).

pit, decreasing in width towards the bottom, so that the lower portion of the pit is actually a narrow ditch. When an animal falls into the pit, it is caught between the two sides, its legs left dangling above the bottom, so that it is unable to assume a posture to jump out. Judging on the basis of this type, I have inferred similar techniques in other types. Type A features small deep holes on the floor of the pit, which are traces of poles driven into the bottom; Type B features long deep post-

Figure 7.2 Distribution of pit-traps at Kirigaoka, Yokohama City (Imamura et al. 1973).

holes firmly filled with hard loam blocks, which would have vertically fixed many poles. Type A and Type B are similar in that many poles were placed on the bottom. I do not think the tops of the poles were pointed, because 10 to 20 poles would not fatally wound the game, as the shock would be dispersed among the poles. My inference is that the poles were part of a device to deprive the animal of mobility,

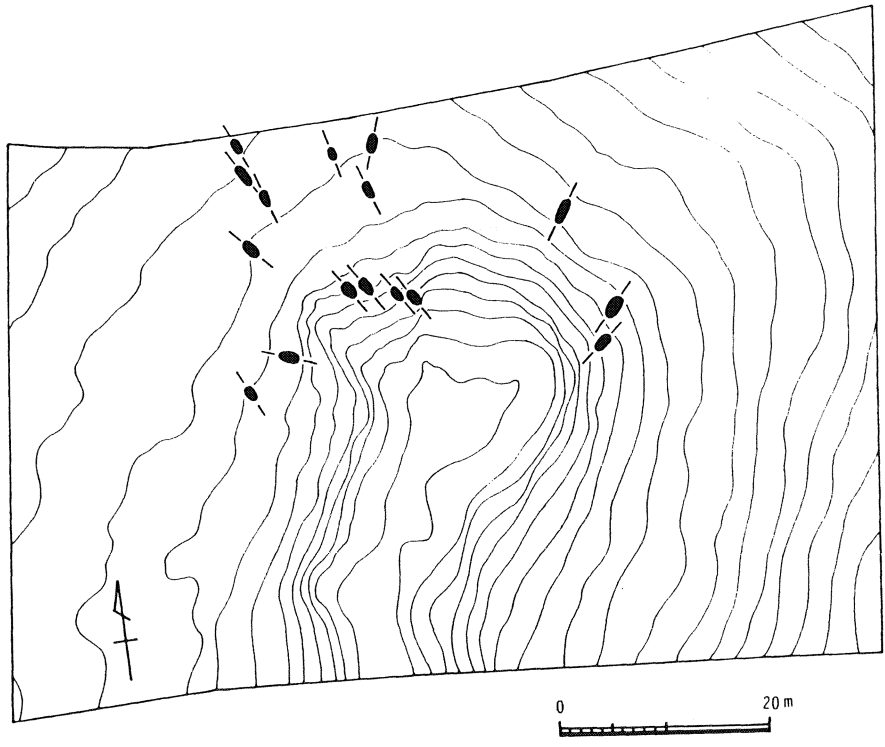

Figure 7.3 An example of the arrangement of pit-traps in which game is expected to fall by itself (Yamadamizunomi, Chiba; Imamura 1983).

as many poles longer than its legs would have prevented it from placing its legs on the bottom. Additional horizontal poles would have enhanced the effect. Moreover, although killing may be a sure way to capture animals, it would also necessitate frequent checking to ensure the game did not rot, thus losing the advantage of traps as automatic devices. Type D has no clear trace of post-holes on the bottom, but the waisted form of the floor and slight depressions at the corners suggest some kind of wooden structure.

Although we do not have concrete evidence for the type of game hunted, wild boar are the most probable game, as is the case with pit-traps recounted in folklore. We should also consider the possibility that pit types may have been designed for specific types of game. In Kirigaoka, Type E is known to be earlier than Types A and B of the late stage of the Initial (II) Jomon. However, many Type E pits are found in other areas, especially in the Tohoku and Hokkaido districts and dated to the Late (IV) Jomon period. Therefore, Types A, B and E appear to have been in use simultaneously over a long period of time. An important point is that there are only E-type pits and its variants in Hokkaido, where deer were plentiful but wild boar did not live. E-type pits must have been designed for deer, whereas Type A and B, the major types in the Initial Jomon of southern Tokyo, were possibly for wild boar. Small variants of Types A, B and C may have been for other small animals.

Criticisms of my pit-trap hypothesis have been made by a few archaeologists who have argued that the pits were too small and shallow. One critic produced a picture of a large pit-trap made by modern farmers and argued that pits smaller than this could not be pit-traps. The difficulty with such criticism, however, was that no substitute suggestion on their use was presented, despite repeated requests. Could it be claimed that Jomon people made an estimated million such pits in the Tama hill areas alone during the Initial Jomon without any specific purpose? In response to the criticism, I provided many ethnographic examples from around the world and demonstrated that, in comparison with them, Jomon pit-traps were not too shallow (Imamura 1976). Moreover, both the variation in these traps and their accompanying devices correspond with variations seen among ethnographic ones, and the positioning of pits in a row at regular intervals is seen in both Jomon and ethnographic pit-traps (Fig. 7.4).

Pit-traps are found throughout Japan

After the Kirigaoka excavation, the discovery of pit-traps was reported from many sites throughout most parts of Japan, including Hokkaido, Tohoku, Kanto, Chubu, Chugoku and Kyushu, although discoveries are rare in Kinki and Shikoku. These discoveries were mainly the result of an increased number of rescue excavations, as well as an increased recognition of such features. Such excavations are often called administrative excavations, because they are carried out by local governments as part of their duties; there were over 5,000 excavations a year in the early 1980s and the number is still increasing. Although excavated pit-traps have been dated from the Palaeolithic to the Historical age, most of them were dated to the Jomon period.

The densest distribution is known in the Tama hill areas in the southern suburbs of Tokyo, where many extensive rescue excavations, resulting from housing developments, together with the originally dense distributions of pit-traps buried in the earth, resulted in many discoveries. Southern Hokkaido and northern Tohoku also have dense distributions. In contrast to pit-traps of the Tama hill areas, most of which are dated to the Initial (II) Jomon, most of those from Hokkaido and Tohoku were dated to around the Late (V) Jomon (Imamura 1983). The major types of pit-traps in the above two areas were quite different in form.

Significance of pit-traps in Jomon hunting

The most detailed information on pit-traps has been compiled for the Tama New Town located in the Tama hill areas, where thorough rescue excavations were carried out in a planned housing area of 30 km^2, resulting in the discovery of more than 10,000 pit-traps. As the whole area was not excavated, we estimate that more than ten times this number actually existed. According to Hiroyuki Sato, who

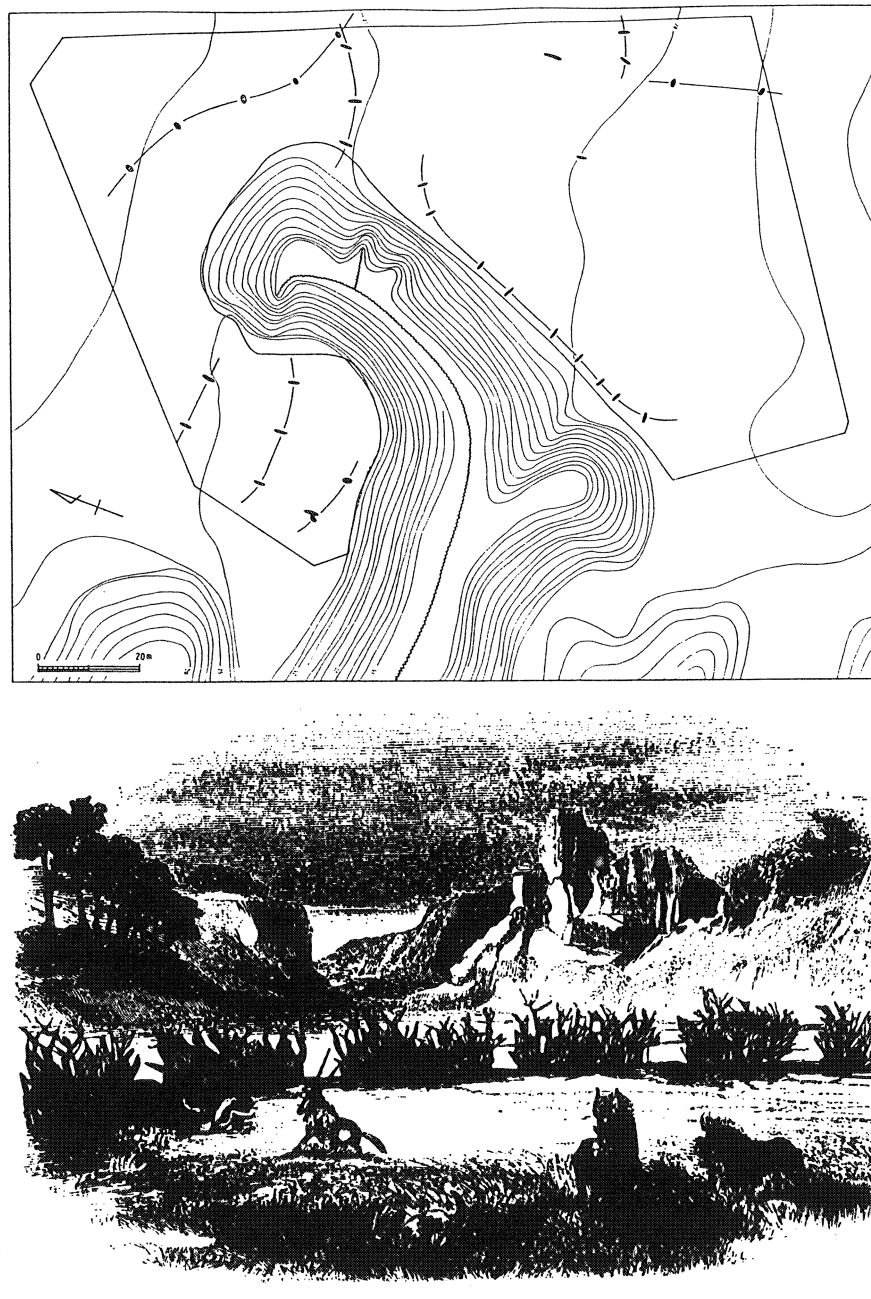

Figure 7.4 Arrangement of pit-traps in rows with presumed interval fences (Sapporo S153 site, Hokkaido) and the same arrangement of pits and fences seen in ethnography (the Damaras, southwestern Africa; Lagercrantz 1938, Imamura 1983).

compiled the data from the Tama New Town, they are divided into two groups; those of the late stage of the Initial (II) to Early (III) Jomon, and those of a later period for which exact dates are not known. The former are abundant and the major types correspond to the B1 and B2 of my classification, although he considers B1 to be older than B2. The latter group is not so numerous and the form is slender and without post-holes on the bottom. This type was not found in Kirigaoka. Pits of the former group are usually located on hills, especially around the depression at the head of long valleys, as well as close to the edge of terraces below hills, whereas the latter are usually located in flat areas of low terraces. The pits of the latter group were often arranged in a row at regular intervals, in contrast to those of the former group, which were not arranged in such a way although a few were clustered together in some cases. Arrangement in a row is often seen as characterizing pit-traps of the Late Jomon, especially in the Hokkaido and Tohoku districts. Judging from their location, concentrated around the top of valleys and the absence of linear positioning, pit-traps of the Initial Jomon in the Tama hill areas seem to have relied on the animals casually falling in the pits. By contrast, as is seen in ethnography, pit-traps placed in a row must have been accompanied by fences placed at appropriate intervals so as to lead the animals to the pits. Such arrangements may sometimes have worked in conjunction with hunters driving the animals. Ethnographic cases from northern Eurasia, Africa and North America indicate that more intensive animal drives were normally done with long convergent fences and a large hole or an enclosure at the end (Sato 1993). These convergent fences, if there were any, have left hardly any clear traces and it is impossible to judge whether or not they were used in the Jomon period. Linear alignment is not necessarily a later technique, because 13 pit-traps from the Late Palaeolithic were found arranged in an arc at regular intervals at Hatsunegahara (Shizuoka prefecture) (Fig. 7.5; Suzuki & Maejima 1990).

Although pit-traps cannot be dated precisely enough as to be linked to specific settlements, Hiroshi Miyazawa & Yasuhiro Imai pointed out a general tendency in the Kohoku New Town housing area for pit-traps to be located in higher and more inland areas, whereas roughly contemporary sites with fire-pits were located in lower and less inland areas, although these two distributions largely overlap (Miyazawa & Imai 1976). However, most sites with fire-pits do not have pit-dwellings and do not appear to be the stable base settlements of pit-trap users. Considering the fact that fire-pits were unique features to the period when the concentrated use of pit-traps appeared, we could assume that they had a special function, such as the processing of meat for preservation. As noted earlier, more than 10,000 pit-traps were found in the Tama New Town, most of them belonging to the late stage of the Initial Jomon, whereas only six contemporary pit-dwellings were found from three sites and these were only in use for a brief part of the time pit-traps were being used. It may be natural to assume some combination of sedentary settlements and nearby hunting grounds. However, hardly any settlements with pit-dwellings have been found to counterbalance the extent of hunting fields and pit- traps, not only in the Tama New Town itself but also in the surrounding areas. As noted previously, pit-traps of the Initial Jomon in this area seem to have

Figure 7.5 Palaeolithic pit-traps arranged in an arc at Hatsunegahara, Shizuoka (Suzuki & Maejima 1990).

relied on the animals falling in by themselves, and consequently the pit-traps would have required periodic checking. This would be highly improbable from distant settlements. Therefore, one would have to infer a very specific mode of life without fixed dwellings, such that, at least for some seasons during the year, persons would have been largely dependent on pit-traps. In contrast to this is the Middle Jomon phase in which about 10,000 pit-dwellings but only a few pit-traps have been excavated in the Kanto district. Thus, although pit-traps were certainly used in the Jomon period, the specific techniques and frequency with which they were used changed considerably from time to time. One may also doubt the tendency to assume similar and steady progression in modes of life from one phase to the next throughout the Jomon period.

Another insight gained from pit-traps is that the majority of plains and hilly areas had been exploited as early as the Initial (II) Jomon. The increase in population reflected in the number and scale of settlements from Initial (II) to Middle (IV) Jomon was not the result of territorial expansion but the result of an intensified use of the environment and other natural resources.

Relative importances of hunting, fishing, and plant food gathering

There was little change in hunting tools from one phase to another during the Jomon period. One exception is the Incipient (I) phase, when there were many spearheads and tanged points. Although the use of spearheads continued in the Hokkaido and Tohoku districts, the major tool used in hunting during the Jomon period was the arrowhead. Dogs also assisted humans in their hunting. Among the various game, wild boar and deer were important because of their body size. There were no wild boar inhabiting Hokkaido, but deer are thought to have been very important in local diets during the Jomon period, as suggested by early ethnographic accounts on the Ainus who lived in Hokkaido. In some coastal areas of Hokkaido and Tohoku, where seals and fur seals stopped in on their migration route, they were hunted in great numbers. It is very difficult to calculate the ratio of hunting, fishing, and gathering in providing basic nourishment. One point for certain is that they varied over time and between regions. Methods of analyzing carbon and nitrogen isotopes in human bone have recently been applied to the study of Japanese prehistoric diet and are potentially revolutionary in this regard (Fig. 7.6; Minagawa 1990, Akazawa et al. 1993). The data, however, are not sufficient at present and have thus far concentrated on those coastal areas with shell middens, which preserved human bones. Consequently, it is as yet difficult to know the overall patterns and changes in dietary habits across the different phases and between the different areas in the Jomon period. In any event, it has been clarified that fish and sea mammals occupied a high proportion of the local diet in coastal areas, with the ratio increasing in northern areas. This trend conforms well with previous estimations. (Note that this method does not shed light on the sources of calories but only on those of protein.)

Here I will try to link changes in the population, as reflected in the number and scales of settlements, with changes in the composition of stone tools for the Kanto district where the large number of researched sites ensures that the data is reliable (Imamura 1987).

During the Incipient (I) phase, when both the number and scale of sites were very small, the high proportion of stone tools associated with hunting and the almost negligible amounts of fishing and plant-food processing suggest that hunting must have been primarily important. As previously noted, during the Initial (II) phase, when the condition of sites reflected an increase in population, there is an overwhelming proportion of plant-food processing tools to hunting gear. There was also a large variation in the composition of stone tools between

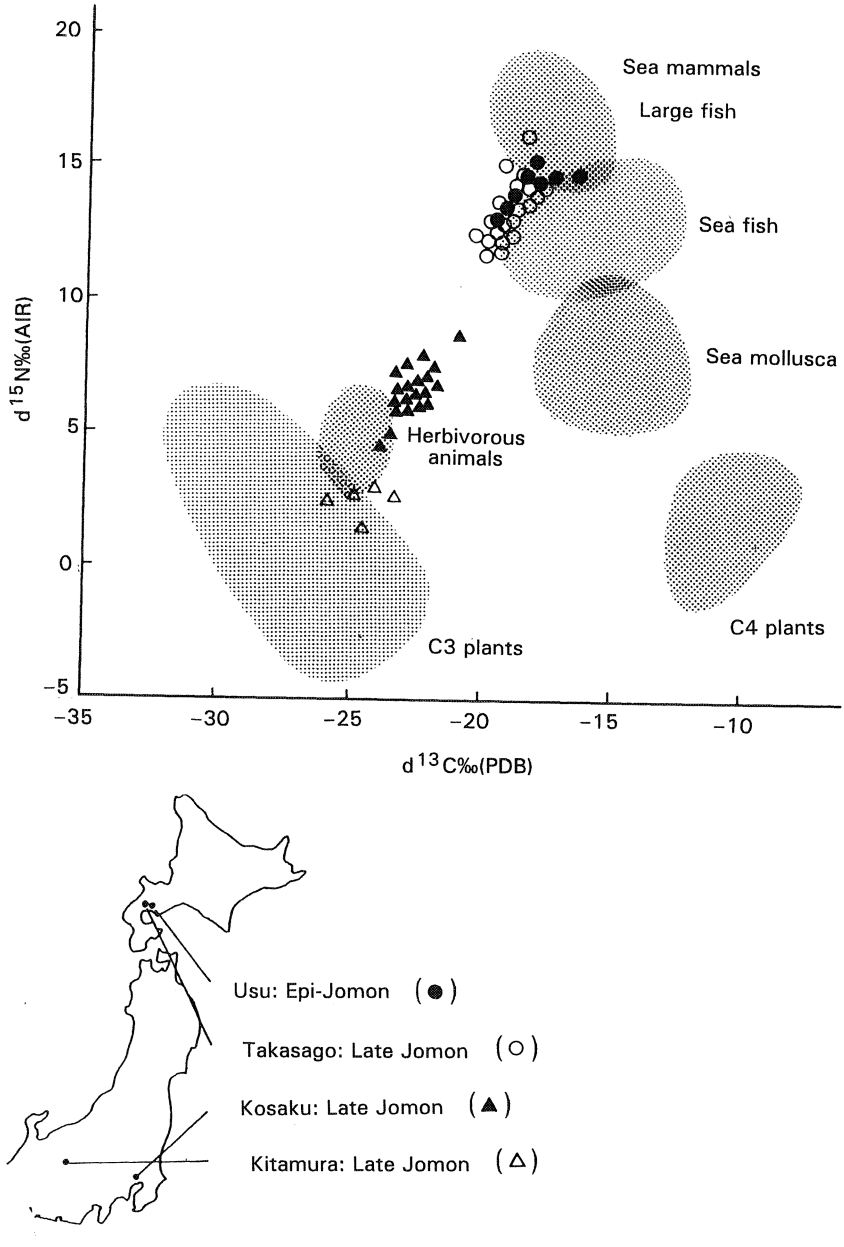

Figure 7.6 Jomon dietary tendencies, analyzed by carbon and nitrogen isotopes (Akazawa et al. 1993).

sites, especially in coastal areas where fishing became increasingly important.

We have also seen the very peculiar development of the mass use of pit-traps and dense distribution of very small sites in hill regions during the late stage of the

Initial Jomon. In the Middle (IV) Jomon when the population greatly increased, the proportion of hunting tools reached its lowest point over the entire Jomon period and few pit-traps were made. Large numbers of chipped stone axes, which despite their name functioned as digging tools, were used in western Kanto as well as the Chubu Highlands. During this Middle phase, many large horseshoe-shape shell middens were formed in coastal areas of eastern Kanto. However, in inland areas there were similar large settlements but without shell middens, indicating that marine resources were not indispensable for a stable life. Nevertheless, by the time of the Late (V) Jomon, when the number of inland sites began to decrease in western Kanto and the Chubu Highlands, the large sites were mainly located in eastern Kanto, where there were abundant bays and inlets. This trend towards a concentration in coastal areas continued and intensified throughout the remainder of the Jomon period. This movement seems to have been caused by shortages of plant foods, which brought about both the depopulation of inland areas and an increasing dependence on marine resources enabling stable life to continue only in coastal areas. The decrease in the number of sites reached its lowest point, close to the levels of sites in the Incipient (I) phase, during the late stage of the Final (VI) Jomon. Even sites located at what were formerly large shell middens rarely left shell layers, and subsistence activity is thought to have been centred around hunting. Great quantities of arrowheads and animal bones, sometimes called "bone midden", are more prominent during this phase than at any other time. This phenomenon can be interpreted as a shortage of sea resources brought about by increasing alluvial deposits and, hypothetically, by decreasing sea levels. These processes were specific to the Kanto district and there were different movements in other districts as will be dealt with later.

Looking at the processes at work in the Kanto district, what emerges is a close relationship between changes in modes of subsistence and changes in population, as inferred from changes in both the number and scale of settlements. For the Kanto district, population changes can be plotted as a curve with a peak of high population during the Middle Jomon and gradual but striking decreases on either side. It is impossible to give absolute numbers to the population. If one could assume that the population of the Jomon period was in proportion to the total numbers of pit-dwellings of a unit time, the difference between the largest and smallest populations in the Jomon period of Kanto would be more than a hundred and maybe as much as a thousand times greater. There are too many uncertain elements to give such concrete estimates, but a hundred is not an exaggerated number and it would be accepted by most Jomon researchers. Larger populations are linked to the prominence of plant foods, and smaller populations are linked to the relative importance of hunting. Fishing seems to have supplemented shortages in plant foods, and populations were extremely small during periods when neither plant foods nor marine resources were enough (Imamura 1987).

It may seem contradictory that population and hunting are in inverse relation. It is explainable, however, in as much as the prosperity of the Jomon period was supported mainly by plant foods, and their availability is what primarily affected the population. Moreover, population increase meant a decrease in the number of

game animals per person and would have resulted in a decrease in the comparative importance of hunting among all subsistence activities. Men are the greatest predators of animals, so a great increase in human population could have affected the population of animals. Generally speaking, fishing was more significant than hunting in the overall subsistence patterns of the Jomon period. However, although fishing was able to supplement the deficiencies in plant foods, it alone did not bring about prosperity to the Jomon people, at least as far as the Kanto district is concerned.

Harsh conditions, such as those seen in the Late and Final phases, did not always develop over such a long period of time, but sometimes occurred abruptly. Around the time of the Jusanbodai type pottery during the final stage of the Early (III) Jomon phase, the number and scale of sites of the Kanto district decreased suddenly. The remaining large sites, which compared to those of other phases were small to medium size, were usually located fronting the open sea. In other contemporaneous sites, an increased proportion of arrowheads in relation to other stone tools provides evidence of active hunting. Once again the explanation for this is a shortage of plant foods, which brought about a sudden depopulation in the Kanto district, with the remaining population increasingly dependent on open sea fishing and hunting (Imamura 1992a).

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CHAPTER EIGHT

Plant foods and the Middle Jomon culture

The prosperity of Jomon culture reached its climax in northeastern Japan during the Middle (IV) phase of the Jomon period. The basis of this prosperity was plant foods. There were two different areas, one characterized by many storage pits and the other characterized by large quantities of digging tools called chipped stone axes.

An outline of the Middle Jomon culture

Jomon culture reached its climax during the Middle phase in the area of central and northern Honshu. The following description will concentrate on the Chubu and Kanto districts of central Honshu, with occasional reference to the Tohoku district. The prosperity of the Middle Jomon culture is most clearly demonstrated in the numbers of sites and pit-dwellings. Although the Middle Jomon, radiocarbon dated between 5000 bp and 4000 bp, accounts for only a tenth of the chronological span of the Jomon period, 70 per cent of all excavated pit-dwellings in the Chubu and Kanto districts belong to this phase and 50 per cent of all excavated pit-dwellings to the latter half of this phase alone. When we compare the average numbers of pit-dwellings in the earlier and latter half of the Middle Jomon, there are respectively 13 and 30 times more pit-dwellings than the average number of those during other phases of the Jomon period. When calculated on the basis of pottery type as time unit, we see a sharper increase in population followed by a more abrupt decline (Figs 8.2, 8.3) than we do when calculations are made based on Jomon phases as time unit.

The prosperity is also evident in the scale of settlements. Dozens of settlements with more than 50 pit-dwellings, many of which were arranged in a circle, have been excavated in northeastern Japan. Such large numbers of pit-dwellings did not all exist simultaneously but were the product of successive rebuilding over time, as evidenced both by the several successive pottery types and by the overlapping remains of pit-dwellings.

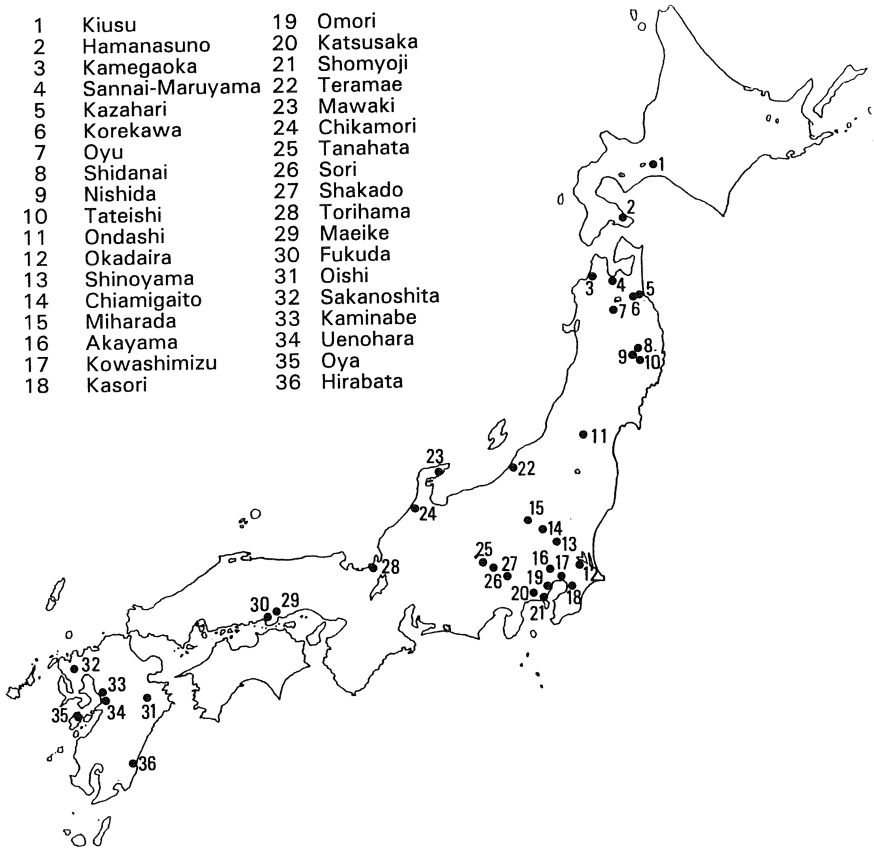

Figure 8.1 The Early, Middle, Late and Final Jomon sites referred to in the text.

In the Miharada site (Gunma prefecture; Akayama 1980), dated to the latter half of Middle and the beginning of Late Jomon, 341 pit-dwellings arranged in a circle around a central open space were excavated. In the Kowashimizu site (Chiba prefecture; Fig. 8.4; Kowashimizu 1976), a settlement dated from the middle to late stages of the Middle Jomon, 260 pit-dwellings arranged in a circle with more than a thousand pits in the central clearing were excavated. Many of the pits were flask-shape in cross-section and are thought to have been used for storage. There are also shallow pits at the centre of settlements, thought to have been burial pits.

Although not wholly excavated, the following concentric settlement plan was clearly recognized at the Nishida site (Iwate prefecture; Fig. 8.5; Sasaki et al. 1980, Nagamine 1981): burial pits in the centre were encircled by buildings evidenced only by post-holes, followed by an outer ring of pit-dwellings and finally by storage pits located at the periphery. Such circular or concentric arrangements are common for large settlements. Forerunners of such arrangements are seen in the Initial (II) Phase. They were clearly established by the Early (III) Jomon and followed by their

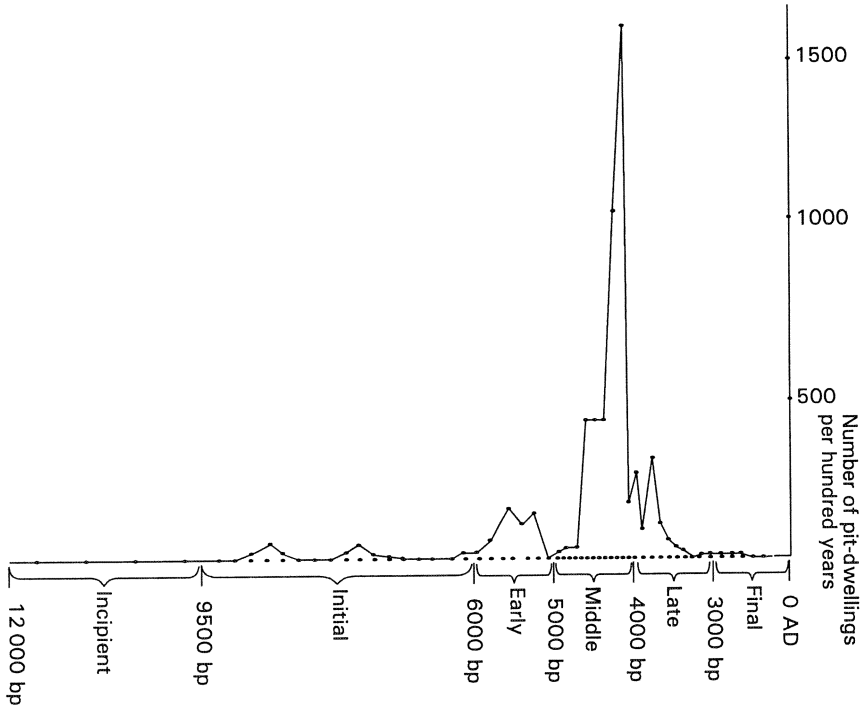

Figure 8.2 Change in numbers of excavated Jomon pit-dwellings in the western Kanto district with pottery type designating time unit (Imamura in press).

rapidly increasing number and intensification during the Middle (IV) Jomon.

Another indication of the flowering of Jomon culture during this time is the increase in symbolic elaboration, as seen, for instance, in the development of pottery decoration, and in the production of cult objects such as ceramic figurines and stone rods. The Katsusaka series of pottery types, distributed in the Chubu Highlands and western Kanto, display a variety of forms and decoration that were developed during this phase. It is often regarded as the climax of Jomon fine art. Although inferior in refinement of craftsmanship to the Kamegaoka types of the Final Jomon in the Tohoku district, its exceptionally vigorous three-dimensional decorations are worthy of the name prehistoric art. If I were to choose a word that best described its character, it would be "over-ornate". Indeed, the pottery is so ornate that its actual use appears to have been secondary (Fig. 8.6).

Most, if not all, ceramic figurines of the Jomon period are female; there are also a smaller number in carved stone. The oldest female figurines from the Jomon period are from the Kamikuroiwa Rockshelter (Ehime prefecture), which are small flat pebbles with incised breasts and straw skirts (Fig. 8.7a; Esaka et al. 1967). They are small and simple but more realistic than later figurines, which are extremely figurative and highly symbolic representations. There are also small simple figurines from sites such as Hanawadai shell midden (Fig. 8.7b; Kono & Yoshida 1949) in the last stage of the Yoriitomon series pottery types. They are simple triangular

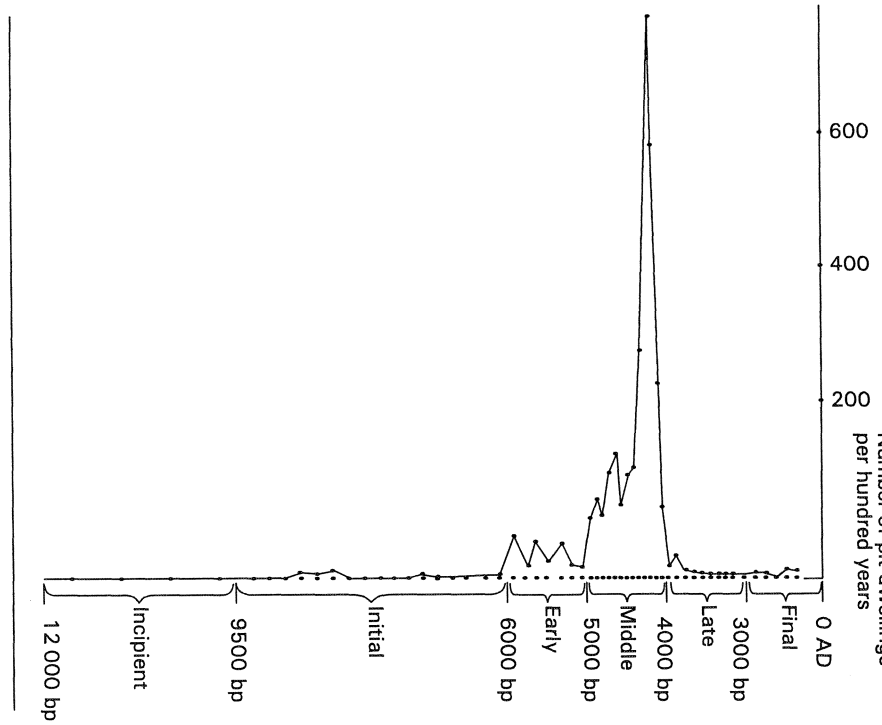

Figure 8.3 Change in numbers of excavated Jomon pit-dwellings in the Chubu Highland with pottery type designating time unit (Imamura in press).

or waisted tablets with buttons representing breasts. Because of a break in the archaeological sequence, their relationship to later figurines is not clear. In any event, they provide evidence for the existence of a religious world in which symbolic representation of women was required from a very early stage of the Jomon culture. Ceramic figurines increased in number during the Early (III) Jomon and large free-standing ones were made in the Middle (IV) Jomon of the Chubu Highlands and the Kanto district (Fig. 8.7c; Miyasaka et al. 1990). One from the Late Jomon Chobonai site is 42 cm tall and elaborately decorated (Fig. 8.7d).

Ceramic figurines varied according to the phase and region. There are a few sites with exceptionally numerous ceramic figurines, for instance, Shakado site (Yamanashi prefecture), which yielded more than 800 (Yamagata 1992) and the Tateishi site (Iwate prefecture), which yielded more than 200. This fact seems to indicate that settlements were not the same but that each had its own particular character. There are many opinions regarding the role of ceramic figurines. The fact that, of the many figurines known, most lack some body parts, led to the interpretation that they were broken in a kind of substitutionary ritual for wounded or ill persons. In the Shakado site, the discovery of two refitted fragments of one figurine found 300 m apart was interpreted as an attempt at complete destruction. There are also some cases in which figurines were intentionally

Figure 8.4 Distribution of pit-dwellings (large circles) and storage pits (small circles) of the Middle Jomon settlement at Kowashimizu, Chiba (Kowashimizu SRP 1976).

buried in a pit or in stone enclosures (Fig. 8.8).

The most prominent feature of ceramic figurines is that most of them are representations of women. There are many that represent women with swollen stomachs, and two from Shakado that have a clay ball in an empty belly, each implying pregnancy. Therefore, ceramic figurines are probably related to reproduction and fertility cults, and to the prosperity of future descendants. Stone rods often shaped in the form of a phallus also appear to have been related to such cults, and there are a few from the Middle Jomon whose length exceeds 1 m (Fig. 8.9). Some stone rods were found standing erect on the floor of pit-dwellings or among an arrangement of stones. As figurines and stone rods seem to be cult objects related to female reproductive capacity and male genitals, the religion of the Jomon period seems to have been based around sexual themes. One expression of this is a ceramic tablet with a representation of a male and female organ on opposite sides, which is from Otaru, Hokkaido. Ceramic figurines and stone rods lasted to the end of the Jomon period, whereas other kinds of cult objects such as ceramic and stone tablets, sword-shape stone objects and wooden objects like totem poles were increasing in variety and number from the Late into the Final Jomon phases.

It is interesting that ceramic female figurines became human-shape bone containers for secondary burial at the threshold of the Yayoi period (Ishikawa 1987) in northeastern Japan. It suggests that, at that time, concepts of death and fertility were linked. Another kind of bone container then was the storage jar. Preference for such a form with a small mouth, not convenient if adding large bones, may be

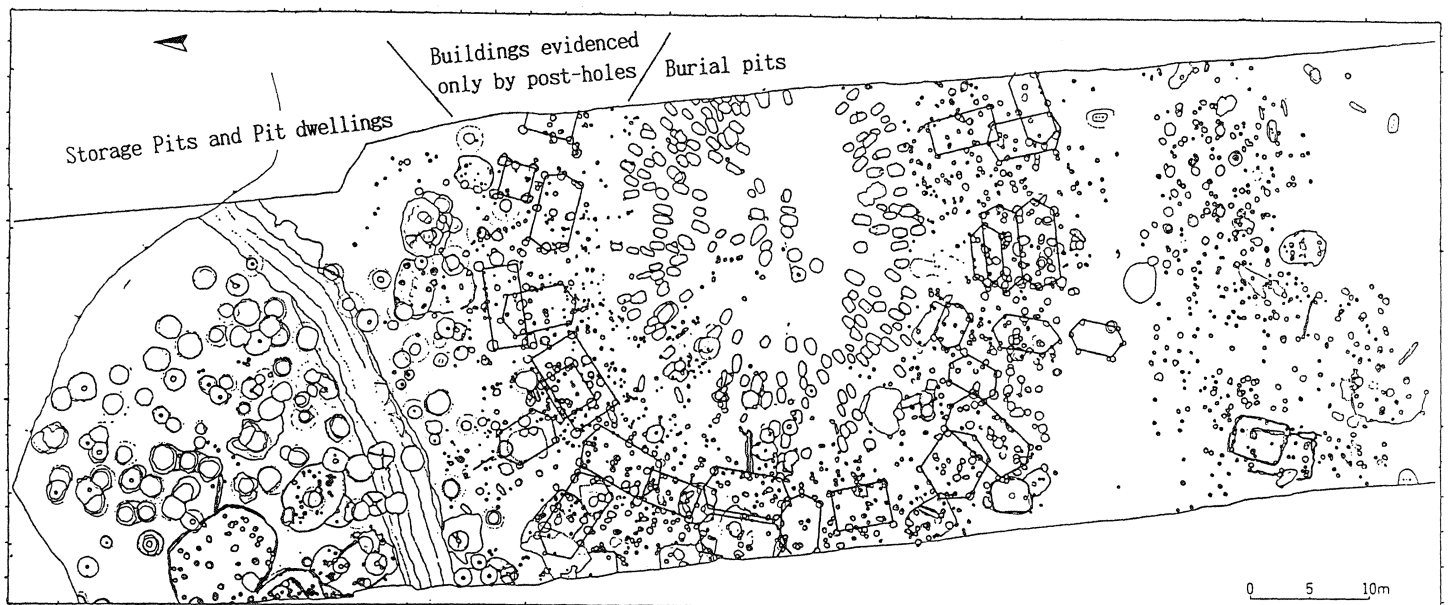

Figure 8.5 Concentric arrangement of different kinds of features in the Middle Jomon settlement at Nishida, Iwate, (Sasaki et al. 1980, Nagamine 1981).

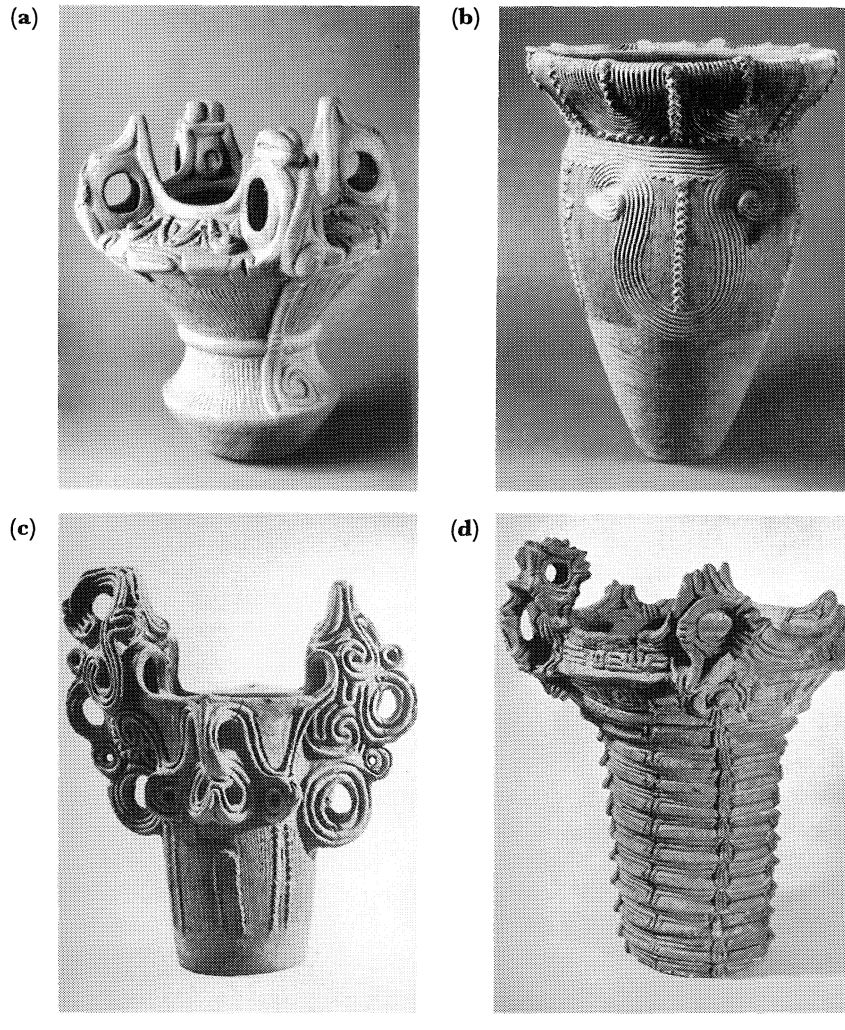

Figure 8.6 Pottery masterpieces of the Middle Jomon: (a) Takikubo, Tokyo; (b) Tonobayashi, Yamanashi prefecture; (c) Sori, Nagano prefecture; (d) Ashahi shell midden, Toyama prefecture.

explained by their probably commoner use of keeping seed, which would revive in the next year.

I have presented evidence of both quantitative and qualitative changes in order to demonstrate the flowering of Middle Jomon culture. Lastly I would like to present an interesting piece of evidence of the stability of Jomon subsistence, although it goes back to the Early (III) Jomon. It is a cookie or biscuit-like food, which was preserved in a swampy site at Ondashi (Yamagata prefecture). Analysis of the fatty acids and sterols produced evidence of ingredients such as chestnut and walnut flour, meat and blood of the wild boar and deer, and wild bird eggs. These

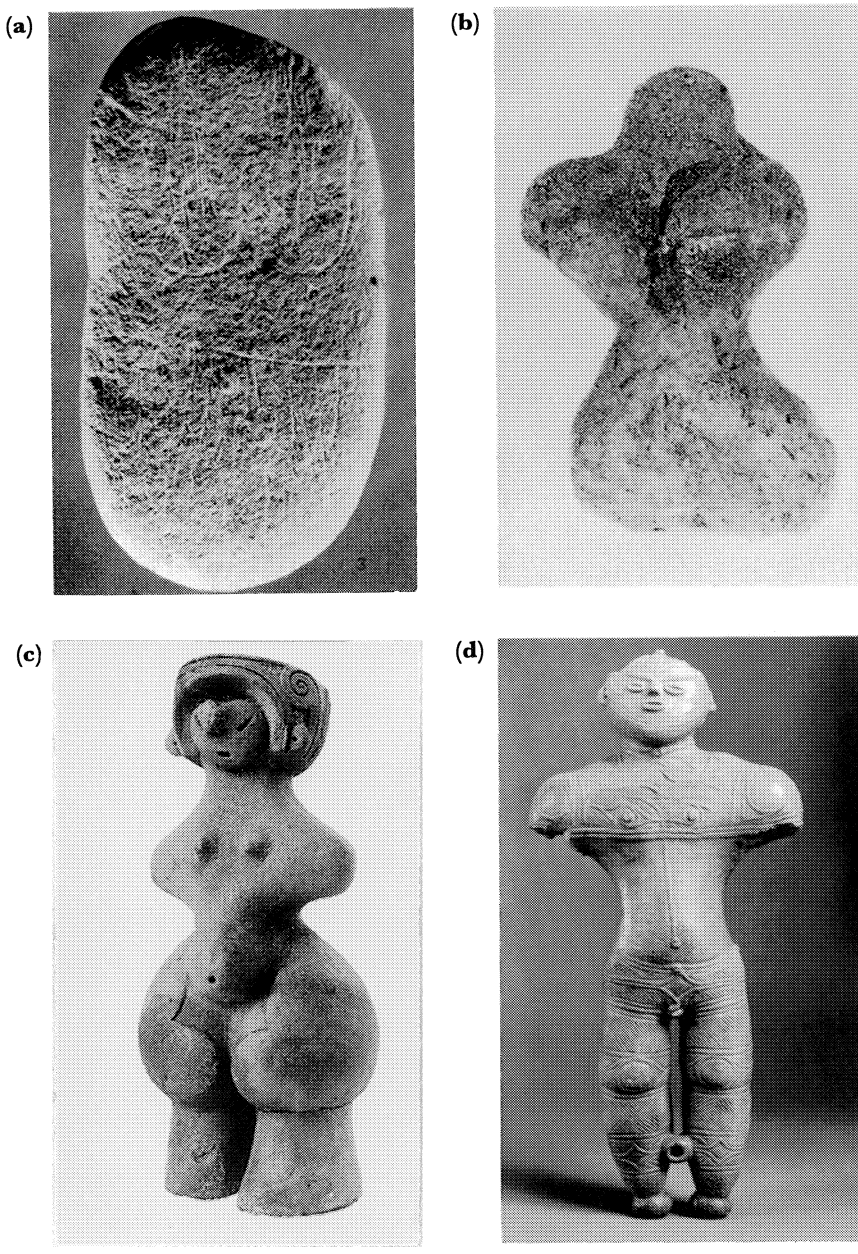

Figure 8.7 (a) The earliest representation of human figures from the Kamikuroiwa Rock-shelter, Ehime. Scratched lines were applied on small pebbles to represent hair, female breasts and straw skirts (Esaka et al. 1967). (b) One of the oldest clay figurines from the Hanawadai shell midden, Ibaragi (Kono & Yoshida 1949). (c) Self-standing clay figurine of the Middle Jomon, from Tanahata, Nagano (Miyasaka et al. 1990). (d) Large clay figurine of the Late Jomon, from Chobonai, Hokkaido.

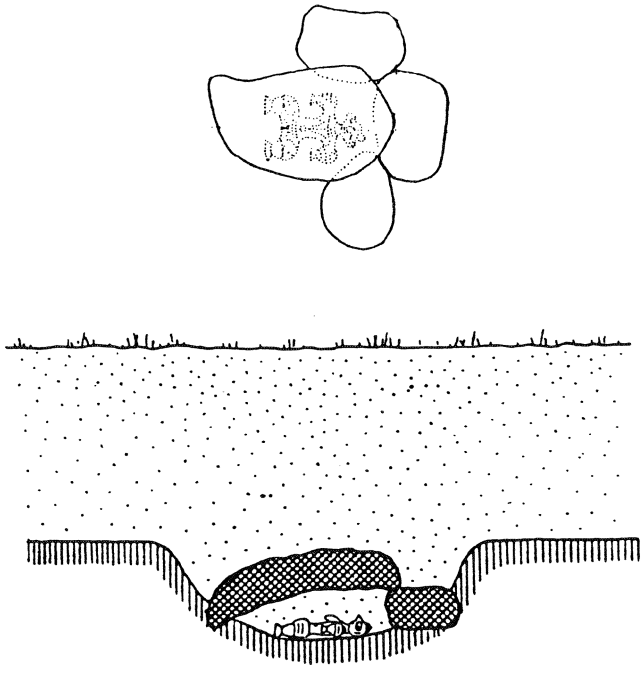

Figure 8.8
Reconstructed burial of a ceramic figurine at Sugisawa, Yamagata (Final Jomon; Sakai & Esaka 1954).

were classified into two major types: a "cookie type" containing much hydrated carbon and a "hamburger type" containing much protein (Nakano 1989). In addition to these surprising ingredients, beautiful patterns were applied on the surface (Fig. 8.10).

Economic foundations

What was the economic foundation of Jomon prosperity? There is evidence that in several regions there was a shift in the location of sites from higher areas during the Early (III) Jomon to lower terraces during the Middle (IV) Jomon, suggesting a change in subsistence activities between these phases (Fujimori 1965, Ishizaka 1985).

Stone and bone tools are often expected to reflect the overall trend of subsistence activities most sensitively among all artefacts. However, bone and antler tools are mainly recovered from shell middens so that comparisons between inland and coastal sites cannot be made on this basis. The following is a summary of common stone tools from the Middle Jomon (Fig. 8.11). Arrowheads are the most common hunting tools, although spearheads are also seen in Tohoku and Hokkaido. Tanged stone scrapers, thought to have been used for skinning and butchering, as well as drills for sewing skin or manufacturing bone tools, were also present. There are also large tanged stone scrapers made of coarse material, which are characteristic

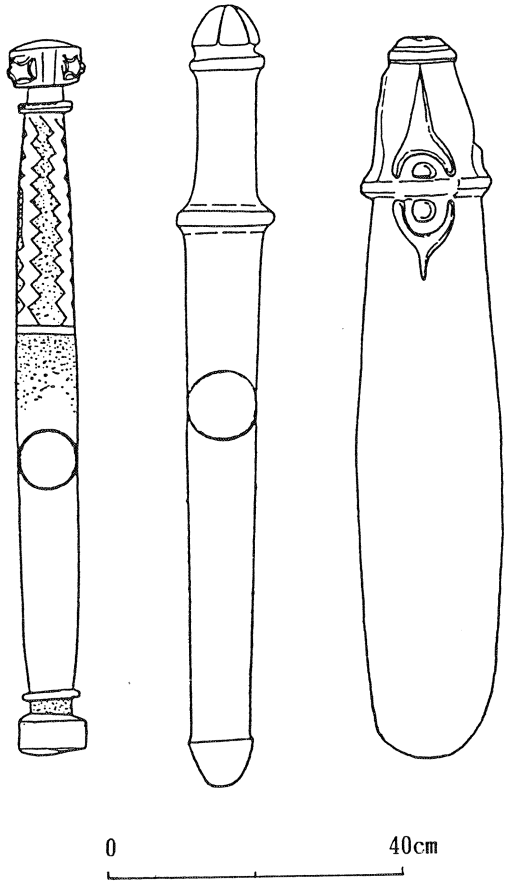

Figure 8.9 Stone rods of the Jomon period.

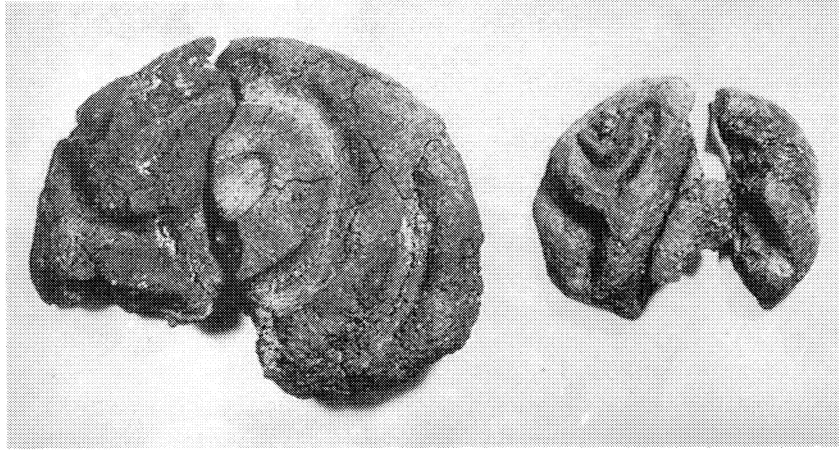

Figure 8.10 Cookie (biscuit)-like food from Ondashi, Yamagata (Early Jomon).

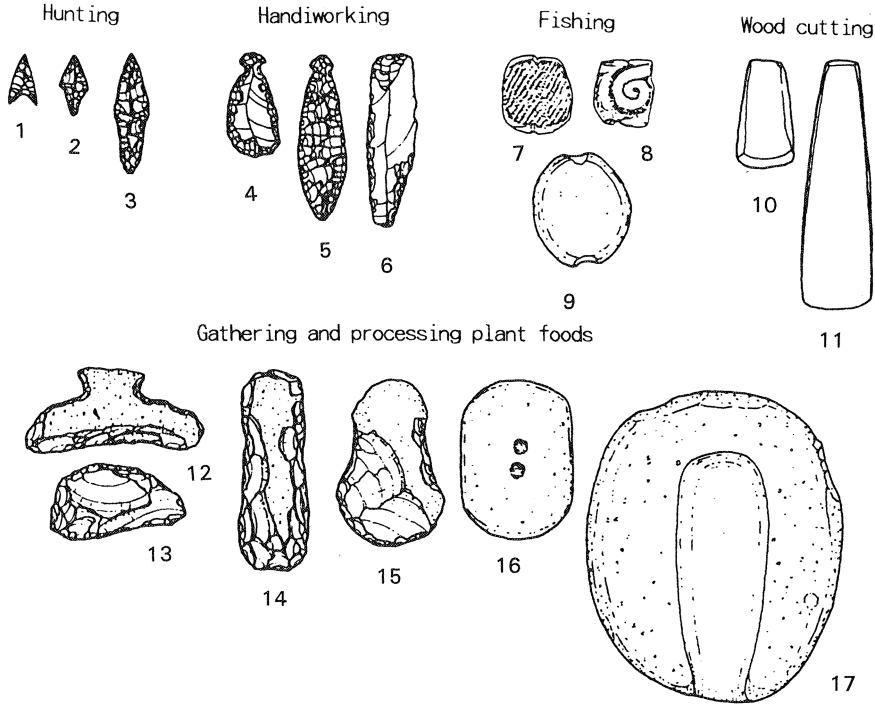

Figure 8.11 Standard Jomon tools. 1,2: arrowheads; 3: spearhead; 4,5: tanged scraper; 6: scraper/knife; 7–9: net sinkers; 10,11: ground axe; 12: coarse tanged scraper; 13: side blade; 14,15: chipped axes (digging tools); 16: pitted grinding stone; 17: grinding slab.

of the Middle Jomon and which seem to have been used for processing plant materials. Use wear analysis of chipped stone axes suggests that, despite the name, they were used as digging tools, whereas ground stone axes were used for cutting wood. There are also the so-called side-edged tools, especially numerous in the Chubu Highlands, whose function, according to one opinion, was for cropping plant foods, and can be the evidence of agriculture. Other tools presumably used for processing plant foods include grinding slabs, grinding stones, pitted stones and stone hammers. Fishing tools include stone and ceramic net sinkers and pumice floats.

Although stone tool types of the Middle Jomon are not significantly different from those of the former phase, change is reflected in the overall composition of tools with a decrease in hunting gear and an increase in plant-food processing tools. Chipped stone axes account for more than half of all stone tools in most sites of the western Kanto region and the Chubu Highlands. Formerly, even prior to the recognition of Yayoi agriculture, Kashiwa Oyama who excavated one of the main sites of the Middle Jomon in western Kanto, Katsusaka, hypothesized a phase of incipient agriculture on the basis of many chipped stone axes, which he interpreted to be hoes (Oyama 1927).

Eiichi Fujimori, who carried out much research of Middle Jomon sites in the Chubu Highlands, argued that the stability and prosperity of the culture could not have been achieved solely through hunting and gathering. He thus renewed the Middle Jomon agriculture hypothesis, arguing on the basis of both its non-hunting character and the large quantity of chipped stone axes, which he suggested could have been used as ploughing tools (Fujimori 1970). Makato Watanabe (1975), however, who studied techniques for processing acorns and other nuts in folklore, and applying this knowledge to archaeological material, suggested that such techniques were developed during the Jomon period, resulting in an increased number of edible plant foods. Further, he argued that it was this technique and not agriculture that brought about the prosperity of the Middle Jomon. This idea had to be modified, however, on account of the discovery at an Incipient site at Higashi–Kurotsuchida (Kagoshima prefecture), of stored acorns from deciduous oaks, which require a painstaking processing for the removal of tannic acids.

Early to Middle Jomon

There is no doubt that a wealth of plant foods and their intensive utilization had brought about prosperity during the Middle Jomon, but this may not be attributable to a single cause. In attempting to trace these developments to their climax, it is difficult to ascertain the precise point when such prosperity began, both because the former half of the Jomon period of northeastern Japan is basically characterized by gradually increasing prosperity and because patterns of development differ from area to area. For the Kanto district, the Early (III) Jomon phase is commonly recognized as one of generally increasing prosperity. However, there is a remarkable decline at the end of the Early phase, which makes the upward curve in the Middle phase the more conspicuous. For the Chubu Highlands, the Early phase also reflects a gradual increase, but the decline at the end of the Early phase is not so remarkable as it is in Kanto. Nevertheless, the upward curve in the Middle phase still stands out there. The dramatic contrast between the prosperity of the Middle Jomon and the subsequent decline in the Late Jomon is unique to this area.

Storage pits

For the Tohoku district, the Early (III) phase is also one of gradually increasing prosperity, although what is unique is that this trend continued to the climax of the Middle Jomon without interruption. Therefore, the increase in the Early Jomon and its climax during the Middle Jomon in Tohoku can be seen as a single phenomenon. This phenomenon is characterized by an increasing number of large settlements such as Sannai–Maruyama (Asahi 1994), as well as a corresponding

increase in the number of storage pits (Fig. 8.12). Storage pits usually amount to a few times the number of pit-dwellings. Many pits are flask-shaped and large ones measure 2m deep and 2m in diameter at the bottom. Storage pits are commonly seen throughout the Jomon period from the Incipient (I) phase onwards. However, the mere presence of storage pits should be distinguished from the mass use of many large storage pits, which reflects a carefully planned annual schedule of food storage. The latter, which appears to be part of the subsistence strategy that brought about the prosperity of the Middle Jomon, began in northern Tohoku around the middle of the Early Jomon and spread to the south. Then the extensive use of large storage pits appeared in northern Kanto in the middle stage of the Middle Jomon and spread to southeastern Kanto but did not appear in western Kanto or the Chubu Highlands.

Plant remains include chestnuts, walnuts, horse chestnuts and acorns. It would be too simplistic to suggest that it was the mass use of storage pits that brought about the stable supply of food and prosperity, as this merely represents an intensification in the use of such pits, which had been in use long before, although in small numbers. The key question is how such a large quantity of nuts were obtained.

Judging from nut remains found in the pits, and from the characteristics of various nuts, the most important were clearly chestnuts, which do not require special processing. Although walnuts are the most numerous of all plant remains, any estimate of their actual numbers must be reduced because of their hard shell, which resists decay. In 1961, Nakao Sakatsume (1961) listed 27 kinds of plant foods with archaeological evidence for their use in the Jomon period (Makoto Watanabe listed 39 in 1975 and then Kaoru and Tomoko Terasawa listed 64 in 1981). Sakatsume also noticed the important role of chestnuts and suggested that the growth of chestnut trees had been actively promoted by humans. This idea was repeated by several archaeologists, and recently an extraordinarily high percentage of chestnut pollen (Yasuda 1988), and a high frequency of chestnut trees among carbonized wood remains, have been reported from several swampy Jomon sites (Chino 1983). There are also indications of exceptionally large chestnuts, which cannot be seen among the present-day wild ones (Sakatsume 1956). It is clear that chestnut was

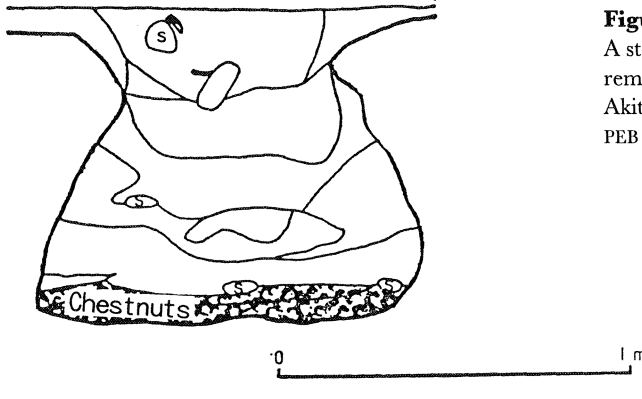

Figure 8.12
A storage pit with chestnut remains at Nashinokizuka, Akita (Final Jomon; Akita PEB 1979).

very important in northeastern Jomon. The question is whether the growth of chestnut trees was artificially encouraged or whether there was simply a very favourable environment for the natural growth of chestnut trees. The chestnut tree favours sunlight and its stump survives fire, so that, under certain climatic conditions, chestnut trees become dominant after a forest is burned (Fukui 1983, Iwanami 1988). Kuroboku (a black non-sticky soil), which is distributed widely in the plains of Japan, is considered by pedologists to have been formed under grassland conditions (Kato 1963). The important point is that there can be no other explanation for the spread of grassland in the Japanese climate but frequent and deliberate burning (Sakaguchi 1987, Sase 1988).

However, a quite divergent opinion based on the analysis of pollen and natural wood remains suggests that there is no evidence for extensive secondary forests (Chino 1991), that is, no frequent burning around Jomon settlements. Rather, it is suggested that although there must have been very favourable warm climatic conditions, which suited evergreen broad-leaved trees, these trees had not yet extended into these areas, thus allowing the chestnut to flourish (Yasuda 1988).

What remains is one of the major questions in understanding the basis of Jomon culture; that is, whether or not the flowering of the Jomon culture and the phase of greatest prosperity was simply related to natural changes in the environment or whether it was the fruit of extensive and deliberate human intervention. There is as of yet no conclusive answer to this question at present.

The mass use of storage pits or chipped stone axes, and plant cultivation

Another enigma is the minimal use of storage pits in the Chubu Highlands and western Kanto, which are areas with indications of having the highest level of prosperity in the Middle Jomon. One possible explanation might be that other means of storage were devised, and buildings, archaeologically evidenced by post-holes alone, would be the first candidate for this. However, this does not adequately explain the local phenomenon of minimal use of storage pits, because such buildings were extensively distributed in northeastern Japan. Moreover, the buildings are generally larger than normal pit-dwellings and certainly too large for storehouses. A more significant point perhaps is that, during the Middle Jomon period, many chipped stone axes were in use in those areas without an intensive use of storage pits (Fig. 8.13) but which were the most highly prosperous. Similarly, an inverse relationship between chipped stone axes and storage pits is recognized over time in these regions. The substantial use of storage pits is seen during the late Early, early Middle, and early Late phases of the Chubu Highlands and western Kanto, when these areas were not so prosperous and when chipped stone axes were not very abundant. However, in the middle and late stages of the Middle Jomon, which are characterized both by stable life and the mass use of chipped stone axes, there were only a few storage pits or at least a far smaller number of storage pits

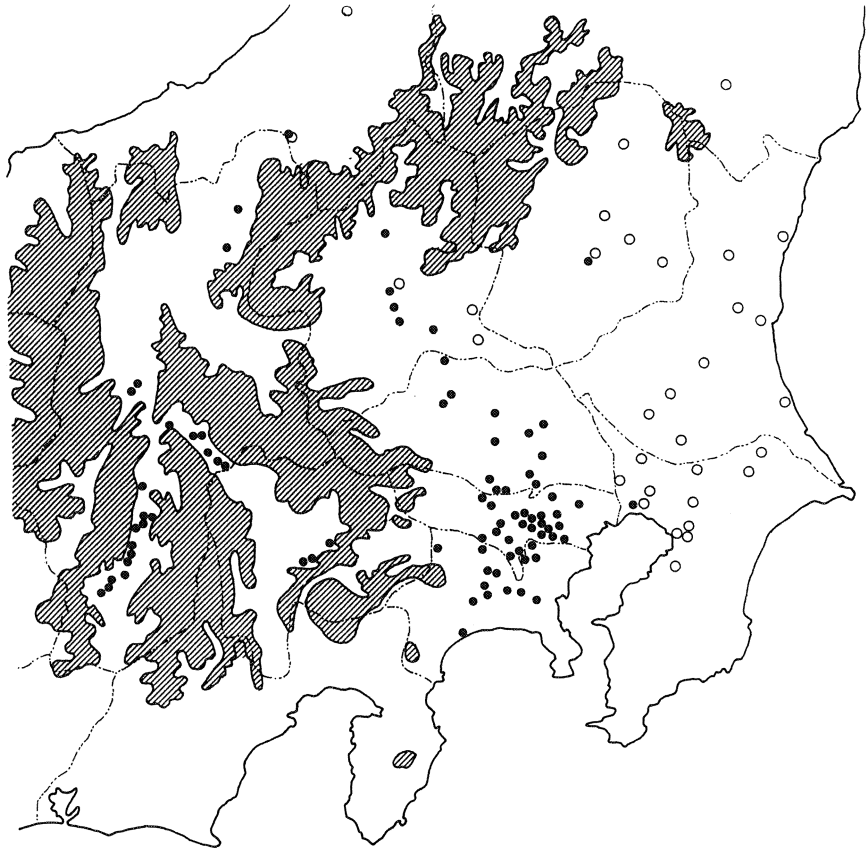

Figure 8.13 Mutually exclusive distributions of the mass use of storage pits (○) and the mass use of chipped stone axes (●) of the Middle Jomon period (Imamura 1989).

per pit-dwelling than the preceding and following stages (Imamura 1989).

The above situation demonstrates that the mass use of storage pits and the mass use of chipped stone axes were in inverse relation, in both temporal and spatial contexts. Both, and especially the latter, were part of subsistence technologies that contributed to prosperity, but what is the subsistence practice that involved the mass use of chipped stone axes?

As we have seen, Middle Jomon agriculture had been hypothesized on the assumption that chipped stone axes were used as agricultural tools, and some archaeologists still maintain this opinion. The problem, however, is that no suitable cultivated plant remains have been recovered from this phase, in spite of the fact that 10,000 pit-dwellings have been excavated. This stands in stark contrast to the frequent discovery of cereal remains from sites of the Yayoi period. Carbonized grains, which at first attracted attention as possible evidence of foxtail millet, were identified as "egoma" (*Perilla frutescens* (L.) Britt. var. *japonica Hara*) or "shiso" (*Perilla frutescens* (L.) Britt. var. *crispa (Thunb.) Benth.* (Matsutani 1983). Subsequently, perilla

was detected in bread-like foods, many recovered from several Early and Middle Jomon sites providing evidence of common use. Egoma and shiso are very similar plants and their seeds are difficult to distinguish even by scanning electron microscope. Their tastes, however, are quite different. Oil was extracted from egoma in many areas of Southeast and East Asia during the historical period and it is still used to cover cookies in rural areas of Korea. Shiso is commonly used for seasoning pickles or as garnish for raw fish dishes in present-day Japan. Both are cultivated for commercial purposes, but they are often grown for domestic use and can be seen growing quite naturally without much care in the corners of rural house gardens. Although the existence of perilla itself is very important as evidence of some knowledge of cultivation among Jomon people, it cannot be considered a staple food.

There are other possible cultivated plant remains known. They are green gram (*Vigna radiata* L.), gourd (*Lagenaria* sp.), rape (*Brassica* sp.), burdock (*Arctium lappa* L.), and hemp (*Cannabis sativa* L.) from the Early Jomon Torihama shell midden (Fukui prefecture), deposited in swampy areas around 5500 bp (Kasahara 1981, Umemoto & Moriwaki 1983). Buckwheat pollen was detected from a few Early Jomon and many Final Jomon sites (Yasuda 1984), and a seed was found at the Early Jomon Hamanasuno site, Hokkaido (Crawford 1985). Although of all the plants for which there is any evidence of cultivation prior to the introduction of rice, this plant alone would have been suitable as a staple crop. This presents a major problem in the debate over Jomon agriculture. Detection of its pollen from natural lacustrine deposit of 9000 bp (Tsuji et al. 1983), however, suggests indigenous presence, rather than very early cultivation, of buckwheat in the Japanese archipelago. In addition, no discovery as yet of imprints of the characteristic seed on any of pottery from the Jomon period denies common presence of this plant in their settlements.

Thus, for the Middle Jomon period, there appears to be no suitable or clearly identifiable crop that might have been cultivated with the use of the many chipped stone axes. At present, the major opinion concerning chipped stone axes is that they were used for digging natural tubers. Japanese indigenous yam (*Dioscorea japonica*) is still plentiful in hilly areas, and special tools are required to dig out the long tubers that extend downwards into the soil. Tubers are a natural store of energy and they remain in good condition from autumn until spring. Tubers need not be dug out for storage and, in fact, once uprooted, yams are difficult to store for long. Thus, digging for yams and storing them in pits are in most cases contradictory. Therefore, the inverse relation between the mass use of chipped stone axes and the mass use of storage pits may correspond to the difference between those areas that depended on nuts and those that depended on tubers. However, a problem remains as to why the gathering of yams was intensified and how they could have supported a greatly increasing population during the Middle Jomon. Tubers do not easily grow in dense forests, and it is necessary to assume the deliberate modification of the environment before arguing that the yam was the primary food source upon which the prosperity of the Middle Jomon depended, in those areas where the use of chipped stone was prevalent.

These areas, the Chubu Highlands and western Kanto, declined remarkably in the next Late Jomon phase. This phenomenon is generally explained by the arrival

of cool climate after the warm climatic optimum. These areas of decline correspond to areas in which there was a mass use of chipped stone axes. The higher the level of prosperity, the more severe the decline. During the next Late Jomon phase, the mass use of chipped stone axes spread to southwestern Japan. This phenomenon is easily explained by the cool climate. But the fact that Tohoku, where the climate must have been even cooler than in Chubu and Kanto, did not show a remarkable decline cannot be explained by the same reasoning.

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CHAPTER NINE

Questions in the Late–Final Jomon period

The prosperity of the Chubu Highlands and the Kanto district during the Middle Jomon came abruptly to an end at the end of this phase and only continued to a certain extent in eastern Kanto. As the state of deterioration spread into this latter region during the Late Jomon, new centres of prosperity gradually emerged in two areas, northern Tohoku and central Kyushu, dividing Japan into two large cultural areas characterized by distinctive pottery types as well as different subsistence activities. In northeastern Japan, hunting, fishing and intensive processing of horse chestnuts are prominent. In southwestern Japan, however, the possibility of agriculture before the Yayoi period once again presents the largest question.

Regional differences in Jomon culture

The identification of regional differences in Jomon culture is most often made on the basis of the variation and distribution of contemporaneous pottery types (Kobayashi 1989). Stone and bone tools, as well as structures such as pit-dwellings, are not so sensitive to temporal and spatial changes as is pottery with multiple attributes such as form, decoration, and technological characteristics. Moreover, pottery may have meanings other than strictly usage characteristic of other productive tools. There are several arguments about the social meaning of the different Jomon pottery types, each of which has a fairly constant combination of attributes. Some are of the opinion that these pottery types are manifestations of ethnic identity, and at the very least there must have been a high level of social interaction and flow of information, including that related to pottery manufacturing techniques, throughout the area where a type of pottery was predominately distributed. The area in which any one pottery type was distributed changed from time to time. Linear-appliqué type of the Incipient Jomon, for instance, was extensively distributed throughout Japan except in Hokkaido, although slight regional variations are also noticeable. In contrast to this, many regional types or subtypes

emerged in the Chubu Highlands and the Kanto district during the Middle Jomon. Overall, ten or so types divided the Japanese islands during most of the Jomon period although the boundaries between them were fairly flexible.

When pointing out regional cultural differences represented by pottery traditions, emphasis is often placed on the contrast between southwestern and northeastern Japan, the boundary between the two located generally around the Nagoya region. Although this emphasis is appropriate for the Final Jomon phase, which I discuss below, it is dubious to apply this contrast to the whole of the Jomon period. Although it is clear that a fairly distinct boundary between pottery types existed there over most of the Jomon period, it must be remembered that this boundary was only one of ten or so between as many types. Kyushu and northeastern Hokkaido, for instance, quite consistently maintained their own regional types during most of the Jomon period.

It is also often emphasized that the number of sites is less in southwestern Japan than in northeastern Japan (Yamanouchi 1964). This difference is most clearly seen at the above-noted boundary between the Inland Sea–Kinki regions (eastern part of southwestern Japan) and Chubu district (western part of northeastern Japan). The difference in site numbers between the two areas can be explained by the presence or absence of extensive plains of volcanic ash, which became the main field of Jomon activity. Thus, central and southern Kyushu, although a part of southwestern Japan, have well developed volcanic ash plains as well as a fairly large number of Jomon sites, including large-scale ones. The distribution of evergreen broad-leaved forests in southwestern Japan and deciduous tree forests, including important chestnut trees, in northeastern Japan is another factor that affected the number of sites and may also account for the comparatively small number of sites in central and southern Kyushu, despite the existence of developed volcanic ash plains.

The spread of pottery with zoned cord-marking

The prosperity of the Chubu Highlands and the Kanto district declined suddenly at the end of the Middle phase (see Figs 8.2, 8.3). To be precise, the decline occurred in a drastic manner somewhat earlier in Chubu than in western Kanto, and the western Kanto pottery type (Kasori E IV) moved into the Chubu Highlands at the very terminal stage of the Middle Jomon. Soon a similar decline occurred in western Kanto, and the Nakatsu type of pottery of the Inland Sea–Kinki regions spread into Kanto. Although the Nakatsu type features developed zoned cord-marking, in which motifs are stressed in contrast between areas with and without cord-marking, the technique had already been developed in northeastern Japan in the latter half of the Middle Jomon. Therefore, although the direct ancestral type of the Nakatsu is seen in the Inland Sea–Kinki district, an extensive network of pottery information exchange existed behind the development of this pottery type (Imamura 1977). This pottery spread not only to the east but also to the west into northern Kyushu, generating an extensive distribution of similar

kinds of pottery. This expansion of pottery types took place not as one incident but was an apparent facet of widening network of social interaction and exchange. The similarity in pottery types over an extensive area continued up until the middle Late phase. The mass use of chipped stone axes, and the proliferation of cult objects such as ceramic figurines and stone rods, appears to have been introduced through this network from central Honshu to central Kyushu (Nagamine 1977, Tomita 1987). In northeastern Japan, there was another similar spread of one dominant pottery style in an area stretching from Kanto to northwestern Hokkaido at the middle of the Late Jomon phase. Therefore, this was one of the rare times that had a small number of extensive distributions of similar pottery style in the Jomon period.

Two central areas in northeastern and southwestern Japan

As I have noted in the previous section, the decline in eastern Kanto was not as abrupt as it was in western Kanto and the Chubu Highlands at the end of the Middle Jomon. However, eastern Kanto also suffered a decline beginning at the end of the Late Jomon (IV), until it reached its lowest point at the end of the Final (VI) Jomon, and, strictly in terms of the number of sites, this stage was similar to that of the Incipient (I) Jomon (see Figs 8.2, 8.3).

As the decline in Kanto proceeded, Japan was divided into areas each under influence from northern Tohoku and central Kyushu. The pottery of the former area developed very sophisticated and elaborate patterns and that of the latter area gradually simplified its patterns until finally all patterns were abandoned in favour of a beautiful burnished black surface (Fig. 9.1). The two areas also appear to have had contrasting subsistence patterns as well. The former, generally speaking, was orientated towards a multilateral subsistence pattern, including both hunting and fishing (Fig. 9.2), as well as horse chestnut processing as evidenced in bog deposits that contain many horse chestnut shells. The latter seems to have developed an increasing dependence on plant foods, although in some areas, such as northwestern Kyushu, fishing was also important.

Northeastern Japan

The centre of prosperity of the Jomon culture moved from central Japan to the Tohoku district in the Late–Final Jomon. To be precise, stability was maintained in Tohoku despite the decline of the central Honshu region. The so-called Kamegaoka culture centred in northern Tohoku was the most prosperous of the Final (VI) Jomon. This prosperity is largely inferred on the basis of achievements in craftsmanship and the prevalence of ritual objects, rather than on the number of settlements and quantity of material as was the case with the Middle Jomon.

Figure 9.1 Contrast between richly decorated pottery from northeastern Japan (upper) and simply decorated black burnished pottery from southwestern Japan (lower) of the Final Jomon.

Although the reason why this area maintained a stable economy is not firmly established, a multiple subsistence strategy was surely one important variable. Generally speaking, the quantity of arrowheads and animal remains increased in the Late–Final Jomon sites of northeastern Japan. The prominent development of harpoons, which are thought to have been used for catching large fish and sea mammals, is seen in the jagged eastern coastal areas of Tohoku (Fig. 9.2).

Horse chestnuts were also widely exploited in the Late–Final Jomon. Although horse chestnuts are large and useful, processing them for consumption requires painstaking work, and techniques for neutralizing tannic acid, which had been developed by the beginning of the Middle Jomon, continued to be employed to this end. This is thought to have included bleaching the nuts in running water for many

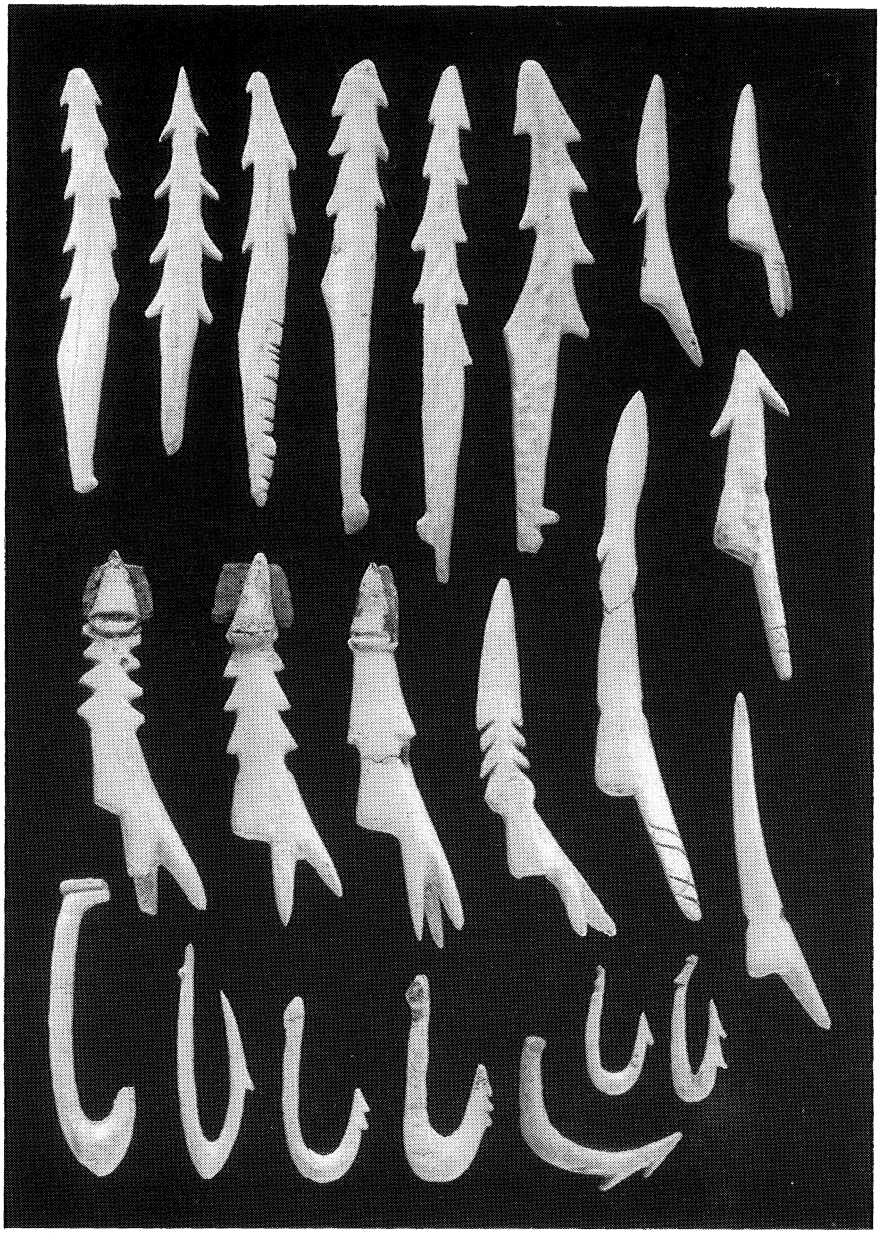

Figure 9.2 Harpoons and fish-hooks of the Numazu shell midden, Miyagi (Late–Final Jomon).

days, boiling them for hours, or soaking them in a wooden ash solution. Square wooden constructions used to hold water for processing horse chestnuts were discovered together with many shell remains at Akayama (Saitama prefecture; Fig.

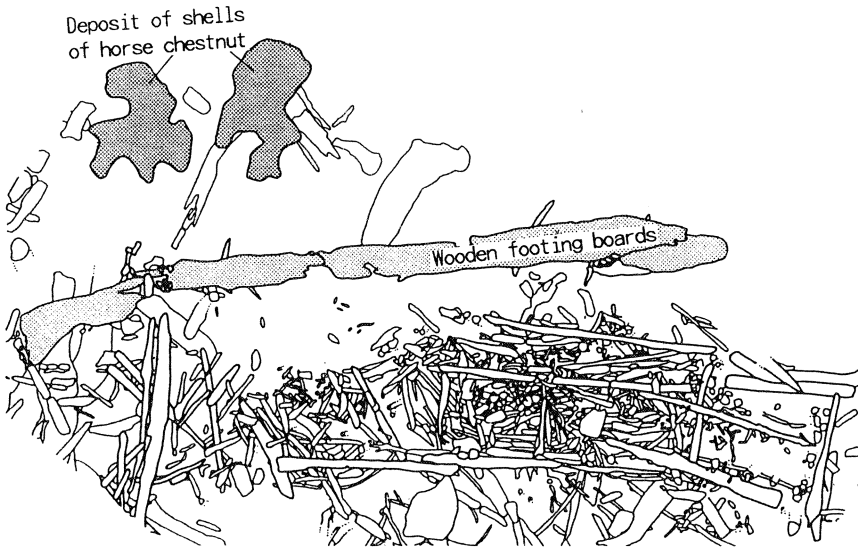

Figure 9.3 Wooden water reservoir for processing horse chestnuts (Late–Final Jomon; Kanahako 1990).

9.3; Kanahako 1990), Teramae (Niigata prefecture) and other sites. The general shift in sites from locations on high terraces down to rivers from the Middle to the Late Jomon can be explained at least partly by the necessity of an abundance of water for processing nuts. Although the cause is not known, I would assume that a shortage of chestnuts obliged Jomon people to increase their dependence on horse chestnuts. Sometimes "nutshell middens" were formed in swamps near Jomon sites. Such middens provide a wealth of plant remains as well as wooden artefacts. Representative ones are Kamegaoka (Shimizu 1959) and Korekawa (Hosaka et al. 1972), both of which are in Aomori prefecture.

Finally, with regard to subsistence, I have to note the evidence to date of possible plant cultivation during the last stages of the Jomon period in northeastern Japan. This includes several discoveries of buckwheat pollen in the Final Jomon sites, as well as the discovery of carbonized rice in a pit-dwelling of the Late–Final Jomon Kazahari site (Kudo & D'Andrea 1991). The rice was dated to the Final Jomon by AMS (accelerator mass spectrometry facilities).

Development in crafts and ritual objects

Prominent among the cultural features of the Late–Final Jomon in northeastern Japan are refinement in craftsmanship and an increase in the number and kinds of ritual objects, which apparently did not have any practical functions. The formal variations in Kamegaoka type pottery of this phase outnumber the variation in pottery forms of the subsequent Yayoi period. One opinion is that this variation is

indicative of a society controlled by rituals, which required many different kinds of pottery vessels to be used on different occasions and/or for different kinds of food (Tsuboi 1962). Although the patterns do not show any three-dimensional development, their careful finish and their elaborate and sophisticated patterns rank this pottery type as the finest example of Jomon craftsmanship. Lacquer, which was in use by the Early Jomon, was applied with great skill to pottery, wooden bowls, baskets, ornamental combs, decorated bows and other artefacts (Fig. 9.4).

There was also increasing enthusiasm for ritual constructions. Large buildings such as pit-dwellings as long as 30m were seen from the Early Jomon. However, large constructions obviously for ritual practices appeared from the Late Jomon. Whereas stone circles are known from the Early Jomon, during the Late Jomon they were arranged into more regular forms and were sometimes made on an even larger scale. They were distributed in an area from Hokkaido to the Chubu Highlands. The most representative is the two stone circles at Oyu (Akita prefecture) (Fig. 9.5; Goto et al. 1953). Their diameters are respectively 45m and 40m. Burial pits discovered beneath arranged clusters of large stones within these circles provide evidence of function as communal cemeteries. Cemeteries in which earthen embankments replace stones are known only in Hokkaido (Fig. 9.6; Otani 1983) The largest one of them at Kiusu is 75m in diameter and at present its embankment stands 5m high above the central lowered space. Circular arrangements of large split chestnut tree trunks were discovered at several sites, including Chikamori (Ishikawa prefecture; Minami et al. 1983). Although the bases of the wooden posts are the only remaining evidence, it is difficult to imagine that the original structures would have been normal houses, because some of the posts are as large as 80cm in diameter.

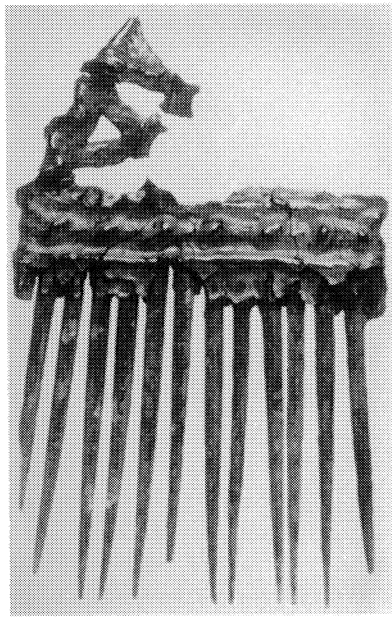

Figure 9.4 Lacquered comb of the Jomon period (Bunkacho 1995).

Figure 9.5 A stone arrangement called "sundial" in stone circles at Oyu, Akita (Goto et al. 1953).

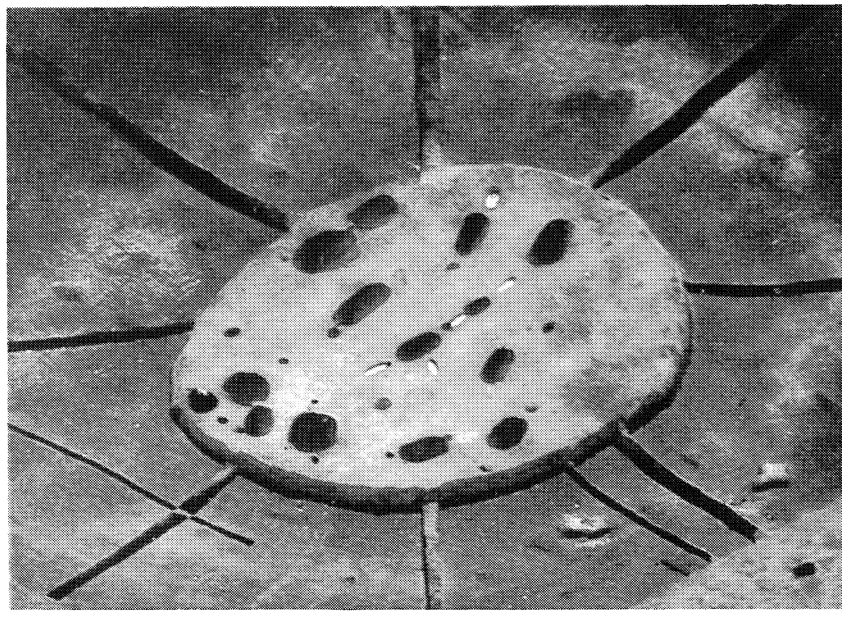

Figure 9.6 A burial precinct encircled by an earth bank at Bibi 4 (Hokkaido Centre for CP 1984).

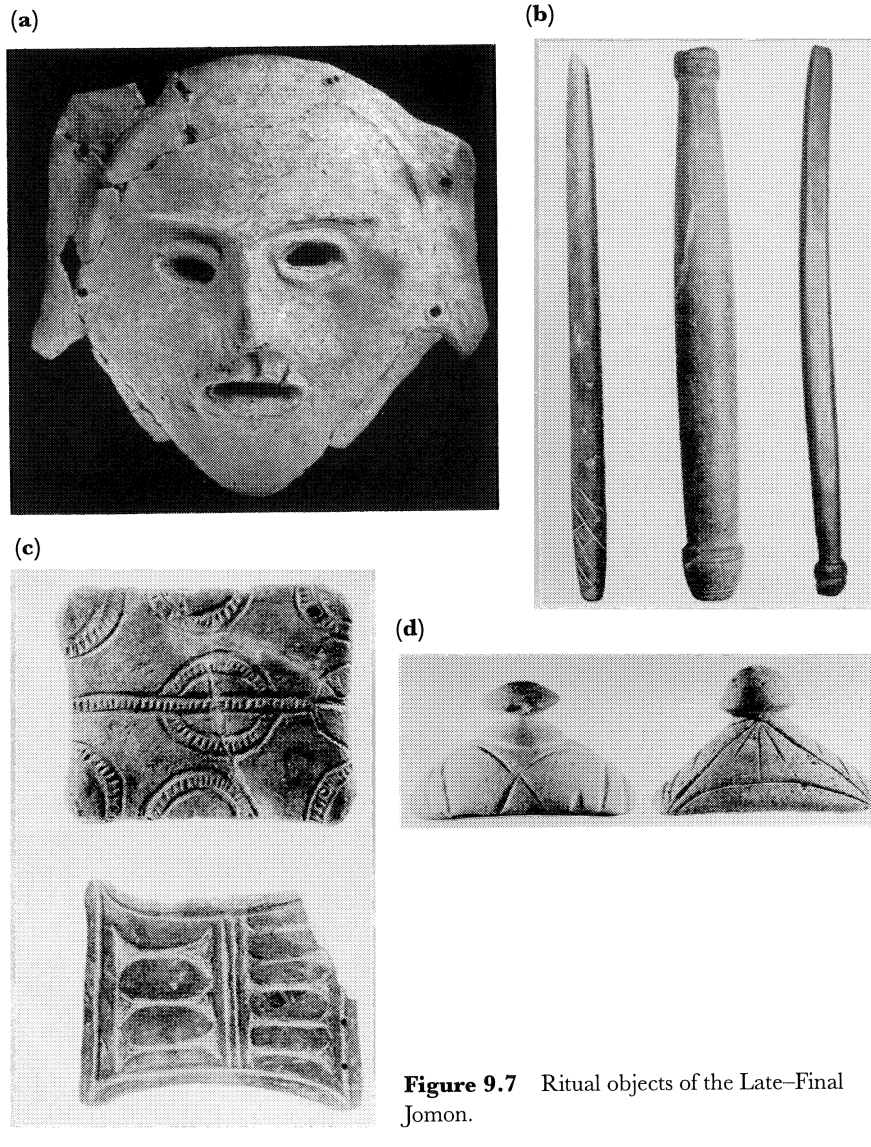

Figure 9.7 Ritual objects of the Late–Final Jomon.

Artefacts that appear to have ritual functions increased in kinds and number during the Late–Final Jomon. Besides ceramic and stone figurines, ceramic masks (Fig. 9.7a) and stone rods (Fig. 9.7b), ceramic and stone tablets (Fig. 9.7c), and so-called "crown-shape" stone objects (Fig. 9.7d) appear in the Final Jomon. The so-called "stone sword" (Fig. 9.7b) is another variant of the stone rod. However, there were very few truly new kinds of ritual objects, since most of them were variants of previous types. Rather, there was only an increase in the quantities produced and a refinement of the finished product.

The increase of ritual objects during these phases may be explained not simply by the accumulation or development of spiritual practices over time but by the increasingly strict normative social order generated in response to the deteriorating natural environment (Fujimoto 1983). These ritual objects, which increased in variety throughout the Jomon period, lasted until the end of the Final Jomon in northeastern Japan and until the Initial Yayoi in southwestern Japan. With the exception of ceramic figurines, which transformed into human-shape bone containers for secondary burials in northeastern Japan, these ritual objects disappeared soon after the emergence of Yayoi agriculture. As will be discussed later, there was never any wholesale population replacement in the transition from the Jomon to the Yayoi, so that the extinction of many kinds of traditional Jomon ritual objects must have been brought about by ideological changes, which accompanied the change in subsistence and modes of life.

Progress in specialized production can be counted among features of these phases. It was highlighted by salt-making with purpose-made coarse pottery at several seashore sites in Kanto and Tohoku (Kondo 1962), as well as by mass production of sophisticated ceramic earrings at the Final Jomon Chiamigaito Site, (Gunma prefecture; Toyama 1985). Specialization was previously seen in production of ground stone axes at the Middle Jomon Ozaki and other sites (Kanagawa prefecture; Suzuki et al. 1977).

Southwestern Japan

The pottery of southwestern Japan lost its persistent and characteristic cord-marking during the latter half of the Late Jomon period, and, with the exception of simple incised lines, all decorative patterns disappeared by the Final Jomon, and were replaced with a new form of surface decoration, black burnishing, which was produced through polishing the surface and firing in reducing conditions (Fig. 9.1). This simplification or absence of decorative motifs, resembling Yayoi pottery from southwestern Japan sites, is in contrast to the intricate patterns of contemporary pottery from northeastern Japan. However, pottery forms and the positioning of the simplified patterns were a continuation of a pottery tradition that began in the former half of the Late Jomon. Although the influence of Chinese pottery has been suggested (Kagawa 1960), it is necessary to emphasize both the fundamental continuity behind the change in surface treatment and the general movement of cultural elements from northeastern to southwestern Japan in the Late Jomon.

Another characteristic of the Jomon in southwestern Japan is the storage pits known as acorn pits (Fig. 9.8). What makes them unique is that they were deliberately dug in bogs, allowing water to seep in so that nuts were kept in a water-soaked condition. These pits were made over an exceptionally long period, from the Early Jomon to the Early Kofun. They were discovered for the first time at Maeike (Okayama prefecture; Shiomi & Kondo 1956), and were subsequently followed by their discovery in many sites throughout southwestern Japan. One interesting facet

of these discoveries is that there are many cases in which nuts were found in the same condition as when they had been placed in the pits. Not surprisingly, the most common nuts in the pits are those of *shining leaf* trees (broad-leaf evergreen trees of monsoonal East Asia), which were distributed in southwestern Japan, and included not only naturally edible sweet acorns and evergreen oak acorns, which are easy to process, but also walnuts and horse chestnuts, the latter being especially difficult to process. The general opinion as to why they deliberately dug storage pits in such wet locations is that they functioned both as storage pits and as a convenient means for bleaching out the harsh taste. However, I disagree with this assumption, not only because naturally edible sweet acorns were stored in these pits but also because horse chestnuts cannot be made edible through water bleaching alone. I suggest that the purpose of storing them in such a way was to put them into artificial dormancy, preventing germination for years or even tens of years and thus ensuring a food supply in case of famine. The excellent preservative conditions of such pits has been amply demonstrated by one of the acorns recovered from a pit at Sakanoshita (Saga prefecture; Saga PM 1975), which sprouted after a dormancy of 3000 years. This theory could explain the reasons why there are so many cases in which nuts were left undisturbed, why there are only a few cases in which delicious nuts such as chestnuts and walnuts were stored, and why such pits were made and used over such an extraordinarily long time in spite of fundamental changes

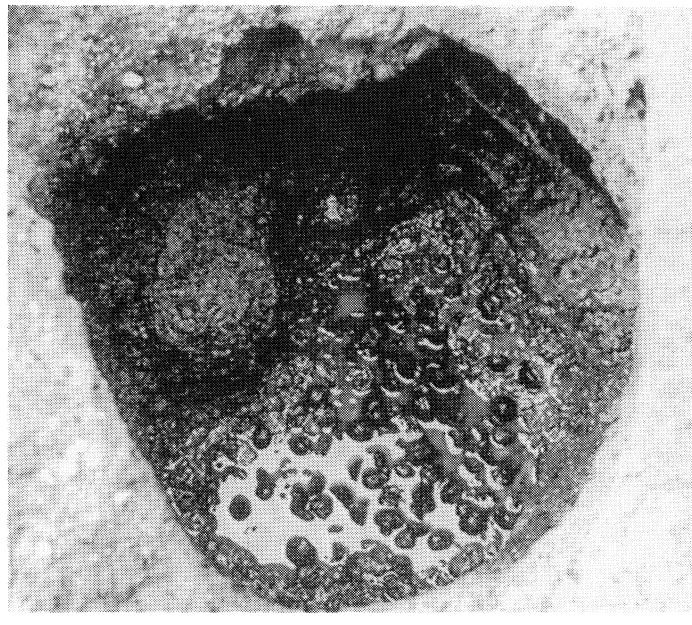

Figure 9.8 Storage pit for acorns and other nuts dug in a swampy area at Kuridani, Tottori (Late Jomon; Fukube TEB 1989–90.)

in subsistence (Imamura 1988). The presence of such preserved nuts must have provided assurance to people who were beginning to experiment with agriculture and who may have suffered considerable anxiety about the harvest.

Large settlements appeared in central and southern Kyushu in places such as Kaminabe (Kumamoto prefecture), and Hirabata (Miyazaki prefecture), from the latter half of the Late and into the Final Jomon (Hongo 1987). Many chipped stone axes discovered from such sites are interpreted as agricultural tools by some scholars in a manner similar to those of the Middle Jomon (Kagawa 1966). However, the chipped stone axes clearly diffused from central Honshu accompanying other cultural elements such as ceramic figurines and stone rods, and cannot be directly linked to the introduction of cereals from the mainland. Nonetheless, an important fact to consider here is the discovery, albeit rare, of cereal remains. They include two grains of rice and a grain of barley from Uenohara (Kumamoto prefecture), an early Final Jomon site (Uenohara SRP 1971) and one impression of rice on pottery from Oishi (Oita prefecture) of the same period. Recently, an impression of rice was discovered on pottery dated to the end of the Late Jomon from the Fukuda shell midden and the Minami–Mizote site (both Okayama prefecture; newspaper reports).[1] As outlined previously, the cultivation of some plants, including a variety of bean (green gram), perilla, gourd, rape, burdock and hemp had started by 5500 bp from the Early (III) Jomon. Rice and barley were added to the list of plants cultivated by Jomon people around 3000 bp, or the end of the Late Jomon. Nevertheless, such cultivation was not accompanied by new tools in the continental tradition, so these plants must have been cultivated and processed using indigenous tools.

Although admitting the existence of cultivated plants, including even cereals in the Jomon period, the reason why many Japanese archaeologists attach such little importance to it, and distinguish it from the agriculture of the Yayoi period, is that none of the fundamental social changes that take place in the Yayoi period are seen in the Final Jomon. Even if the cultivation of cereals or primitive agriculture had already begun by the Late Jomon, it does not appear to have formed an important part of the food supply.

In the jagged coastal areas of northwestern Kyushu, open-sea fishing was actively pursued as in other similar areas in Japan, and a distinctive type of composite fish-hook developed there (Fig. 9.9; Watanabe 1985). Fish-hooks of the northwestern Kyushu variety were discovered at a site on Sangnodae Do Island near the southern coast of Korea, and a part of a composite fish-hook of Korean type was discovered at Oya (Kumamoto prefecture). Stone saws or possible blades, which were inlaid in composite-type harpoons (Fig. 9.9), have been discovered on both sides of the Korea Strait. Fragments of Jomon pottery from the Early to Late Jomon phase were discovered at the Tongsamdong shell midden near Pusan (Sample 1974). This evidence points to frequent exchanges between fishers along

1. According to the latest newspaper report, plant opal of rice was detected in the body of Middle Jomon pottery from Himesasahara, Okayama prefecture. It should be stressed that in northeastern Japan, there has never been discovery of rice impression on the enormous volume of pottery before the final stage of the Jomon period.

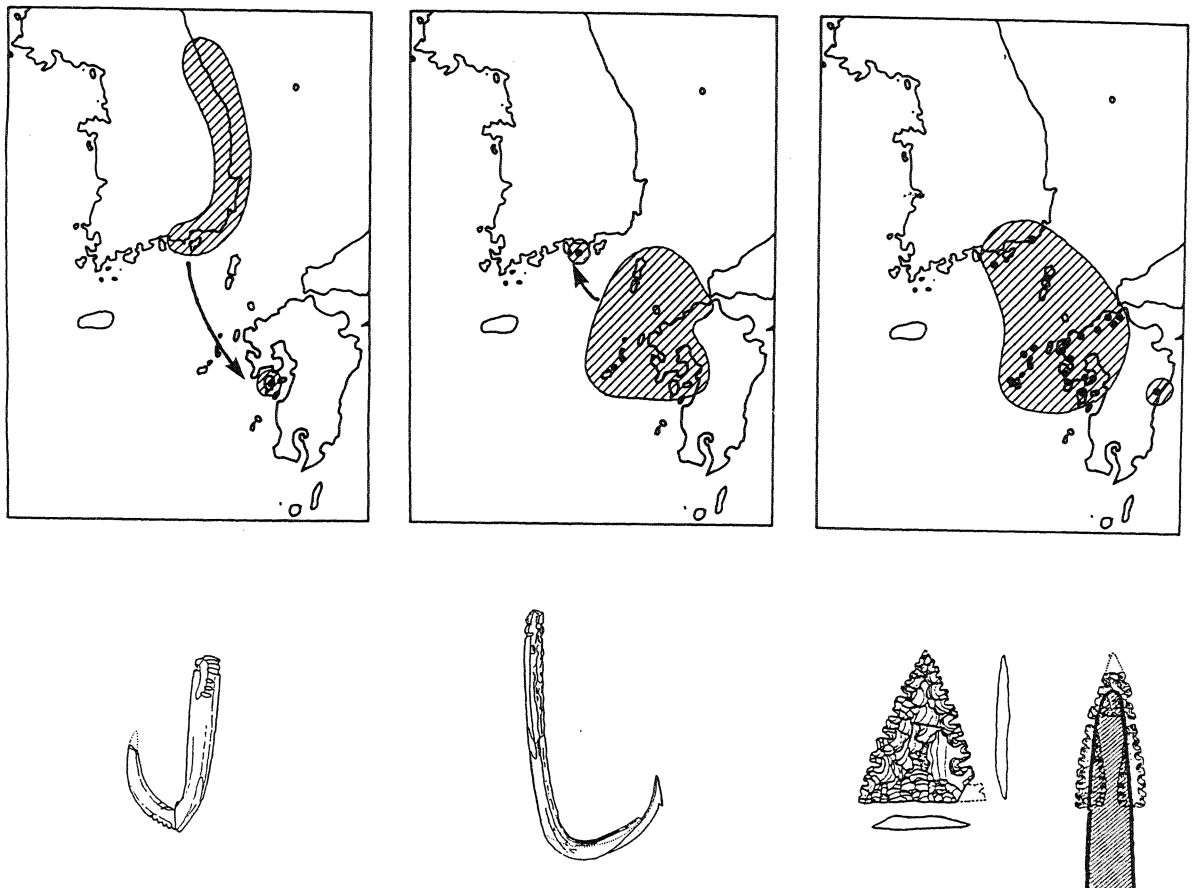

Figure 9.9 Fishing gear of northwestern Kyushu and southern Korea and their distribution (after Watanabe 1985). Left: Korean type of composite fish-hooks. Centre: northwestern Kyushu type of composite fish-hooks. Right: "stone saw" or possible blades for composite fish spears.

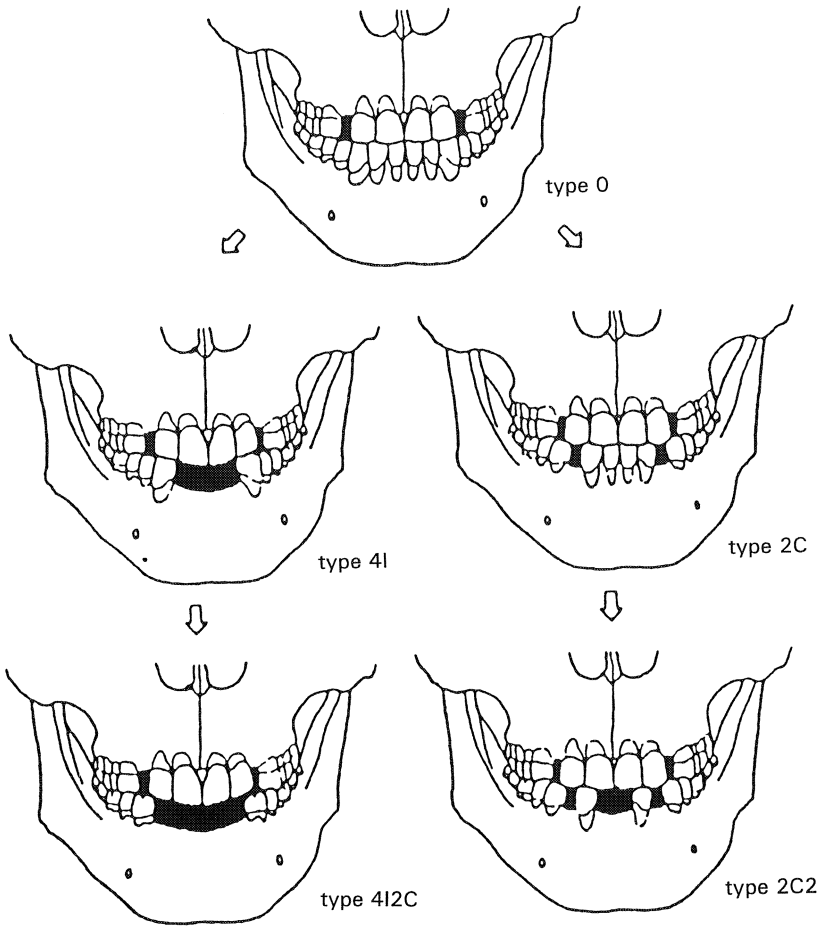

Figure 9.10 Progress of tooth extraction of the Final Jomon in southwestern Japan. The first step is thought to have been practiced in a coming-of-age ceremony and the next step at marriage and functioned to differentiate those who married into from those who were natives of the settlement (Harunari 1992).

the jagged coasts of southern Korea and northwestern Kyushu. Cereals are thought to have been carried into Japan around the end of the Late Jomon through these exchanges. However, such cereals did not bring about any fundamental change to Jomon societies.

Ritual structures and artefacts were not developed in southwestern Japan to the extent they were in northeastern Japan. However, this does not mean that there was no strict normative order there, and the practice of tooth extraction provides evidence for other kinds of social rituals in southwestern Japan (Fig. 9.10). Although present in simple form from the Early Jomon, it developed into an elaborate ritual form that included the extraction of many teeth. Hideji Harunari

argued that this practice was part of rites of passage such as coming-of-age, marriage, and the death of family members, in which certain specified teeth were extracted at different stages of a person's life (Harunari 1979). He argued that the extraction at marriage functioned to distinguish natives of the village from persons who married into it. These practices also swiftly disappeared after the beginning of the Yayoi period, although they remained until the Middle Yayoi in northeastern Japan, where different types of tooth extraction were practised.

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CHAPTER TEN
The arrival of agriculture

The development of full-scale agriculture and of societies based around it began in the Yayoi period. Yayoi is the name of the town in Tokyo where a type of pottery characteristic of this period was discovered for the first time. This period lasted about 700 years from the fifth century BC to the third century AD. Although a relatively short period, it was a turning point in Japanese history as society underwent a revolutionary transformation with the basis of Japanese culture being laid down.

The four fundamental developments of the Yayoi period are as follows.

1. The beginning of full-scale agriculture depending mostly on wet-rice cultivation.
2. The procurement and manufacture of bronze and iron tools.
3. Active exchange, including migration, trade, and diplomatic intercourse with Korea and China.
4. The beginning of social stratification and the emergence of political bodies that were later to be unified into a state.

The four points above are closely related; developments in one being related to or giving rise to developments in the others. The beginning of agriculture was brought about by the introduction of crops and farming techniques from the mainland as a result of migration and cultural exchange. It also brought about the introduction of bronze and iron, as well as the technology for processing them. Iron tools accelerated agricultural development. Bronze tools were imported or cast in response to the increasing demands for cult objects and prestige goods by a developing society, and only a sufficiently developed society could maintain the high technology required to produce them. Such a developed society was established only on the basis of advanced agriculture. Moreover, in such a society, chiefs sought prestige goods and diplomatic intercourse with foreign political bodies possessing advanced culture and power, in order to maintain their status and superiority over other groups.

One new feature of the Yayoi period, which had not been seen previously during the Jomon period, was imported objects from China, such as bronze mirrors and coins (Fig. 10.2), which can be correlated to absolute dates in Chinese chronicles (Okamura 1984). These provide the Yayoi period with absolute dates. Furthermore, dendrochronology has started to yield more accurate dates for the Yayoi sites (Mitsutani 1994) and consequently the period does not have the serious

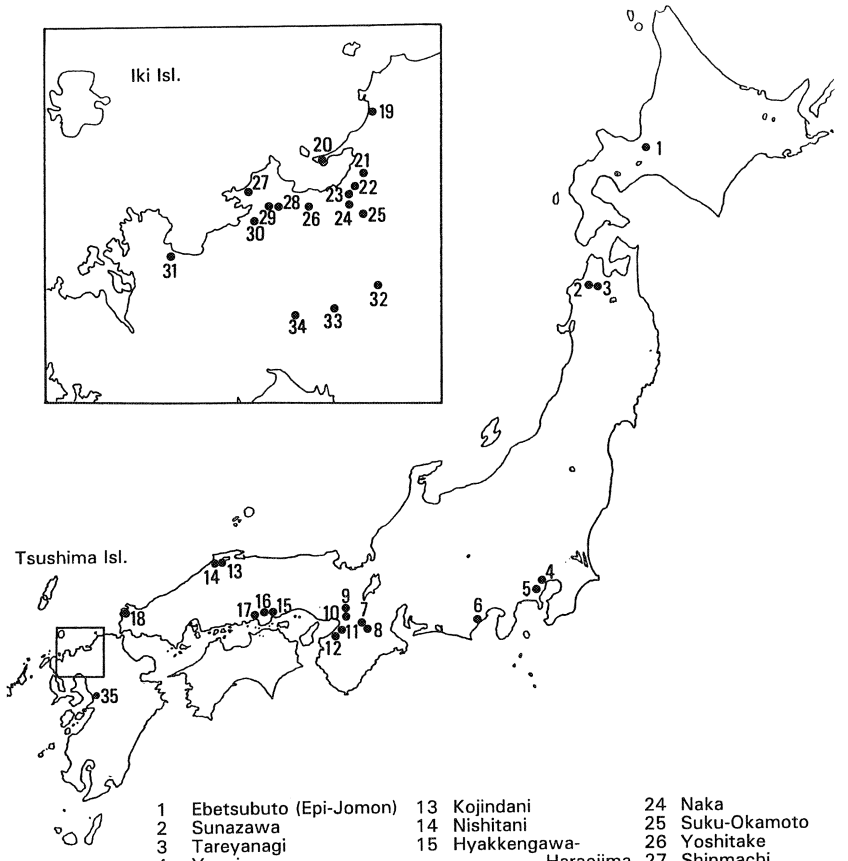


Figure 10.1 The Yayoi and Kofun sites referred to in the text.

problem of dating that the Jomon period had. In addition, there are short and simple written records about Japan in Chinese chronicles. Strictly speaking, therefore, the Yayoi period does not belong purely to prehistory.

The original area of rice cultivation

Although Yayoi agriculture included cultivation on dry fields, wet-rice cultivation in paddy fields was of primary importance. In terms of the origins of rice cultivation, the Assam–Yunnan theory put forward by agriculturists is dominant in

Figure 10.2 Bronze mirror imported from China.

Japanese academic circles (Watabe 1983). However, no archaeological evidence of early rice cultivation in these areas is known, and, inferring from the comparatively undeveloped condition of agriculture in the later Yunnan, one cannot be very optimistic in expecting that future discoveries will provide evidence of the earliest cultivated rice there. In contrast to this area, the valley of the lower and middle reaches of the Changjiang has many sites with evidence of very early rice cultivation. The best-known site is Hemudu, Zhejiang province (Figs 5.1, 10.3; Ren 1982), the beginnings of which have been radiocarbon dated to 7000 bp, where rice grains, husks, straw and leaves were deposited as thick as 1 m in some sections. The rice is reported to have been mainly composed of slender Indica and some round Japonica types. There are many bone shovels (see Fig. 5.3) made of the scapulae of large mammals, which appear to be agricultural tools. Animal bones provide evidence that pig, dog and probably water buffalo were bred, in addition to active hunting and fishing. Dwellings are classified into two basic types: elevated floor dwellings and surface dwellings with posts embedded into the ground. Pottery is diversified in form and, along with other advanced material culture, suggests that this culture was not in the beginning stages of agriculture but was already in a fairly developed stage. Therefore, the discovery of evidence for even earlier rice cultivation was expected.

Such expectations were confirmed in several sites located in the plains of the middle reaches of the Changjiang in Hunan and Hubei Provinces, which were radiocarbon dated at between 7000 and 8000 bp, excluding a few problematic early dates on coarse carbon grains in the ceramic fabric, which might have been

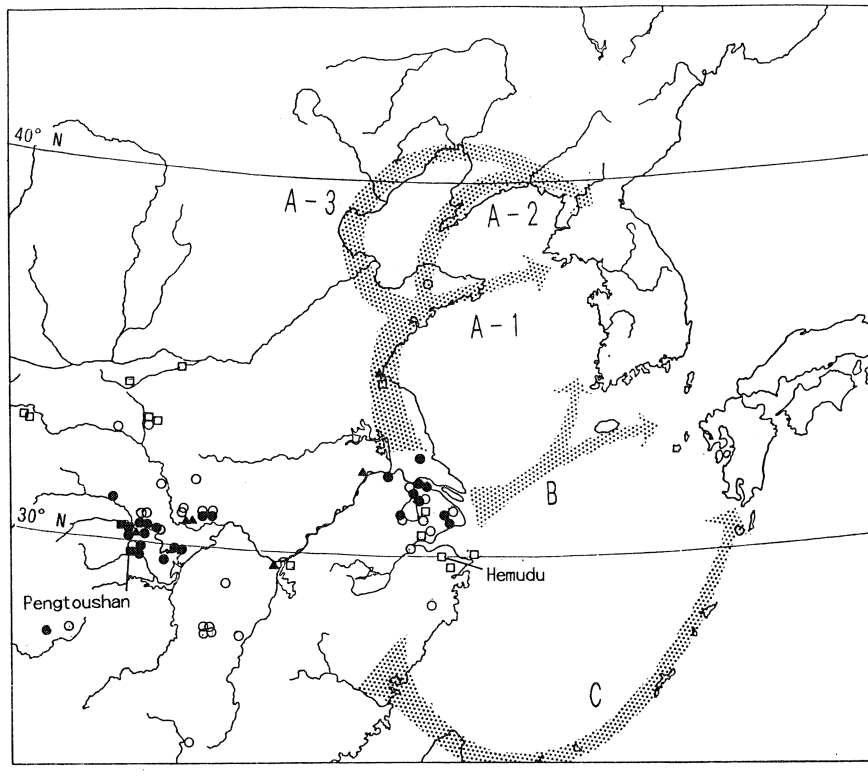


Figure 10.3 Neolithic rice remains (■ 9000–7000 bp; □ 7000–6000 bp; ● 6000–5000 bp; ○ 5000–4000 bp; ▲ 4000–3000 bp) and three hypothetical routes for the dispersal of rice cultivation from China to Japan (A: northern; B: direct; C: southern). (After Matsumura 1991 and Takakura 1991.)

from the original clay material. This culture was to be called the Pengtoushan or Zaoshi culture (Nakamura 1991). Although there is no detailed report on the excavation, nor as of yet sufficient palaeobotanical analysis, the scale of the sites, which measure 10,000 m^2, and the thick cultural deposit with rice remains, suggest both stable sedentary life and cultivation. Judging from the progressive stages of pottery production among these sites, this culture is surely divided into several subphases. Moreover, a comparison of the simple forms in the earliest with the elaborate forms of later phases show that pottery rapidly developed over the duration of this culture, suggesting that fundamental cultural transformation was occurring, in other words, the beginning of agriculture. It is also clearly known, through researches at Cishan, Peiligang and other sites, that between 7000 and 7500 bp, around the same time as that of the Pentoushan culture, the cultivation of foxtail millet was established and developing on the plains of the Yellow River (Shao 1982).

Diffusion to Japan

Agriculture, which had developed in China, was introduced through diffusion to Japan. However, as the earliest original date of agriculture in China extends back even further, the lag between the development of agriculture in China and its adoption in Japan becomes longer. The beginning of agriculture in Japan is dated in the fifth century BC or, according to another opinion, around 1000 BC, which is quite late when compared with the beginning of agriculture in China dated at around 8000 bp.

400 BC is the date when certain evidence of agriculture such as wet-rice fields and agricultural tools appeared in Japan. One of the bases of this date is an iron tool found at the earliest Yayoi Magarita site (Hashiguchi et al. 1983–5). This date broadly correlates with the beginning and following proliferation of iron tools in China.

As mentioned in Chapter 9, a few sporadic discoveries of rice and barley grains and grain impressions on the surface of pottery from around 1000 BC have led some archaeologists and ethnologists to argue that an earlier form of swidden and/or dry field agriculture was started in southwestern Japan and, in particular, central Kyushu (Kagawa 1966). However, such cereals do not appear to have brought about fundamental change to the Jomon economic system, but were only added to the range of cultivated plants previously known.

The launching area for the diffusion of rice cultivation to Japan is generally assumed to have been southern China, particularly the lower reaches of the Changjiang. Three possible routes have been suggested, as follows (Fig. 10.3; Matsumura 1991, Takakura 1991):

- The southern route, proposed by folklorists, is from the coast of southern China to southern Kyushu through the Ryukyu islands (Yanagida 1961).
- The direct route is from the lower reaches of Changjiang to northern Kyushu across the China Sea (Ando 1951).
- The northern route is a roundabout route from the lower reaches of Changjiang to northern Kyushu via the Korean peninsula and Korea–Tsushima strait (Takakura 1991). Although there are a few possible subroutes between China and Korea, all are commonly via the peninsula.

In contrast to the former two, for which there is scant archaeological evidence, the third route is supported by a great wealth of evidence that links northern Kyushu to southern Korea (Fig. 10.4; Takakura 1991), and Korea to northeastern China. Most Japanese archaeologists support this route. The fact that rice cultivation was developed in southern China, and that rice does not easily adapt to a cool climate, makes the first and second routes more plausible than the third. However, the existence of both round and slender types of rice in the lower reaches of the Changjiang presents a problem for the direct route hypothesis, since only round varieties have been discovered in Japan (Sato 1974). Thus, one must assume that there must have been another area along the way where the slender type fell away. Moreover, the fact that rice had already reached the Shandong peninsula by 4000 bp (Machida 1987) makes the northern route possible enough, since rice cultiva-

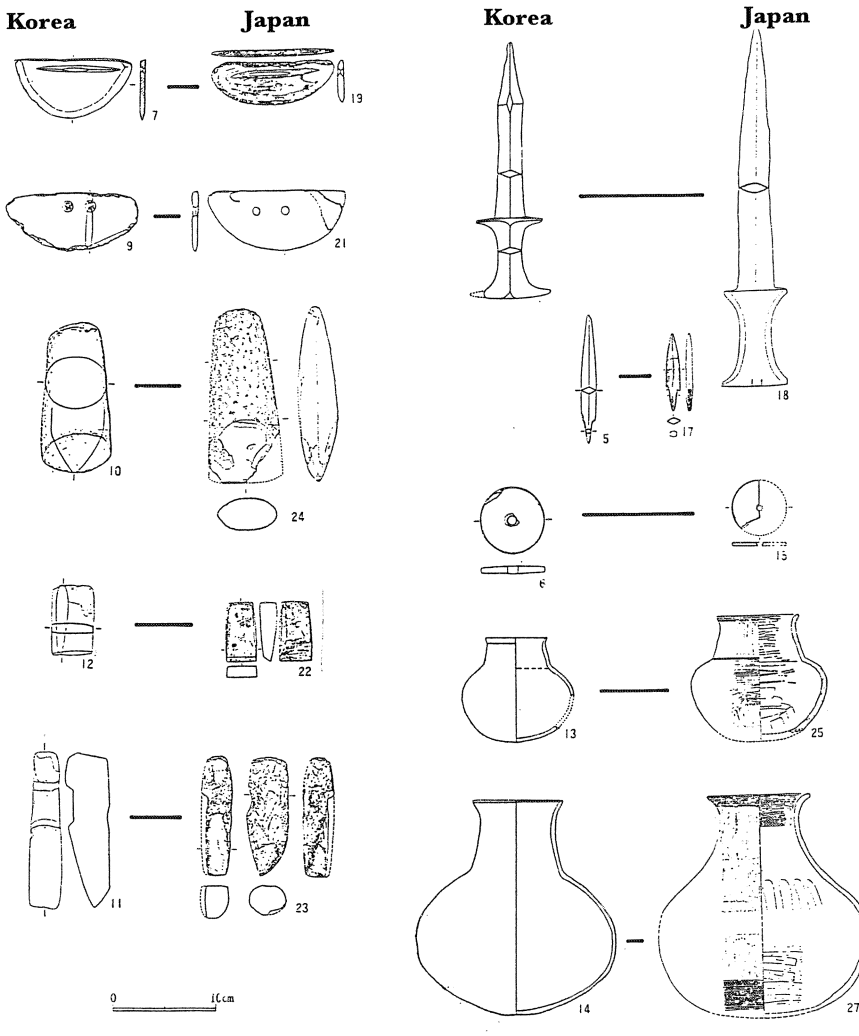


Figure 10.4 Parallel tools between the Korean Plain pottery culture and Japanese Yayoi culture (Takakura 1991).

tion on a full scale was introduced into Japan around 400 BC. The earliest rice dated to 1000 BC could have been introduced by this way as well although there is no archaeological evidence other than the rice itself to support this route.

New cultural elements, including several kinds of stone tools similar to those found in Korea, Korean-influenced pottery types, special types of pit-dwellings and storage pits seen on the peninsula emerged together with advanced rice agriculture in Japan around 400 to 500 BC. All these clearly show that rice arrived in Japan via the Korean peninsula. Some of these elements, such as reaping knives and storage pits can be traced back to northern China. There are three possible subroutes between the Korean peninsula and the western coast of the Yellow Bay

on the northern route – a land route detouring around the Yellow Bay, a route crossing the sea from Shandong peninsula to Liaodong peninsula, and another route crossing from Shandong peninsula to the western coast of the Korean peninsula. Although opinions are divided, any of these circuitous routes, in addition to the slow adaptation of rice to a cool climate, partly explain the time-lag that occurred on the way to Japan. Rice cultivation, in addition to many other cultural elements from northern China and Korea, including the dryland farming of millet, reached northern Kyushu, the major gateway to mainland culture. This is a very important archaeological area because of the many sites that provide evidence of cultural exchange with the mainland and of the earliest agriculture in Japan.

The Initial Yayoi period

In Yayoi research, the excavation of wet-rice fields is very important because they provide concrete evidence of farming techniques. So far, more than 230 wet-rice field sites of the Yayoi and Kofun periods have been excavated (Takaya 1988). Plant opal, contained in the leaves of rice (Fig. 10.5), plays a major role in the detection of such sites (Fujiwara 1982). The earliest rice fields in northern Kyushu have been excavated at Nabatake (Saga prefecture; Nakajima & Tajima 1982), and Itatsuke (Yamazaki 1979) and Notame (Yamazaki et al. 1987) (both in Fukuoka prefecture). These sites were accompanied by a type or types of pottery that formerly had been placed in the latter half of Final (VI) Jomon. Until the discovery of these sites, Yayoi pottery, agriculture and the tools arrived from the mainland were thought to have appeared simultaneously. However, these sites revealed that the cultivation of wet-rice had already begun in the second half of the Final Jomon. Thence, opinion was divided between those who suggested that agriculture began

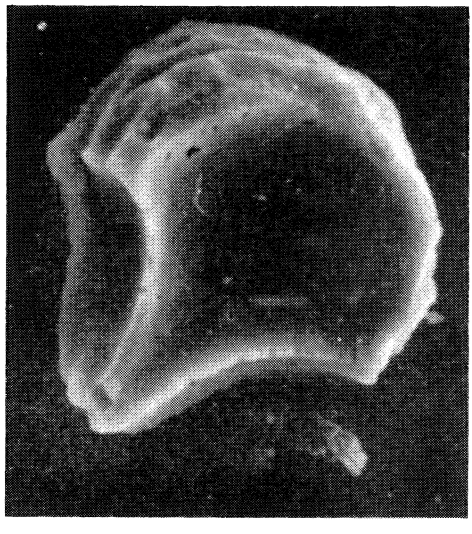


Figure 10.5 Plant opal of rice (*Oryza sativa*; Fujiwara 1989).

in the final stage of the Jomon period and those who suggested that this stage should be incorporated into the Yayoi period, since it was accompanied by agriculture, a revolutionizing technology (Sahara 1983a). The former boundary between Jomon and Yayoi based on pottery types also came into question. However, re-examination of the final types of Jomon pottery recovered from these sites revealed presence of storage jars, pedestalled dishes and an early type of Yayoi cooking pot, all of which are basic elements of Yayoi pottery assemblages (Nakajima 1987).

In short, a transitional phase was recognized between the Final Jomon and Early Yayoi, during which the earliest forms of Yayoi pottery appeared and Jomon pottery forms continued for some time alongside an emergent Yayoi pottery tradition. In order to reflect this new condition, an Initial stage was designated prior to the Early phase (Sahara 1983a), and the Yayoi period was rearranged into four phases; Initial (I), Early (II), Middle (III) and Late (IV). A pure set of Yayoi pottery forms was established through dropping out the Jomon forms (Fig. 10.6) and marked the change from the Initial to the Early phase (Nakajima 1987). This pure Yayoi type, or the very first Yayoi pottery of the conventional periodization, is called Ongagawa type and spread to the Nagoya region or the eastern edge of southwestern Japan as the dominant pottery type (Sugihara 1961, Takahashi 1986). Moreover, its forerunner reached the northern tip of Honshu.

I now turn to a more detailed description of two paddy-field sites from Itatsuke (Fukuoka prefecture), and Nabatake (Saga prefecture), although a few other relatively contemporaneous Initial Yayoi wet-rice fields were discovered in areas to the east, such as at Tsushima-Edo (Okayama prefecture; Okayama CEB 1988), and Mure (Osaka prefecture; Morioka 1988), providing evidence for the rapid diffusion of wet-rice cultivation.

Itatsuke site

The Itatsuke site (Yamazaki 1979) is located at the centre of the Fukuoka Plain. Having been recognized as a key site in clarifying the origin of agriculture in Japan, it underwent many excavations, beginning as early as 1916. In research undertaken in 1978, two overlapping rice fields were excavated. Under rice fields of the Early Yayoi, earlier rice fields were discovered with Yu'usu type pottery, which had formerly been placed at the end of the Jomon period. The site consists of a settlement on a high terrace, 12m above sea level, and rice fields on a low terrace. The settlement was encircled by an oval moat measuring 110×80m within which many storage pits, pit burials, and jar burials were excavated, although no pit-dwellings were detected, probably because of later disturbances. The rice fields of the end of the Jomon period (incorporated into the Initial Yayoi period later) had been formed on a low terrace between the high terrace and alluvial lowlands. Water was supplied by a canal that was traced along the edge of the terrace over the rice paddy and which is known to have also functioned as an outer moat. A dam had been built in the canal in order to collect water and an outlet beside the dam allowed water to flow into the rice fields. There were also drainage canals under the rice fields designed to recycle water, which had been drained from the fields, back to

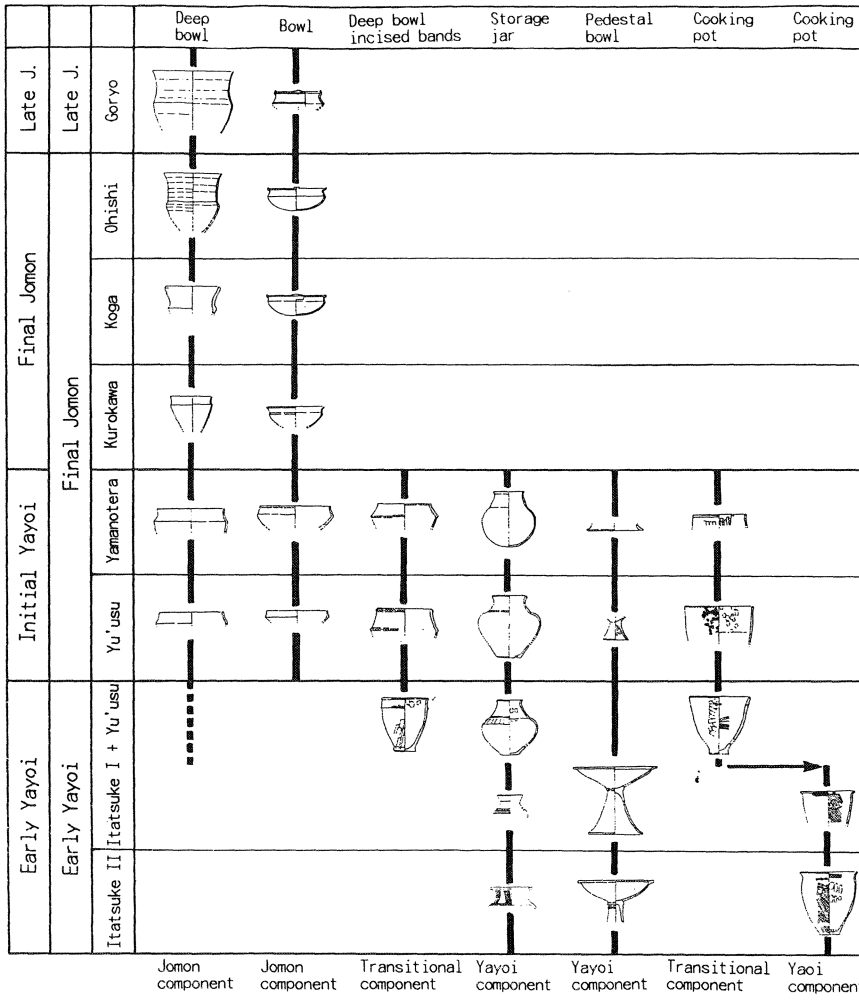


Figure 10.6 The process of the establishment of Yayoi pottery (simplified after Nakajima 1987).

the main canal. Rice fields were segmented and enclosed by banks 50 cm wide and 10 cm high. Although the extent of the field system is not known because of the limited area of excavation, 80×400 m is presumed on the basis of the local topography.

A crucial point to note is that these rice fields were not developed in natural swampy land but on a low terrace above the swampy lowland, and were supplied with water by canal. Thus, water in the rice fields was artificially managed and could alternately be drained and dried or increased as needed. Such rice fields are not only more easily controlled but are also more productive than swampy fields, which are submerged under water throughout the year. Rice fields at Notame, a site broadly contemporary with Itatsuke, showed more clearly the same system, with irrigation and drainage canals (Fig. 10.7; Yamazaki et al. 1987).

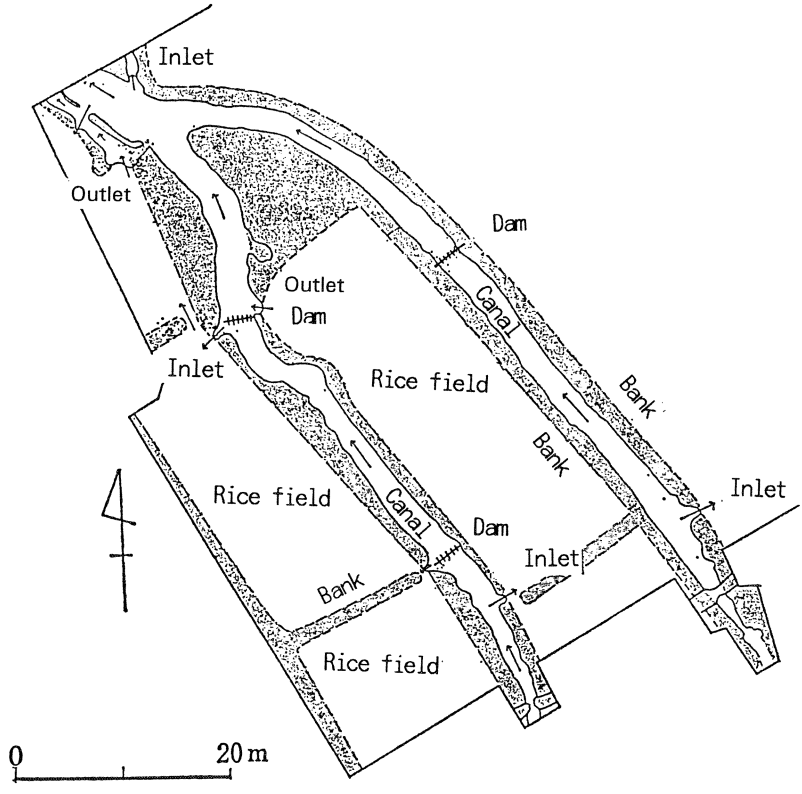


Figure 10.7 Early rice fields and canals of the Initial Yayoi at Notame, Fukuoka (Yamazaki 1987).

Nabatake site

A rescue excavation carried out at Nabatake (Saga prefecture) in 1980 brought about the discovery of even earlier rice fields (Nakajima & Tajima 1982). The site is located at the mouth of a small valley in front of a hill lying behind the coastal plain of Karatsu. The backmarsh of a coastal sandbank is inferred to have lain in front of the site. The excavation revealed five overlapping rice fields, the lowest ones correlated with the Yamanotera type of pottery, generally thought to be a type just before the Yu'usu of the Final Jomon. Canals and wooden planks driven into the ground along the banks were found. These were swampy fields that utilized the natural marsh, and the canal seems to have been built primarily for drainage. Around these fields, stone reaping knives, wooden hoes, carbonized rice, stone axes in the mainland tradition, and spindle whorls were discovered, all of which had been thought to mark the beginning of Yayoi period. This discovery intensified the question of the boundary between the Jomon and Yayoi period, which had arisen following the Itatsuke excavation.

Character of the earliest rice fields

The rice fields at Nabatake, which made use of natural marshland, are clearly more primitive than those of Itatsuke, which were developed on dry land using artificial irrigation. The earlier date of Nabatake might suggest that rice fields in Japan started in a primitive form and then developed rapidly. However, there has been some criticism over the date of Nabatake, which was based on stratigraphical correlation (Yamazaki 1987). Whether or not the date is correct, another way of understanding this is to suggest that the earliest farmers made use of various types of rice fields according to local geological environments. Alternatively, one could suggest that immigrants from the Korean peninsula hastily began agricultural work in order to ensure a supply of urgently needed food before applying advanced technology, which required the investment of much labour in construction works. This is more reasonable than to assume that rice fields were developed with such extraordinary speed – within the duration of one type of pottery – after its introduction to Japan. Such an assumption would imply also that little progress had been made on the continent, in spite of the over 5,000 years of experience in cultivating rice.

Dispersal to the east and north

Rice agriculture, once having been adopted in northern Kyushu, diffused very swiftly to the east and north. Such a swift dispersal, although only as far as southern Tohoku, had been pointed out based on chronological correlations as early as 1930 by S. Yamanouchi (1930). Although his theory was developed by very few archaeologists (Nakamura 1982), most archaeologists held the naïve view that the dispersal of a new culture dependent on the subtropical crop must have taken a long time and spread to the east only gradually before reaching northern Tohoku in the Middle Yayoi.

This problem was resolved by an excavation at Sunazawa in the centre of the Tsugaru Plain (Aomori prefecture), the most northern area of Honshu (Murakoshi et al. 1990). The site is located on the tip of a hill abutting alluvial lowland. An earlier excavation in 1955, and the examination of pottery types, had already clarified the importance of the site in bridging Final Jomon and the beginning of the Yayoi in this region.

An excavation in 1986 brought to light five rice fields segmented by banks accompanied by the Sunazawa type pottery. It was also ascertained that the Sunazawa type was accompanied by small amounts of Ongagawa type of the Early (II) Yayoi of the southwestern Japanese tradition, as well as a certain amount of pottery representing a hybrid type between the two. The beginning of rice agriculture here at the northern tip of Honshu was determined as corresponding with the middle stage of the Early Yayoi of southwestern Japan, with the absolute date placed around the second century BC. Although it took 4000–5000 years for rice cultivation to diffuse from southern China to Japan, once it reached the Japanese Islands, it spread to the northern tip of Honshu, in about three hundred years. Considering

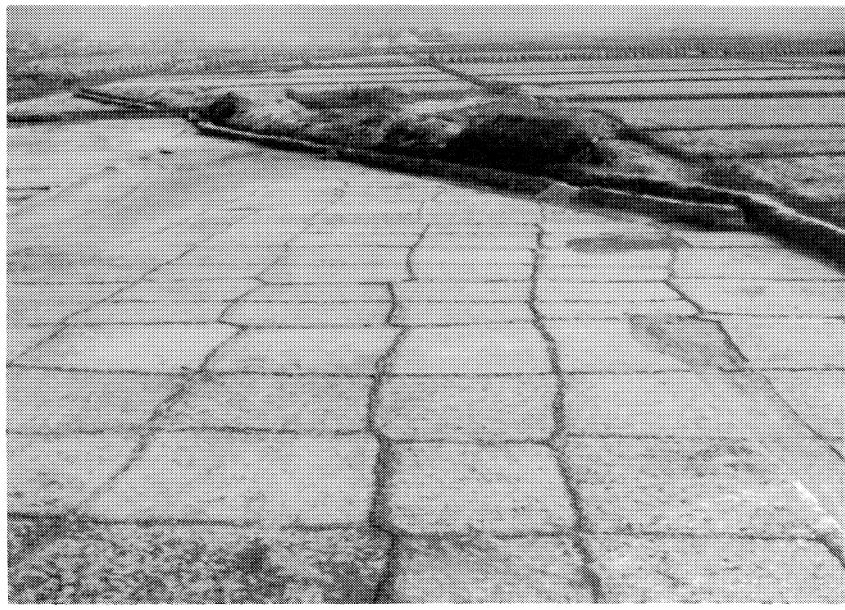


Figure 10.8 The northernmost rice fields of the prehistoric period, discovered at Tarayanagi, Aomori (Middle Yayoi; Endo et al. 1985).

that rice is a subtropical plant, the speed with which it was adopted is surprising. If the northern route is accepted, however, then it is clear that rice had already been exposed to the cool climate of northern Korea, probably gaining adaptability to it (Machida 1987). In any case, rice cultivation could not cross the Tsugaru strait into Hokkaido, and the Jomon culture continued as the Epi-Jomon of Hokkaido, remaining dependent on hunting, gathering and fishing. It was not until modern times that rice cultivation was introduced into Hokkaido.

In addition, it should be noted that rice cultivation as a dominant subsistence seems to have retreated from northern Tohoku to a line at the middle of Tohoku some time after its initial rapid expansion (Kudo 1986). Although very extensive rice fields of the Middle Yayoi were discovered at Tareyanagi (Endo et al. 1985; Fig. 10.8) in the same plain in which Sunazawa lies, they are not thought to have been in use for long, despite their favourable location on the plain. Keyhole-shape *kofun* were not built beyond this same line (Fig. 10.9); *saku* or "palisades", which in fact were fortified frontier administrative offices of the early Historical Japanese government, were also placed along this line (Fig. 10.9; Kurosaki 1992).

Concerning the question of northeastward diffusion of agriculture, I would like to review here the changes in disucssion after the discoveries of the Early Yayoi phase in northeastern Japan and the Initial Yayoi phase in southwestern Japan. Former discussions on this question had concentrated on the reason why diffusion stopped at the line between southwestern and northeastern Japan. Various explanations concerning this question came to be scrapped when it was known that the acceptance of agriculture by northeastern Japan was not late and the time-lag

Figure 10.9 The northern limit of the distribution of keyhole-type *kofun* (broken line; Niino 1992) and locations of "palisade" or frontier headquarters of early historical period (●; Kurosaki 1992).

between the two areas was minimal. However, discovery of the Initial phase sites, so far only in southwestern Japan, has resulted in the revival of the same question. Some former explanations, such as the one that more specialized subsistence systems, especially to fishing in northeastern Japan, resisted the acceptance of agricultural life (Akazawa 1982), may become available and necessary again for our present knowledge, which is, incidentally, similar to that prior to the recent discoveries. In any event, my own major question is not why the diffusion of rice cultivation temporarily stopped at the middle of Japan, but rather why it diffused with astonishing speed through Japan compared with the slow diffusion of over 5,000 years on the mainland.

Farming settlement at Toro (Fig. 10.10)

The farming settlement at Toro (Shizuoka prefecture; Japanese AA 1949, 1954), is not especially old nor especially large. However, its importance is that the whole settlement, and adjoining rice fields and many wooden tools, were preserved in damp conditions, and its excavation produced a fairly detailed picture of an early farming village in Japan. This site is also pivotal in the history and development of Japanese archaeology. Before the Second World War, the foundation myth that attributed the birth of the nation to the Emperor's ancestors was taught as the early history of Japan. Defeat in the war brought about a denial of the imperial Japanese historical view and marked the appearance of the archaeological view in school textbooks. The Toro excavation was timely in that it attracted nationwide attention during this period of social upheaval. The Japanese Archaeological Association, the nation's largest society of Japanese archaeologists, was established on the occasion of the completion of the Toro excavation.

This site is located in a coastal plain in Shizuoka prefecture and dated to the Late (IV) Yayoi. The research was carried out from 1946 to 1950 by an archaeological team that was to organize the above-mentioned association later. The settlement was formed on a natural bank in a floodplain of the Abe River and rice fields had been developed on lowlands south of the bank. Twelve dwellings were unearthed. These were not normal pit-dwellings but pit-dwelling-like surface buildings with a banked enclosure around the building, an adjustment to the low and damp conditions. The shape was rectangular with rounded corners and measured 5–8m long inside the bank and 8–12m long outside the bank on the long axis (Fig. 10.10a). There was a fireplace at the centre and four post-holes around it. A wooden plank had been placed at the bottom of each post-hole to prevent sinking. The enclosing bank was protected by small piles. There were two storehouses as evidenced by the remains of the bottom parts of four posts embedded into the ground (Fig. 10.10b). Parts of buildings discovered from other places facilitated the reconstruction of the storehouse, which had raised floors, with ladders and protective devices against rats attached to the posts just under the floor. Banks between rice fields were protected by many wooden planks. The area of any one rice field segment varied from 800 to 2400 m^2, and was larger than the majority of rice fields discovered from other sites. Artefacts included pottery, stone, iron and wood. As is usual with Yayoi pottery, it consisted of storage jars, cooking pots, pedestalled dishes and serving bowls. There were ground stone axes and ground stone arrowheads, although they were in small quantities. The scantiness of stone tools is explained by their replacement with iron tools, which became more prevalent. Although there are traces of cut marks made by iron tools on the surface of wooden tools, only a few iron fragments were recovered, probably as a result of corrosion and recycling. Wooden tools were numerous because of the good conditions for preservation, and included a wide variety such as spades, sandals, bows, bowls, pedestalled dishes, fire-making mortars, parts of looms, and small boats for rice fields. There were also stone sinkers for nets, fish-hooks made of antler, and deer scapulas used for divination. The whole site had been covered by a layer of sand as thick as 1m. This sand is typical of the kind carried by a flood, so that it appears

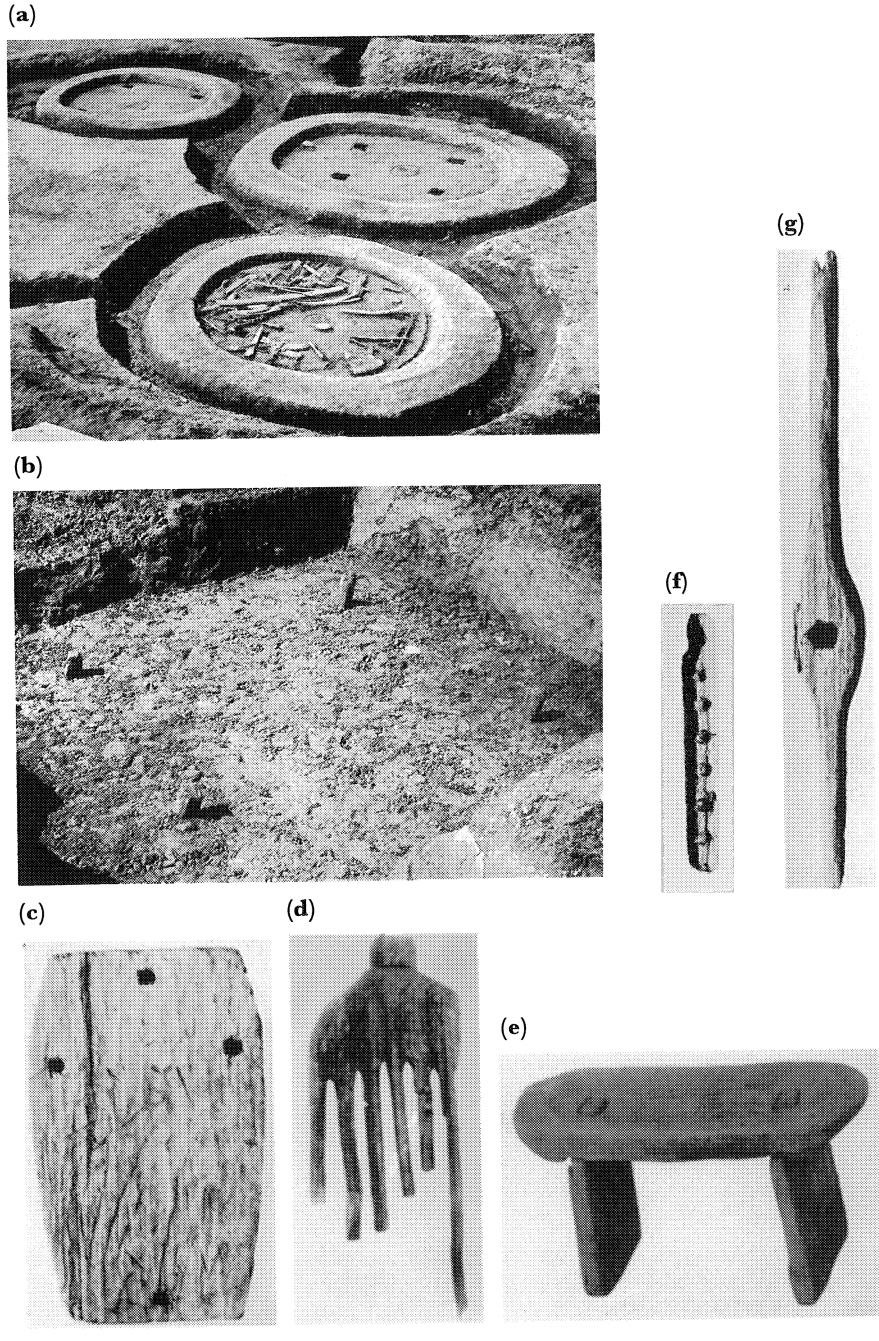


Figure 10.10 The farming settlement at Toro: (a) pit-dwellings; (b) pillar bases of storehouse with raised floor; (c) large sandal for rice fields; (d) forked spade; (e) stool; (f) fire-making mortart; (g) fire-making bow (Japanese AA 1949, 1954).

that the village of Toro was ruined and buried under sand by a sudden flood. This disaster was a boon for archaeologists, for whom the abrupt end of the Toro village preserved vivid scenes of the everyday life of the Yayoi people who inhabited it.

Yayoi agriculture and Japanese cultural tradition

We have seen highly developed rice fields controlled by irrigation and drainage canals at Itatsuke of the Initial (I)Yayoi period. The extensive rice fields of Toro, segmented by banks and protected with wooden piles, were unusual even during the Late (IV) Yayoi, and small rice fields constructed on sloping land were more common because small paddies reduced the amount of earthwork required to keep water at an even depth (Fujiwara 1989). In terms of planting methods, transplanting was evidenced by traces of seedlings at the Hyakkengawa–Haraojima site (Okayama prefecture; Masaoka et al. 1980, 1984), and others demonstrating that this method had been adopted by the Late Yayoi at the latest (see Fig. 1.6). Farming tools provide us with a wealth of information about agricultural techniques. Many wooden hoes and spades were discovered and a wide range of different forms were developed to meet various functional requirements and to tackle a variety of local ground conditions (Fig. 10.11; Uehara 1991). The most common material of which the tools were made was hard oak. The extensive production of such hardwood tools necessarily relied on the sharp edge of iron tools. However, iron was not so prevalent as to be used for farming tools themselves, and it was only from the Middle Kofun period that an iron edge was attached to wooden hoes and spades. The origin of wooden farming tools must have been on the continent, but as yet there have been few discoveries of such tools there. Thus, we cannot distinguish original continental forms from locally developed forms in Japan. Although wooden tools are rarely preserved in normal sites, they are often well preserved in the water-soaked conditions of swampy sites such as rice fields, and the reason why so few discoveries of such tools have been made on the continent is undoubtedly related to the negligible research on rice fields outside Japan. Other wooden tools such as *eburi* or paddy field smoothers, *ooashi* or paddy field trampers, paddy field sandals and others were still used at the time of the Toro excavation in Japanese farming villages and demonstrated the use of similar tools from archaeological contexts.

In addition to wooden implements, there are also so-called stone hoes, which are generally thought to have been used on dry fields (Kamimura 1985), as well as stone reaping knives. Such knives were used from very early on in China for the same purpose and they arrived in Japan through Korea, accompanying rice cultivation (Shimojo 1980). There are also similar reaping tools made of different materials such as wood and shell, and some reaping knives from the Late Yayoi were made of wood with an iron edge. These tools were used to harvest cereal ears individually. In contrast to this, stone or iron sickles were used to cut the entire stalk at the base. One idea offered in explanation was that early rice had irregular ripening times, so that ears needed to be reaped one by one. Repeated harvesting

in this way resulted in its adaptation to the Japanese climate and uniform ripening times, which facilitated the harvesting of rice by cutting the base (Kondo & Okamoto 1961). This suggestion was based on the recognition that reaping knives preceded sickles. However, it has since been discovered that reaping knives and sickles were used together for a long time.

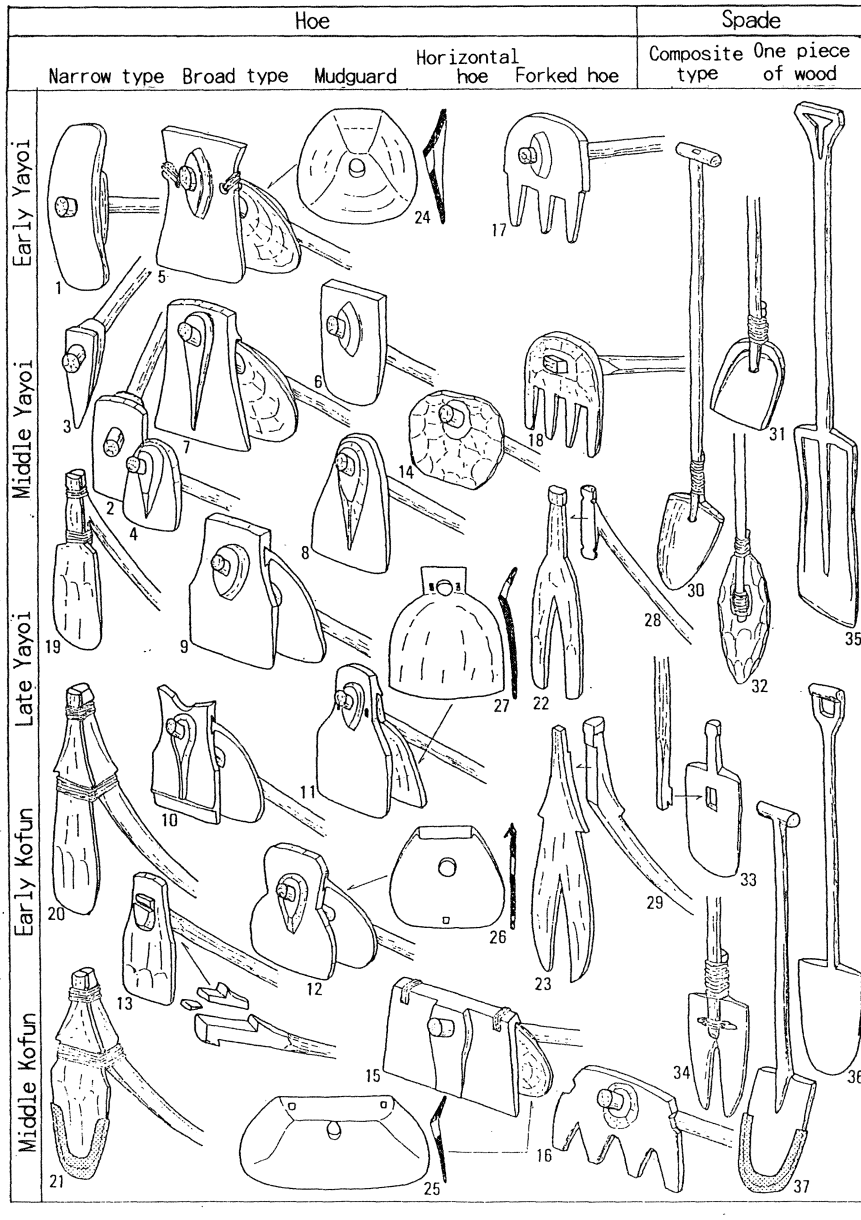


Figure 10.11 Variety of wooden tilling tools, Yayoi and Kofun periods (Uehara 1991).

Harvested rice was stored in underground storage pits (Otomasu 1983) or elevated storehouses (Kinoshita 1988). The former is considered to have originated from similar pits in northern China, although there had been similar storage pits in the Jomon period. This particular pit design arrived in Japan through Korea, like other continental elements, and was widely used in the Early and Middle Yayoi of northern Kyushu and western Chugoku. Apparently, however, it was not a good way of storing rice in the warm humid climate of Japan and, before long, ceased to be used. As mentioned in Chapter 9, storage pits for natural nuts dug in bogs lasted until the Kofun period (Imamura 1988). In contrast to this, buildings with an elevated floor, generally thought to be in the tradition of southern China, provided the basic form for storage buildings. Several pictures incised on pottery of this type of building, in this case might be a shrine or a palace, rather than a storehouse, are represented with (an) elevated floor(s) and a ladder (Fig. 10.12). Basic features of this style are seen in traditional Japanese shrine buildings (Fig. 10.13) and remains of special buildings of the Kofun period at Matsuno, Hyogo Prefecture (Kobe CEB 1983) and Nagase–Takahama, Tottori Prefecture (Tottori PCEF 1983) seems to link such features to those of Yayoi buildings.

Farming on dry fields

As rice was the most important crop in Yayoi agriculture, most settlements selected advantageous location for wet-rice cultivation. In the Nabatake site, besides rice, remains of foxtail millet, adzuki beans, and plant opal from barley were detected. According to Kaoru and Tomoko Terasawa (1981), 37 kinds of cultivated plants are known from the Yayoi period. Thus, 27 new kinds were added to the 10 possibly cultivated plants of the Jomon period. Acorns and other wild nuts were continuously used from the Jomon period onwards. The importance of dry fields is assumed, especially for northeastern Japan where suitable volcanic ash terraces are extensive. Remains of dry fields, although not numerous, have been detected in a few sites in northeastern Japan of the Yayoi and Kofun periods (Noto 1991). Nevertheless, the overwhelming importance of rice in the Yayoi period, as well as throughout Japanese history, is demonstrated both by the predominately high percentage of rice among all cereals recovered from Yayoi sites (Kuraku 1991) and by the fact that rice was the most important food even in mountainous villages of the Historical period which are not located in environments ideally suited for rice cultivation (Koyama et al. 1981).

Livestock farming

Wild boars were probably kept in the Yayoi period as well as during the Jomon period. Some bones from Yayoi sites, identified as domesticated pig (Nishimoto 1991), provide evidence that they were introduced from the mainland during this period.

The section concerning the Wa people in a Chinese chronicle, *Wei-shu*, records that there were neither cattle nor horses. These records were thought to have been wrong, because bones of these animals have been found in several Yayoi sites. However, examination of their fluorine content has revealed that most and maybe

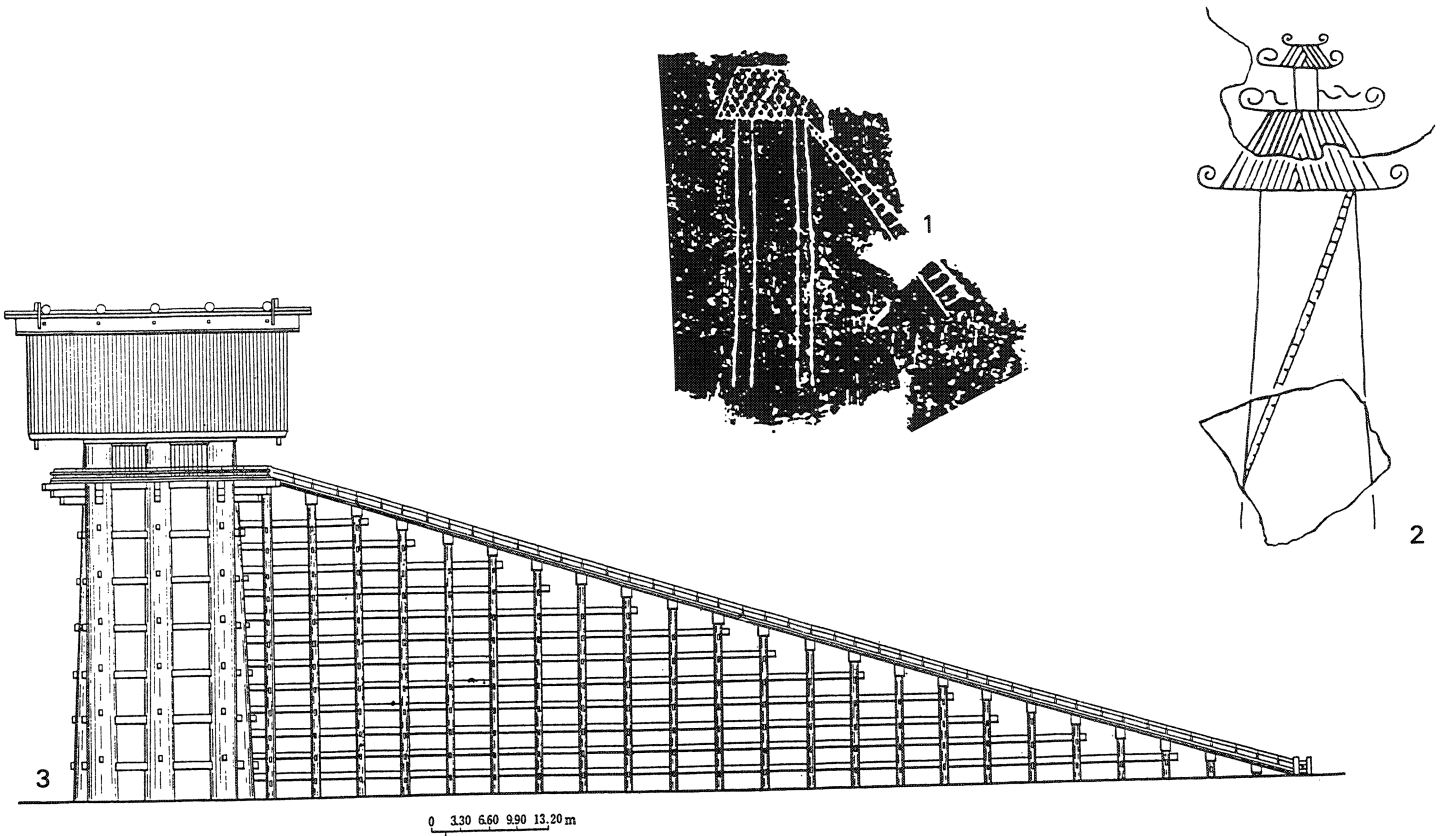


Figure 10.12 Possible depictions of a palace or shrine incised on Yayoi pottery. 1. Sumita, Tottori; 2. Karako-Kagi, Nara; 3. Reconstruction of the Great Shrine of Izumo in ancient times, Shimane (Fukuyama 1958, Sasaki 1981).

Figure 10.13 The shrine building of Ise-jingu, which is thought to be of the style of a raised-floor building from the Yayoi period.

even all of these bones were later intrusives to the prehistoric deposit (Matsu'ura et al. 1991). From the Kofun period there is a wealth of evidence for cattle- and horse-raising. Usage of such animals, however, was mainly for labour, and their role as food resources was limited until recent times. There is almost no record of sheep and goat ever having been raised. Although pigs were raised on a small scale in some periods, they are not like other gregarious herbivorous animals that are useful in stock farming. As Sahara (1975) pointed out, the lack of activity in stock-raising is an important feature of Yayoi agriculture and it orientated the basic dietary habits of historical Japan. The reason was discussed in the section on natural conditions in Chapter 1.

As we have seen, various elements and features of Japanese traditional material culture came into being during the Yayoi period.

CHAPTER ELEVEN

Racial questions of Jomon and Yayoi peoples

The introduction of agriculture from the continent was accompanied by new farming tools and techniques. Immigrants with rich agricultural experience on the mainland must have been indispensable for the successful adoption of rice cultivation during the short summers of Japan. But were the Yayoi people basically immigrants and their descendants? Or did the indigenous Jomon people learn the new technology from immigrants and become the Yayoi people?

Anthropological research

The question of race in Japanese prehistory dates back to the beginning of Japanese archaeology and anthropology, and is still at the forefront of such research. Formerly, the Jomon and Yayoi cultures were understood in terms of simple racial replacement, with Jomon populations differentiated from the more recent arrivals or Yayoi peoples, who were seen as the ancestors of the modern Japanese. Among the several opinions as to the racial identity of the former, the Ainu theory by F. Siebolt (1832–54), Y. Koganei (1904), R. Torii (1920) and others, which holds that the Jomon people were the ancestors of the modern day Ainu, was the most dominant before the earnest collection of, and morphological research on, human remains began. After the distinction between Jomon and Yayoi economic systems was clarified, archaeologists refrained from drawing hasty conclusions, whereas anthropologists were divided into those favouring forms of racial substitution (Dodo 1987), indigenous transformation (Hasebe 1951, Suzuki 1963), and hybridization (Kiyono 1949, Kanaseki 1955). These theories differ in which factor is emphasized and none of them completely denies other factors.

Excavations of an Early (II) Yayoi site and the discovery of about 200 human skeletons at Doigahama (Yamaguchi prefecture) from 1953, brought about much progress in this field (Kanaseki et al. 1960). On the basis of their tall stature, as much as 162–3 cm for males (which on average exceeds Jomon people by 3 cm), and on the basis of their slender faces which differ from those of Jomon people, Takeo

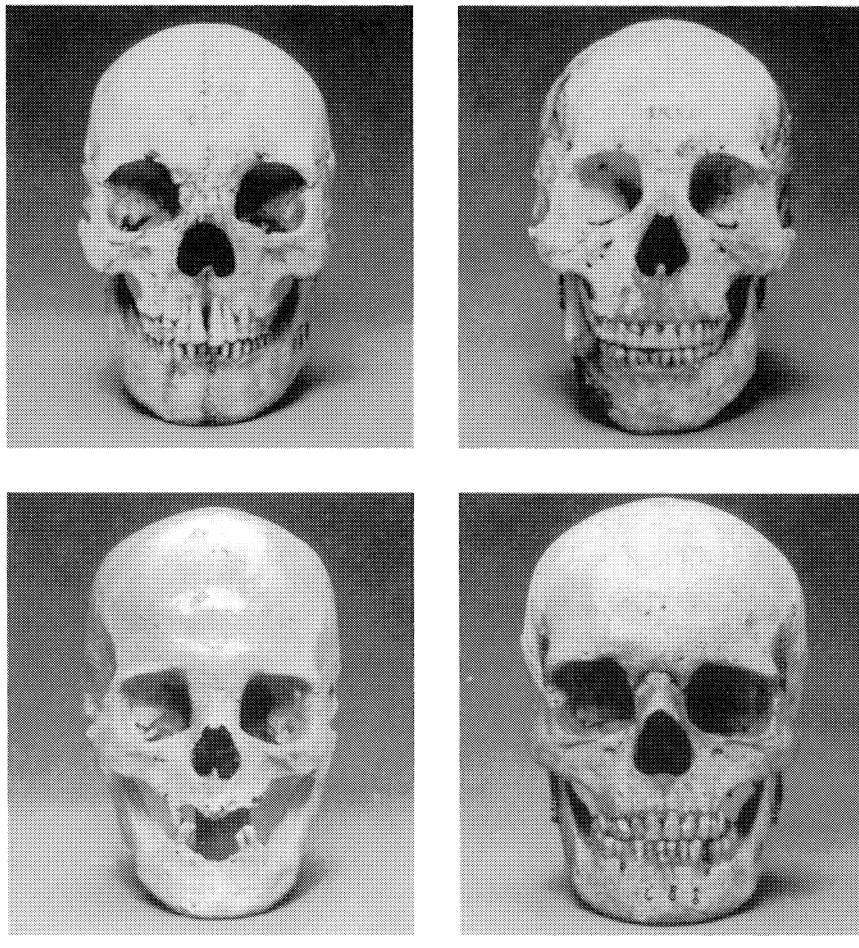


Figure 11.1 Skulls of possible immigrants (upper) and indigenous people (lower) of the Yayoi period (National Museum of Science 1988).

Kanaseki interpreted them as being immigrants from the mainland (Kanaseki 1971). Similar patterns of human remains are known from several sites in an area stretching from northern Kyushu to the Kinki district (Fig. 11.1). Although the study was completed without reference to contemporary comparative material from Korea, recently discovered skeletal remains from Yeanni (Kyongsang-namdo), although dated slightly later, had statures measuring close to those of the inferred immigrants of Doigahama (Kim et al. 1985). On the other hand, Yoshiatsu Naito pointed out the short stature and the Jomon-like morphological features of human remains from Yayoi sites in northwestern and southern Kyushu (Naito 1971). Hisashi Suzuki (1963) also pointed out that Yayoi skeletons from the Kanto district maintained Jomon features and explained their gradual modification in terms of changes in living conditions.

Taken together, this evidence seems to suggest that there was a moderate scale of migration into the northern Kyushu and western Chugoku regions, but that there was no large-scale migration into other areas. Moreover, the features of immigrants appear to have gradually merged with that of the indigenous people, while the indigenous people themselves changed morphologically under new modes of life.

However, the identification of an Initial (I) Yayoi phase before the Early (II) Yayoi has created new problems. Although the skeletal material is scant for the Initial Yayoi, the recently discovered remains of seven individuals from Shinmachi (Fukuoka prefecture; Hashiguchi et al. 1987), do not show the so-called immigrant features, despite their location in the most probable area of immigrant arrival. We have to await further discovery and research of skeletal materials, especially from the Initial Yayoi before reaching any conclusion. Meanwhile, the question may be considered from the perspective of archaeological materials.

Archaeological evidence

As will be discussed in the following chapter, several settlement sites that are known for certain to have been populated by immigrants from the Korean peninsula in the late Early (II) and early Middle (III) Yayoi were discovered in northern Kyushu. However, there has been as of yet no sure discovery of immigrant settlement from the Initial (I) Yayoi. Thus, we have to evaluate the relative contributions of local Japanese traditions and introduced continental cultural elements to the formation of Yayoi culture. Bronze and iron tools need not be included in this discussion since there is not the slightest hint of an indigenous tradition of metal-working. By contrast, chipped stone tools from the Yayoi period, including a few new kinds developed during this period, were undoubtedly a continuation of the Japanese stone tool tradition from the Jomon period, because the production of chipped stone tools had become extinct in China and Korea by the beginning of the Yayoi period (Sahara 1975). There are also several sorts of ground stone tools such as reaping knives, flat single-edge axes, grooved axes and semi-cylindrical axes, which were not present in the Jomon period (see Fig. 10.4). It is interesting, however, that the semi-cylindrical axes do not have exactly the same form as their continental ancestors and are thus taken to be a hybrid of continental and Jomon ground stone axes (Shimojyo 1986).

Until recently, the influence of Jomon house-building traditions on Yayoi houses has been assumed, despite several discoveries of pit-dwellings in northern Kyushu which are clearly of the Songgungni type (Nakama 1987) from southwestern Korea. In fact, all the pit-dwellings unearthed at the Initial Yayoi Magarita settlement site (Hashiguchi et al. 1983–5) were square houses in the Jomon tradition of Kyushu (Fig. 11.2). However, excavation of the Initial Yayoi Etsuji site (Fukuoka prefecture; Shintaku 1994) brought about one of the most important discoveries for the question of continuity and extinction of cultural traditions between the

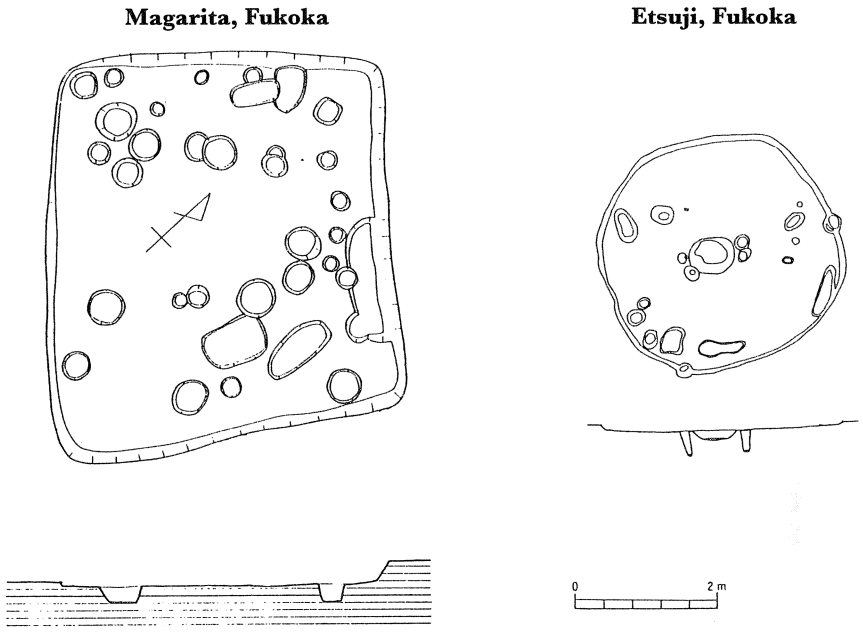


Figure 11.2 Two types of pit-dwelling of the Initial Yayoi: rectangular type in the Jomo tradition and Songgungni-type round pit-dwelling in the Korean tradition

Jomon and the Yayoi. Two and eleven pit-dwellings were unearthed at locations 1 and 2 respectively, and all were of the Songgungni type (Fig. 11.2). Thus, we know that two types of settlements, one consisting only of houses in the Jomon tradition, such as at the Magarita site, and the other consisting only of houses in the Korean tradition, such as at the Etsuji site, co-existed at the very beginning of the Yayoi period within a comparatively small central part of northern Kyushu. The Songgungni type of pit-dwelling is featured by round outline and a large central pit, and by one or two small post-hole-like pits on either side of the central pit. Although discoveries of this type are concentrated in Fukuoka prefecture, later modified ones are known in other areas of northern Kyushu, Shikoku and Chugoku (Nakama 1987). There is an important possibility that round pit-dwellings, which are very common to the Yayoi period of southwestern Japan, although admittedly without prominent features of the Songgungni type, may have originated from or been affected by this type. Whether or not this is the case, another round type of pit-dwelling did continue from the Jomon up until the Yayoi in Tohoku and the local square type of pit-dwelling seems to have continued in Kanto, judging from the very few pit-dwellings of the Final Jomon and Early Yayoi found there.

Pottery tradition

Although we know for certain that two types of settlements co-existed in Fukuoka prefecture in the Initial Yayoi, there is not a similar clear correspondence between Japanese traditional and Korean introduced pottery types and the associated sites, although details of artefacts from the Etsuji site have not yet been published. This is the reason why I hesitate to classify the site as an immigrant settlement.

Pottery is considered to be the most important archaeological indicator of whether or not there was continuity or replacement of prehistoric populations. The reason for this is that pottery, which is the most common and abundant artefact, provides a useful overview of the situation throughout Japan. Moreover, stone tools and other functional tools are not seen as a good indicator of the scale of migration, since they could easily have been adopted as part of the appropriation of the new agricultural technologies. If there was not a wholesale replacement of local potters, it is reasonable to expect that basic pottery patterns and manufacturing techniques would have been retained, even if new forms, such as cooking pots and storage vessels, were adopted, reflecting the requirements of a new mode of life and new diets.

Generally speaking, Yayoi pottery has similarities both to Jomon and to Korean Plain type pottery. The problem of its origins is very complex and many archaeologists have been trying for years to separate the indigenous and foreign elements. The complexity is partly because of the existence of many local variations and the interrelationship among these various local types, in addition to their possible relation to foreign types. It is definitely impossible to discuss the changes in pottery from Jomon to Yayoi in many regions all together in one mode.

In northeastern Japan, terminal Jomon pottery types were modified into the earliest Yayoi pottery types of the area, although they are sometimes accompanied by neighbouring pottery types and small quantities of Ongagawa-like type in the tradition of southwestern Japan. Thus, for example, the Gokanmori type of Jomon pottery was modified into the Suijinbira type of local Yayoi pottery in the Tokai region (Fig. 11.3; Komura 1975, 1981); the Arami type into the Tonouchi type in Kanto; the Sanno fifth-layer type into the Sanno third-layer type in southern Tohoku (Fig. 11.4; Sudo 1983) and the Obora A′ type into the Sunazawa type in northern Tohoku. Thus, although local Jomon pottery types were transformed into Yayoi types adopting the characteristic forms of storage jars and cooking pots, there was no significant change in the areas within which these distinct pottery types were distributed in northeastern Japan. The longlasting tradition of ornamentation with cord-marking lasted until the end of the Yayoi period in northeastern Japan (Fig. 2.2). These facts suggest that there was no large-scale replacement of populations.

Turning now to southwestern Japan and northern Kyushu in particular, the area with the most evidence of contact with continental culture, the change in pottery from the Final (VI) Jomon to the Early (II) Yayoi through the Initial (I) Yayoi appears to have been very rapid (Fig. 10.6). Although storage jars and a form of cooking pot appeared at the beginning of the Initial Yayoi, which were undoubtedly introduced from or influenced by Korean pottery (Fig. 11.5; Yane 1984),

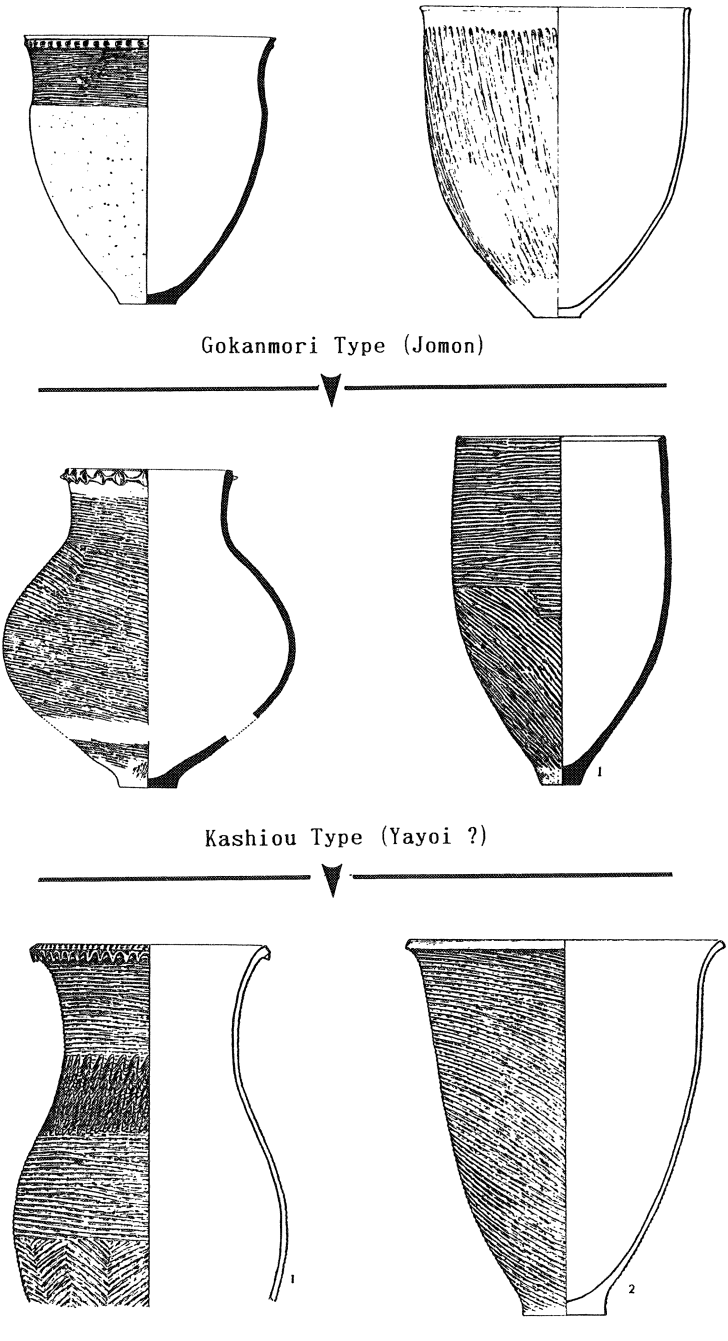


Figure 11.3 Changes in pottery from the Jomon to the Yayoi period in the Tokai region (after Komura 1981).

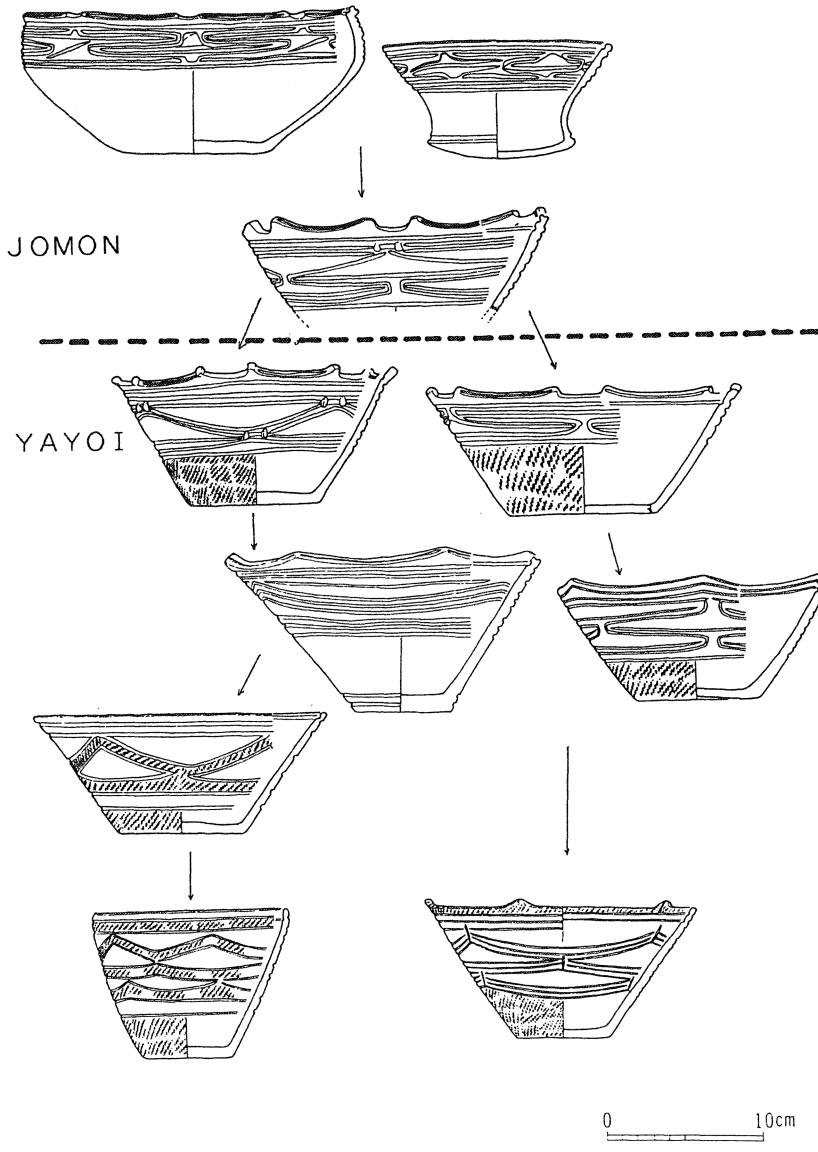


Figure 11.4 Changes in pottery bowls from the Jomon to the Yayoi period in the southern Tohoku region (Sudo 1983).

many other forms of Initial Yayoi pottery in northern Kyushu are a continuation or modification of Final Jomon pottery (Figs 10.6, 11.5; Nakajima 1987). Thus, there does not appear to have been any wholesale replacement of local potters or pottery traditions, even in northern Kyushu. On the other hand, during the Early phase, the storage jars and cooking pots, as well as pedestalled dishes, became dom-

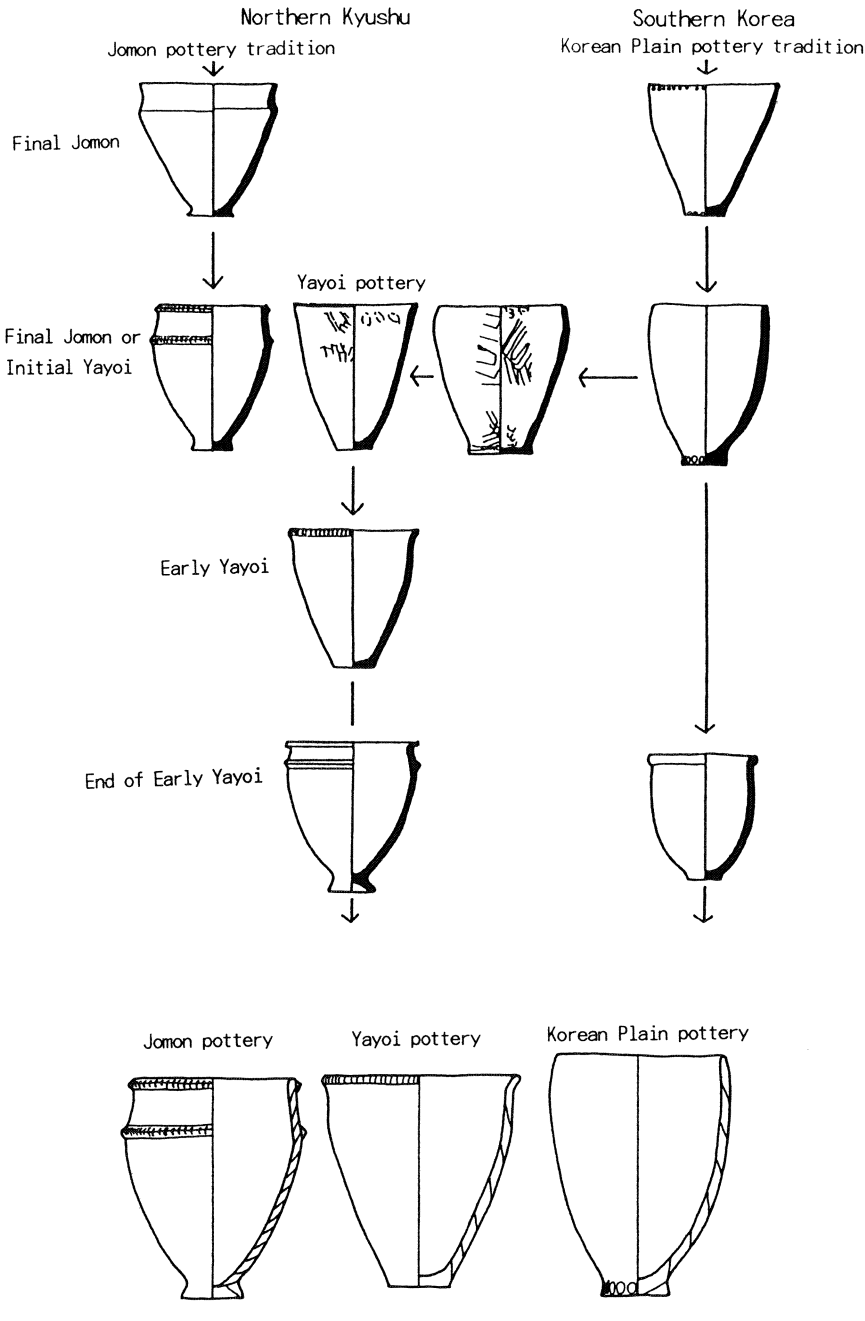


Figure 11.5 Upper: The process leading to the establishment of Yayoi cooking pots. Lower: Building modes of clay cord in the forming of Jomon, Yayoi and Korean Plain potteries (Yane 1984).

inant, with other forms falling away probably in response to the requirements of established agricultural life. This type or set of pottery forms is generally termed Ongagawa type and it marks the establishment of a distinctive Yayoi assemblage at the beginning of Early (II) Yayoi phase or the very beginning of the Yayoi period, according to conventional periodization. This type is distinctively different in appearance from Korean Plain (*Mumun*) pottery, even if it involves some similarity and elements imported from Korea.

The Ongagawa type of pottery spread swiftly as far as the Nagoya region as the dominant component of Early Yayoi pottery, whereas, as noted above, its forerunner, intermingled with types that retained a strong Jomon pottery tradition, reached to the northern tip of Honshu along with wet-rice cultivation (Sudo 1987b). This spread of typical Yayoi pottery is a clear and remarkable phenomenon, and is exceptional among the general continuity from local Jomon into Yayoi types. It is difficult, however, to judge whether spread of the immigrants and their descendants, or alternatively the adoption of a new mode of life, resulted in the dominance of Korean-influenced elements in the Ongagawa assemblage, as well as the geographical spread of the Ongagawa. Although the anthropological data, including the human remains at Doigahama, appear to require a larger migration than the archaeological interpretation, the overall pictures of migration in anthropological and archaeological interpretations were similar, at least until the following theory was presented.

The large-scale migration theory

The new theory concerning large-scale immigration and its contribution to the formation of the modern Japanese was proposed by Kazuro Hanihara in 1987. According to Hanihara, the total number of immigrants over the course of a thousand years from the beginning of the Yayoi to the early Historical period exceeded several million, overwhelming the natural increase of the domestic population. It must be noted that his argument did not develop around, nor did it concentrate only on, the migration that took place at the beginning of the Yayoi period, so his discussion does not relate directly to the present subject. Nevertheless, all the periods in Japanese history, the first half of the Yayoi period is the one in which the introduction of continental cultural elements is most remarkable, and his theory depends on population estimates made by Shuzo Koyama, who suggested that the highest growth rate was from the Final Jomon to the Yayoi period (Koyama 1978). Thus, if there was no large-scale immigration at that time, his argument is unfounded.

One of the two main reasons why Hanihara infers such large-migration to Japan is the enormous increase in population in Japan during these periods. At the beginning of his argument he adopts population figures calculated by Koyama, which are based primarily on the number of sites. According to Koyama's calculations, Japanese population increased at an average annual rate of 0.427 – over a

thousand years, from 75,800 at the beginning of the Yayoi period to 5,399,800 in the early Historical period. Hanihara points out that this figure is extraordinarily high compared to figures calculated for other areas of the world in the first millennium AD, with most of them calculating a figure of less than 0.1 – as the average annual growth rate. Thus, he argued that this high rate of growth could not have been achieved by natural increase alone but only in combination with large-scale migrations into Japan. Hanihara also calculated the ratio of contributing factors to the formation of the morphology of the Kofun people in southwestern Japan, and pointed out that the so-called immigrants contributed five to ten times more than the Jomon people, a figure that supported the result of his first calculation.

Increasing rate of population

The major question I wish to raise with regard to Hanihara's theory concerns his calculation and understanding of "reasonable rate" for population growth in early farming societies. I do not know about the societies of the areas in the world for which figures for comparison were cited nor how they were calculated or how reliable they are. In any event, such rates are the result of specific processes that alternately promoted or suppressed population growth and by no means represent the universal or largest possible rate to be realized under lasting ideal conditions. His theory assumes that the conditions with which the increase of population from the Yayoi to the early Historical period took place were almost identical to other early Historical societies in the first millennium AD which he cites for comparison. My theory begins from precisely the opposite assumption, in as much as I suggest that the improvements in and the increase of the carrying capacity of the economy brought about by wet-rice cultivation were exceptional in human history, judging from the astonishing increase in the number and scale of settlements, as well as the extraordinary speed of social changes (see Ch. 14). A very developed and intensive system of food production was introduced into areas with ideal natural conditions for the system and ignited a series of chain reactions of increasing product and increasing population. As long as Hanihara assumes, as his starting point, a population increase of 70 times, he cannot deny the surprising improvements in the carrying capacity of the economy which allowed such populations to be sustained during this time. Thus, the focus of the question shifts to another. How high a rate of natural population growth could be achieved under such ideal conditions? Is large-scale migration the only way in which an increase of 70-fold could be realized in a thousand years?

As we have seen, the number of pit-dwellings increased by as much as 50 to 150 times in the 600 to 700 years of the first half of the Middle Jomon period in western Kanto and the Chubu Highlands (see Figs 8.2, 8.3). Even if we estimate a very conservative 25-fold increase in population over 650 years (increasing rate of 0.496% per year) on the numbers of pit-dwellings, assuming the rate of increase was maintained 350 years more, this represents a 140-fold increase over a thousand years.

This example, taken from actual archaeological data, proves that Koyama's estimate could have been ideally realized only by natural increases. Hanihara must admit the persistence of these ideal conditions, since, I repeat, his theory is based on Koyama's estimate of a 70-fold increase for the thousand years from the beginning of the Yayoi to the early Historical period and such a greatly increased population must have been fed. I am not arguing that there was no migration into Japan, but simply that we cannot calculate the scale of migration based on the increase of population and the assumption of a "reasonable rate" for population growth. Nor need we push the conventional understanding of population change from foreign data on Japanese history.

Estimation of population change

By no means do I adhere completely to Koyama's population estimates, which were produced with many questionable assumptions from the archaeological side. His assumption of an average population per site, which is common to all the sites from all the phases of a given period (the Jomon, Yayoi and Kofun respectively) is especially questionable, as is his method of calculating the average number of persons per site, based only on the number of pit-dwellings in exceptionally large sites taken to be representative of each period. On the other hand, the actual sites on which he based his numbers of sites vary greatly in size from large settlements with hundreds of pit-dwellings to small temporary sites with no pit-dwelling.

The significance of his endeavour must be recognized, however, since no one else has attempted it and since my own attempt at estimating comparative changes in population size is limited to the Jomon period (Imamura in press). Nevertheless, I have to point out that his understanding of population change, which is based on an average number of persons per site, and the number of sites in a given phase, produces much too gentle a curve when compared to changes in population during the Jomon period, based on the number of pit-dwellings per pottery type (i.e. smaller unit of time), which clearly shows much steeper rises and falls.

One of the problems with using pit-dwellings as a basis for population estimates is that the use of pit-dwellings, and thus their numbers left in a certain area, must have been affected by the extent of sedentary life. Pit-dwelling numbers would also have been affected by how long particular dwellings were in use and the number of persons that occupied it over time. Another serious question is possible changes in the preferred geographical location of sites, which may have affected the discovery of sites and excavation of pit-dwellings. Finally, the duration of each pottery type is also a big problem. Although the first problem pertaining to sedentism and the relative duration of pit-dwellings is fairly serious, the volume of the whole pottery recovered seems to match with the number of pit-dwellings, although there are no statistical data on the total quantities of pottery. This first problematic factor presents far more of a problem to the method of calculating population on the basis of site numbers because, the less sedentary a population was, the more sites must

have been occupied during a unit period. Accordingly, site numbers do not reflect real population size. The second problem pertaining to differentials in the difficulty of site discovery is common to both methods, whereas the third problem seems less serious because we can estimate the average duration of pottery types by using radiocarbon dating. Thus, one can safely say that the extraordinarily high peak of the Middle Jomon was not caused by the long duration of contemporary pottery types.

Repeated increases and decreases

Most archaeologists and anthropologists such as Koyama understand the increase and subsequent decrease in Jomon population to be a far more gradual process than that suggested by my estimates, which were produced by counting the number of pit-dwellings on scale divisions of pottery types (Figs 11.6, 11.7). Moreover, although they assume that there was only one increase and one decrease in population, my own inference is that there were repeated increases and decreases, although many of the peaks and valleys that appear on my graph may be the result of the shortage of data, bias in the number of discovered pit-dwellings, and differences in the duration of each pottery type. I would suggest that the repeated increase and decrease in Jomon population reflects the tension between, on one hand, great potential increases in population and, on the other, the carrying capacity of the Jomon economy, which, although usually stable, was limited and sometimes decreased in periods of climatic flux, for instance. Thus, the population could change suddenly when the balance between the two was temporarily lost. The appearance of stability as well as the gentle increase and decrease in Koyama's graph is surely the result of counting sites by phases, such as the Early, Middle and Late Jomon. This method of calculating population by rough divisions of over thousand-year periods could not provide a detailed picture of population changes but only a rough overview of general tendencies.

Expansion of continental gene?

The number of pit-dwellings increased more than ten times and almost one hundred times in the first half of the Middle Jomon in western Kanto and the Chubu Highlands. The movement of populations from surrounding areas, if any, could not have contributed greatly to this increase, because areas to the north also had increasing population and those to the west originally had a small population that would have made little contribution to the enormous increase in the population in western Kanto and the Chubu Highlands. Such rapid increases in population are seen rarely and only under rapidly improving conditions of food production. Contrary to conventional wisdom, however, such surprising increases were possible and were in fact realized by natural population growth alone even in the Jomon

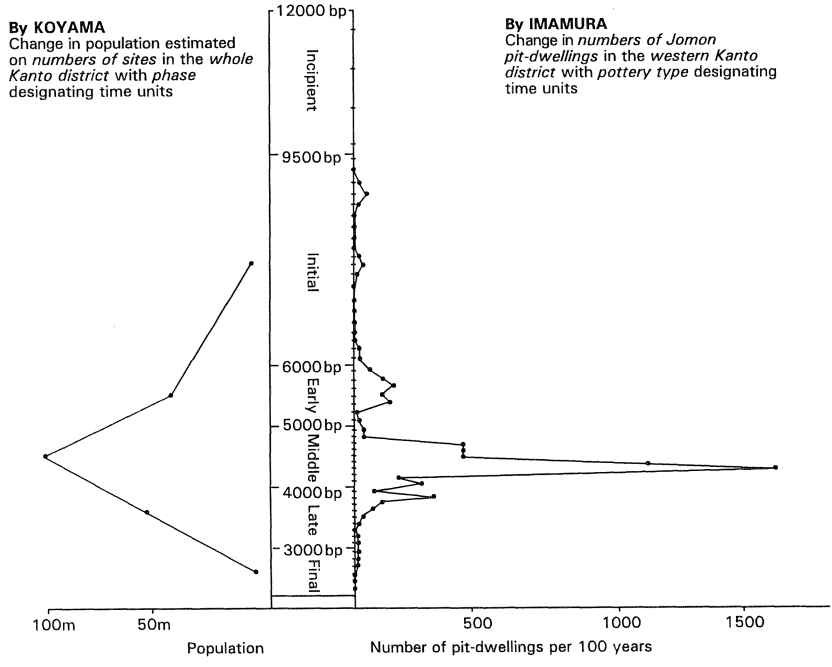
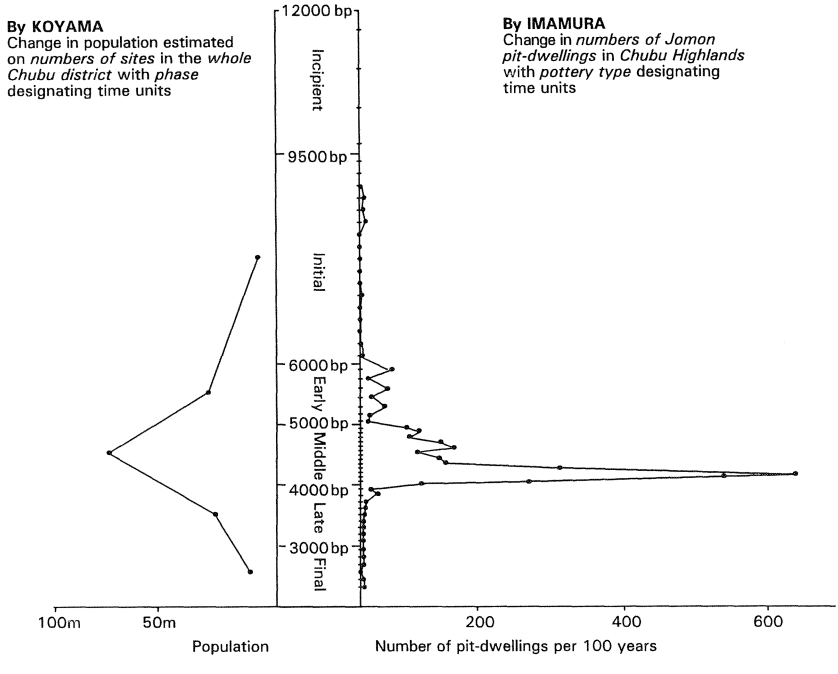


Figure 11.6 Kanto district

Change in the Jomon population, estimated by S. Koyama, and change in numbers of pit-dwellings, estimated by the author (Imamura in press).

Figure 11.7 Chubu Highlands



period, when exceptionally good conditions were realized and sustained. I would also suggest that such ideal conditions were again realized when developed rice cultivation was introduced into southwestern Japan, which was a very suitable area for this method of agriculture, thus promoting another great population explosion.

If, as Hanihara says, it was not the change in the mode of life but genes from the continent that greatly contributed to the formation of the modern Japanese, then some way of understanding the introduction of this genetic material other than mass migration must be sought, because the archaeological evidence does not support this. In its place I would suggest that groups of immigrants, or local communities with a high proportion of immigrants and their descendants, which by comparison with other indigenous group held more advanced agricultural techniques, realized and maintained higher rates of population growth over a considerable period of time, resulting in the increase and spread of the mainland gene.

The effect of the differential in growth must have been larger at the beginning of the Yayoi period, when the indigenous Jomon population was still comparatively small and while there was a large technological gap between immigrant and indigenous groups. As will be discussed in the next chapter, there is concrete evidence of continuing migration into Japan after the end of the Early (II) Yayoi period although apparently on a smaller scale than Hanihara suggested. The spread of Ongagawa type assemblages from northern Kyushu to an extensive area of southwestern Japan was discussed previously and I would also point out the repeated movements of western Yayoi culture into eastern areas during the Yayoi and early Kofun periods. It is known, for instance, that pottery types of the Late Yayoi in the Tokai region penetrated into the Kanto and were interspersed with indigenous types in a mosaic manner (Hidai 1991, Samejima 1994). Thus, there must have been some migration in groups from western areas, where population density was high, to the eastern areas where population density was comparatively low and developable land remained.

Revival of the Ainu theory?

A recent increase in skeletal materials discovered in Hokkaido has bridged the Epi-Jomon and modern Ainu people, indicating a gradual morphological change from the former to the latter (Yamaguchi & Dodo 1980). The recent two tendencies in physical anthropology – the assumption of large genetic contribution of immigrant populations in the formation of modern Japanese and the linking of Jomon people with the Ainu – appears to signal the revival of the Ainu theory proposed by pioneers of anthropology and archaeology. However, the simple linking of the Jomon and Ainu, as well as the Yayoi people and modern Japanese, is a far cry from the complex picture that emerges both from the human skeletal remains and the archaeological evidence, including pottery. Nevertheless, there is a possibility that the gradual increase and accumulation of the continental gene finally contributed greatly to the formation of the modern Japanese.

CHAPTER TWELVE

Immigrant settlements and overseas trade

The various cultural influences and new technologies brought from the mainland to Japan at the beginning of the Yayoi period have been outlined in Chapters 10 and 11. However, pottery made either in Korea or Japan, in the same form and by the same techniques as pottery in Korea, is very rarely found in Initial (I) and Early (II) Yayoi sites. Nevertheless, 200–300 years into the Yayoi, towards the end of Early (II) Yayoi, settlements accompanied mainly by Korean pottery appeared in northern Kyushu among otherwise typical villages with indigenous Yayoi pottery. Such settlements are considered to have been hamlets inhabited by immigrants from Korea, who acted as intermediaries between Korea and Japan.

Settlements of immigrants

Korean Plain pottery was noticed for the first time in 1974 at Moro'oka, Fukuoka City (Fig. 12.1; Goto & Yokoyama 1975) on the eastern slope of a hill located 600 m to the southwest of the well known Itatsuke site. There were 18 pits dated to late stage of the Early Yayoi, 12 of which yielded the Korean Plain (*Mumun*) pottery. The assemblage consisted of 50 cooking pots, three storage jars, and one bowl. There were no pedestalled dishes. Yayoi pottery of the Itatsuke II type dated to the end of the Early Yayoi were unearthed as well. The quantity of Korean Plain pottery was a little more than that of Yayoi pottery (Fig. 12.2). Fabric analysis, undertaken to ascertain the production area,was unsuccessful because of similar geological conditions in both northern Kyusyu and southern Korea. All of the pits seem to have been used simultaneously, for both dwelling and storage. As they were not regular pit-dwellings, they may have been temporary dwellings and, judging from the quantities of Korean pottery, their inhabitants appear to have been immigrants from Korea.

According to a list compiled by Tadashi Goto (1979), 15 sites with at least some Korean Plain pottery were known in northern Kyushu. His new list, published eight years later (Goto 1987), enumerated 45 such sites extending from northern

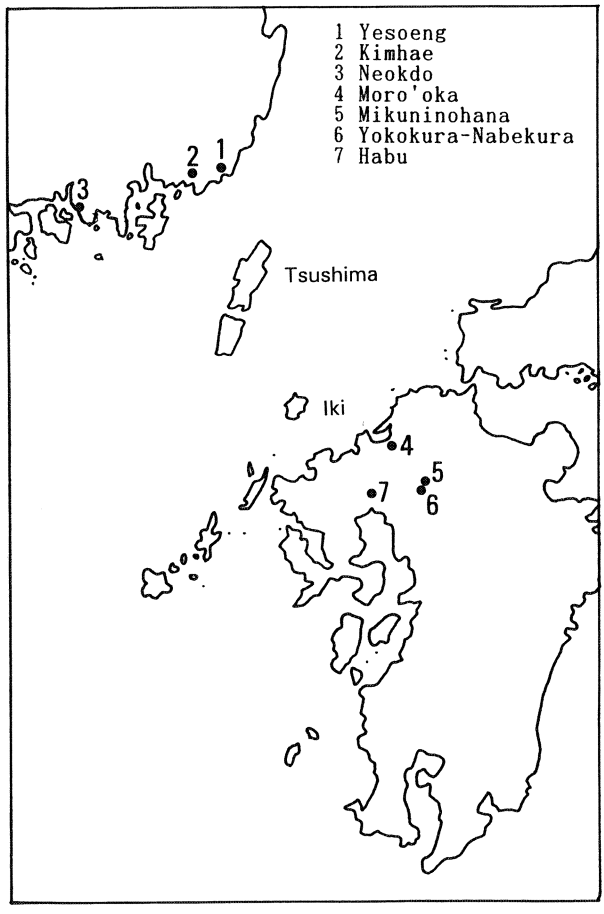


Figure 12.1 Sites referred to in Chapter 12.

Kyushu to the Chugoku, Shikoku and Kinki districts. Their dates are concentrated at around the end of the Early (II) and the beginning of the Middle (III) Yayoi. The number of sites with Korean Plain pottery is very small when compared to the thousands of contemporaneous sites in these districts without such pottery. Nevertheless, the pottery at these sites represent not just the importation of trade ware but also the movements of special human groups.

This is seen more clearly when the sites are examined in more detail. The Morooka site provided evidence of a group of people who, although isolated, had some intercourse with local Yayoi people. Since pottery brought from the mainland could not have met all their daily requirements, the Korean Plain pottery used there may have consisted both of pottery carried from Korea and pottery made in Japan, although it is virtually impossible to distinguish the two. A more isolated condition is seen at the Mikuninohana site (Fukuoka City; Kataoka 1991), where only Korean Plain pottery was unearthed from pits that seem to have been dwellings. At Yokokura–Nabekura (Fukuoka City; Kataoka 1991), large quantities of Korean Plain pottery were found without Yayoi pottery from a pit on the slope of

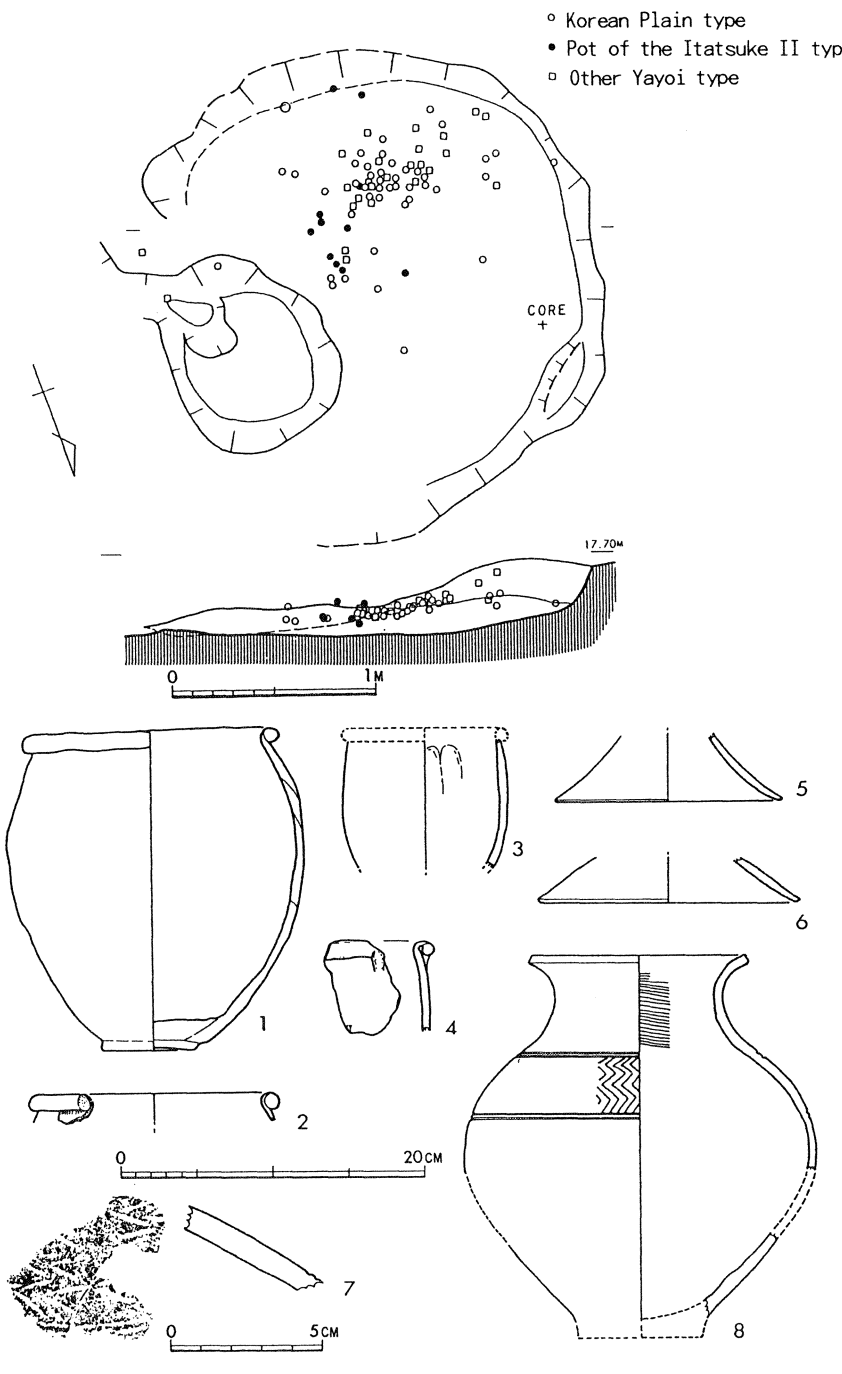


Figure 12.2 Pit 3 and the pottery from it, Moro'oka, Fukuoka. 1–4: the Korean Plain; 5–8: Yayoi type (Goto & Yokoyama 1975).

a hill, and contemporary pit-dwellings with Yayoi pottery but no Korean Plain pottery were excavated on the top of the same hill. This shows that Korean and Yayoi groups lived side by side with little intercourse, each maintaining their own separate identities. The Habu site (Saga prefecture; Kataoka 1991) is basically a Yayoi settlement, although small amounts of Korean Plain pottery were also found there. However, the Korean Plain pottery at this site is not original Korean Plain but the so-called "pseudo-Korean Plain", which was modified under the apparent influence of Yayoi pottery.

Taken together, the evidence from all these sites suggests that immigrants who lived initially in isolation were gradually being assimilated into indigenous populations while their pottery was losing its distinctiveness. Such pseudo-Korean Plain pottery is seen not only around sites with genuine Korean Plain, but also at sites in extensive coastal areas that stretch eastwards from northern Kyushu. This distribution indicates that as one moved eastwards there was an increasing incorporation of immigrants and their pottery with indigenous population and pottery, and a corresponding loss of their separate identity.

A decrease in the quantity of Korean Plain pottery in the Late Yayoi phase seems to indicate a decline in the number of new immigrants and fewer exchanges with the peninsula. This fact corresponds well with the decrease in the amount of imported luxury goods, such as Chinese bronze mirrors, which had previously been imported in great quantities to Kyushu during the end of Early and the Middle Yayoi. Thus, something must have happened to obstruct exchange between Korea and Kyushu. In contrast to the decrease of Korean Plain in northern Kyushu, an increase is noted around the same time on the Islands of Iki and Tsushima, located between Korea and northern Kyushu. T. Goto argues that these islands took over the role as intermediaries between Korea and northern Kyushu which no longer maintained direct contact (Goto 1987).

Yayoi pottery discovered in Korea

Up until this point, I have been discussing Korean pottery discovered in Japan. However, an inverse phenomenon is also known, that is, Yayoi pottery discovered in Korea. It has been found in Pusan, Kimhae and Kyongsang-namdo in the southeastern tip of the peninsula, which is the easiest to reach from Japan via the islands between Japan and Korea, and it was this area that maintained close relations with Japan.

Although the earliest Yayoi pottery found in Korea are jars that were used as burial containers in the Kimhae shell midden and which are identified as Itatsuke II type of the Early Yayoi, most of the Yayoi pottery discovered in Korea is identified as Shironokoshi, Suku I, and Suku II types of northern Kyushu from the Middle Yayoi. The dates of Yayoi pottery seen in Korea correspond to the dates of the Korean Plain seen in northern Kyushu, indicating that traffic and migration flowed in both directions. At one Korean site, Neokdo, Yayoi pottery accounted

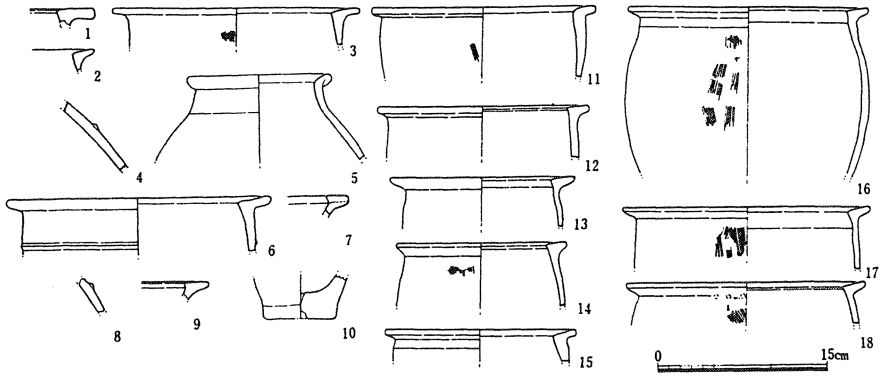


Figure 12.3 Pottery in the Yayoi tradition discovered in southern Korea (Yesoeng site, Pusan; Shin & Ha 1991).

for 8 per cent of all the pottery. This pottery was thought to consist both of Yayoi pottery manufactured in Japan and Yayoi pottery manufactured in Korea. In contrast to this, however, at the Yesoeng site (Pusan City) as much as 94 per cent of all pottery was Yayoi (Fig. 12.3; Shin & Ha 1991). Although indistinguishable from genuine Yayoi pottery made in Japan, most of the pottery from the site is thought to have been made in Korea by Yayoi people who had settled there, since so much pottery could not have been carried across the sea.

Roles of the immigrants

Although it is difficult to know all the motives of Korean and Yayoi immigrants who crossed the strait from each side, we can surely surmise that one of their primary roles was the transport of goods, including bronze and iron tools, as well as raw materials from the mainland. Moreover, there is a correspondence between the dates associated with the evidence of immigration and those of bronze artefacts found in northern Kyushu.

It is important to note that the systematic importation of bronze, the most common among imported goods found in the archaeological context, did not start at the beginning of the Yayoi period. The opening of the Yayoi period depended on immigrants who brought new farming techniques from Korea, which was only later followed by the importation of bronze tools, which might have been significant as cult objects and/or symbols of power. This sequence appears to follow the time-lapse between the beginning of agriculture and the emergence of increasingly complex societies that required special prestige goods.

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CHAPTER THIRTEEN

Iron and bronze

Metals were introduced together with rice cultivation at the beginning of the Yayoi period. Iron smelting technology had been acquired in China by the time wet-rice cultivation began in Japan, and iron tools, and the processing technology required to produce them, diffused swiftly. Therefore, bronze and iron were introduced into Japan at the same time. However, in contrast to the practical use of iron, bronze was used predominantly for ceremonial objects or prestige goods.

Differences between iron and bronze

The earliest metal specimens in Japan include the following: a flat iron axe from the Initial (I) Yayoi Magarita site (Fukuoka prefecture; Hashiguchi et al. 1983–5); a socketed iron axe from the Early (II) Yayoi Saitoyama site (Kumamoto prefecture; Otomasu 1961); and a bronze chisel, a bronze arrowhead and an iron arrowhead from the Early Yayoi Imagawa site (Fukuoka prefecture; Sakai & Izaki 1981). Apart from a few exceptional bronze specimens, iron can be said to have been introduced a little earlier than bronze. Although the discoveries of iron tools are not numerous, traces of iron tool use are seen on the surface of many wooden tools.

In contrast to the practical use of iron tools, bronze artefacts are generally thought to have functioned as ceremonial goods and treasure. As we have seen previously, the demand for such goods was generated by increasing social complexity brought about by the adoption of agriculture. The main reason for the functional differentiation between iron and bronze is their properties as metals. In contrast to iron minerals, which are easier to obtain in large quantities and from which sharp tool edges can be made, the raw materials used in bronze manufacture are more precious and produce a much duller edge than iron. However, bronze can be easily cast into a variety of elaborate forms and it has a golden metallic lustre when newly cast, which is perhaps one of the reasons why it was used for ceremonial treasure. This differential use of iron and bronze may also relate to their respective uses in China. Bronze in China was mainly controlled by the ruling classes, who used it to make ceremonial goods and weapons for the maintenance of their power. In northern China, farming tools were rarely made of bronze and

the extinction of stone tools only came about as iron became prevalent, in the meantime prevalence of iron was late in southern China and bronze farming tools were used in its stead (Sano 1993). In Japan, bronze was not used for farming or ordinary domestic cutting tools, and although the forms of bronze weapons were retained, their active use as weapons diminished and their function was changed into ceremonial goods. This functional change is seen in the modification of weapon forms, with width exaggerated at the expense of sharpness and solidity. However, a recent increase in the discovery of the broken tips of bronze weapons in graves of probable war victims (Hashiguchi 1986) suggests that the functional utility of bronze weapons in Japan was not completely lost. In any event, as their function as weapons diminished, the sharp edge itself became unnecessary, and stone and wooden ceremonial objects appeared in the same form as bronze weapons (Nakamura 1987).

The scarcity of iron tools in Yayoi sites (except in northern Kyushu) may be explained by the continual recycling of broken iron tools as well as by their rare placement and consequent rare discovery in graves or ceremonial underground deposits, and there is no possible explanation for the disappearance of stone tools in the Late Yayoi phase other than the prevalence of iron. If we exclude bronze weapon-like ceremonial goods from the list of edged tools, the sequence of cutting tools in Japan is as follows; stone → stone and iron → the complete replacement of stone by iron.

Iron tools

Among the iron tools of the Yayoi period are swords, halberds, arrowheads, axes, chisels, point planes, knives, spade-shoes, reaping knives, sickles and fish-hooks (Fig. 13.1). The oldest specimen is a flat axe discovered in an Initial (I) Yayoi pit-dwelling at Magarita (Fig. 13.2; Hashiguchi et al. 1983–5). It is made of high-grade forged steel. The socketed iron axe from the Early (II) Yayoi Saitoyama site (Fig. 13.2; Otomasu 1961) is a cast iron product. Judging from the quality and casting technology, these were most certainly imported from China. Although not all domestic products are distinguishable from imported Korean and Chinese ones, the appearance of unique Japanese forms in the first half of the Middle (III) Yayoi phase provides the clearest evidence for the beginning of the domestic manufacture of iron tools. Such Japanese forms became prevalent in the Late (IV) Yayoi. The extinction of stone tools throughout all Japan in the Late Yayoi (except for northern Tohoku and Hokkaido) is explained by the diffusion of iron. These iron tools are thought to have most probably been made of imported iron material. A section concerning "Bian Chen" in *Wei-shu* written in the third century AD, reports that iron resources are found in southern Korea and that the "Han",[1] "Ye", and "Wa", namely Japanese, actively procured it. It also mentions that they used iron

1. Not the Han dynasty of China, but the people of southern Korea.

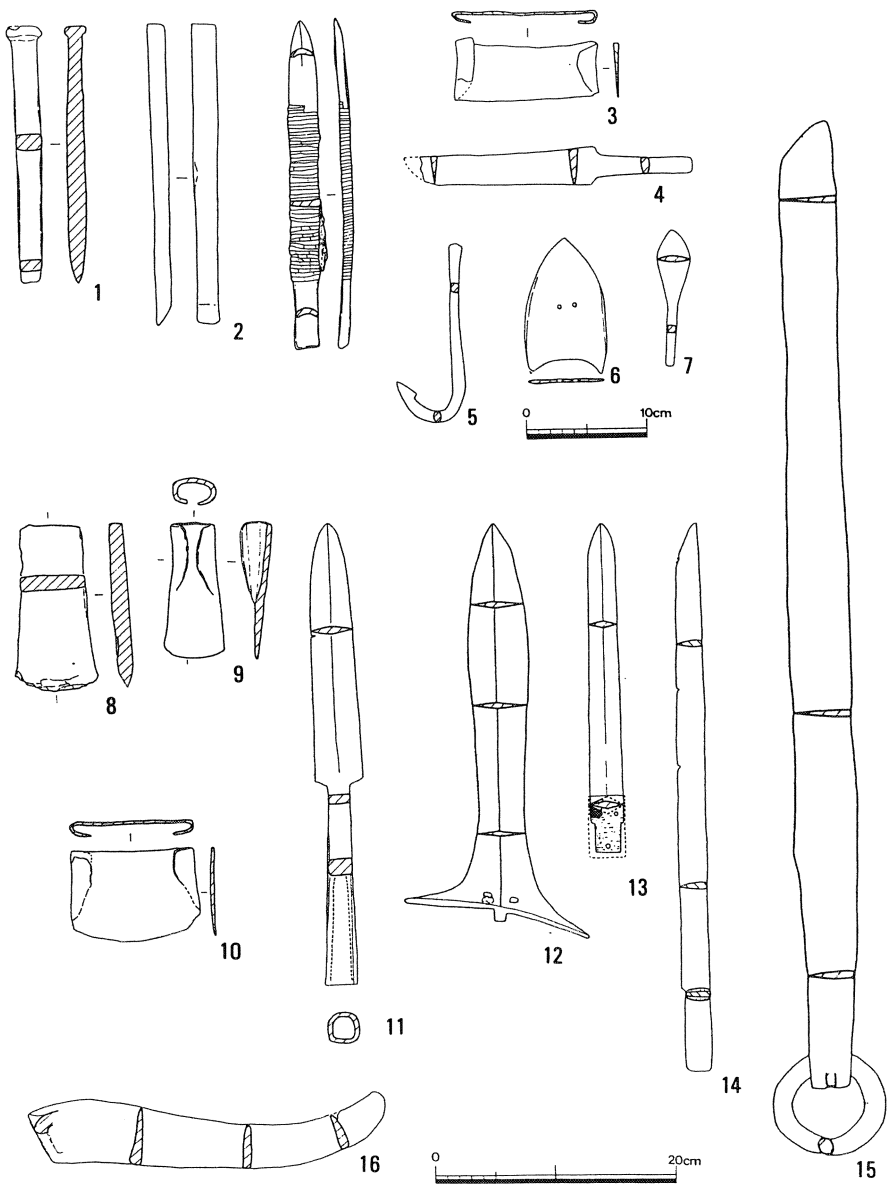


Figure 13.1 Various iron tools of the Yayoi period (from Kawagoe 1993).

as a medium of exchange, like money in China. Although this implies that iron was imported from southern Korea, it is difficult to imagine a supply of imported iron sufficient to bring about the extinction of stone tools. However, as of yet there has been no positive discovery of Yayoi iron smelting sites that would provide evidence of the domestic production of raw iron.[2]

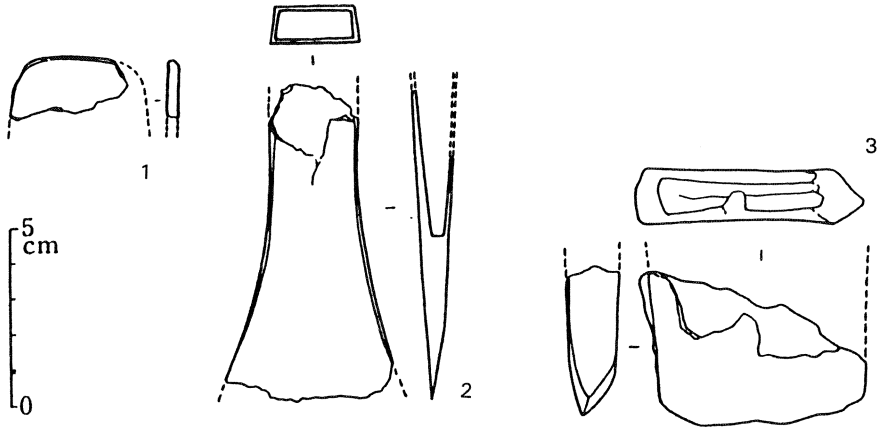


Figure 13.2 Earliest iron tools of the Yayoi period. 1. Magarita, Fukuoka ; 2. Osayuki, Fukuoka; 3. Saito, Kumamoto.

Bronze tools

Origin

There are three related problems in uncovering the origins of Japanese bronze objects:

- the area from where bronze tools were imported
- the area from which tool types and the manufacturing techniques originated
- the areas from which the material for domestic casting came.

The manufacturing areas of imported bronze tools were Korea and China. Korean products were imported from the end of the Early (II) Yayoi (Fig. 13.3), and moulds found in Japan provide evidence that similar tools were cast in Japan soon after such imports began (Iwanaga 1991). Domestic production became dominant from the middle stage of the Middle Yayoi (III). Around that time, Chinese bronzes such as mirrors began to be imported.

Korean bronze imported during the end of the Early Yayoi to the beginning of the Middle Yayoi includes swords, spearheads, halberds, mirrors and small bells (Oda 1986). Although they were cast in Korea, many of the original forms are found in China (Lee 1991). Spearheads and halberds had a long tradition in Shang-Zhou China. Ancestral forms of the Korean sword are seen in the Liaoning type distributed in the easternmost part of China. Korean mirrors characterized by multiple nobs developed out of a succession of forms from those with coarse line patterns to those with fine line patterns. Similar forms of mirrors and ornamental

2. According to a recent newspaper report, an iron-smelting furnace probably from the Late Yayoi period was discovered at Komaru, Hiroshima prefecture. Radiocarbon dates of the third and eighth centuries were reported, so the date of the Yayoi periods is not conclusive.

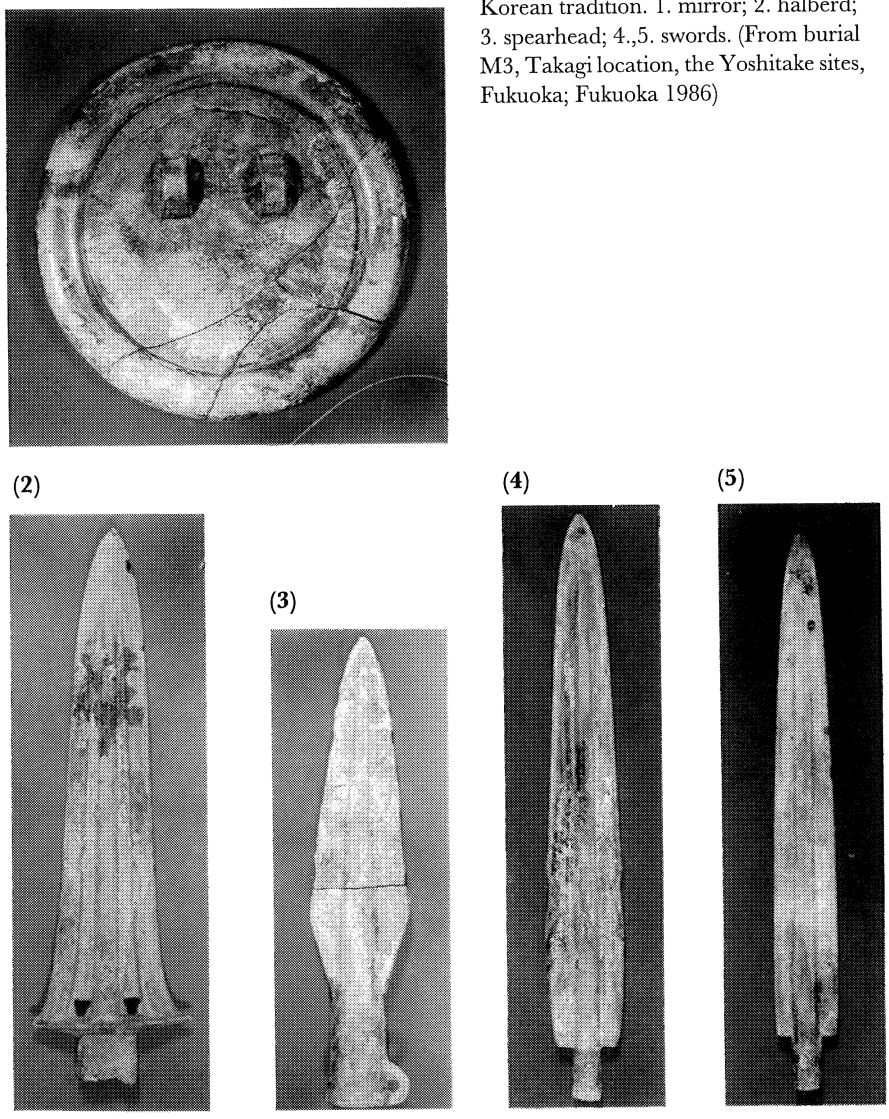


Figure 13.3 Bronze tools of the Korean tradition. 1. mirror; 2. halberd; 3. spearhead; 4.,5. swords. (From burial M3, Takagi location, the Yoshitake sites, Fukuoka; Fukuoka 1986)

plaques are seen in burials of nomadic tribes around the northern border of China. Bronze objects in Korean tradition, with the exception of mirrors, were also made in Japan. Initially made in the same form as the Korean ones, they gradually developed into unique Japanese forms. Weapons were transformed from the thick and narrow original forms into thin and wide forms at the expense of their actual functionality. Such changes indicate that it was their appearance, rather than their efficiency as weapons, that was demanded. Bronze bells became the special preference of Yayoi people and developed into cult objects, some as many as ten times

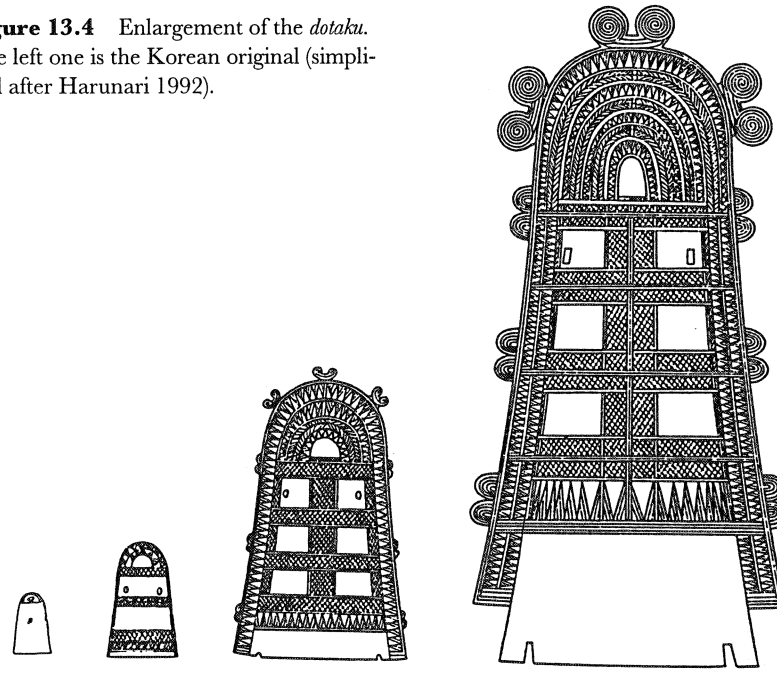


Figure 13.4 Enlargement of the *dotaku*. The left one is the Korean original (simplified after Harunari 1992).

larger than the Korean originals (Fig. 13.4; Sahara 1983b). The absence (except one fragment) of bronze axes in Japan – which might be considered more mundane objects in this context – although present in Korea, clearly shows the purpose of the appropriation of mainland bronze.

Chinese bronze imported into Japan were mirrors and coins. Among bronze objects that played the role of cult objects and prestige goods in Japan, Chinese mirrors appear to have assumed special significance. Mirrors that were cast and brought to Japan, probably during the Han dynasty, were passed down through many generations until finally being buried in *kofun* mounded tombs a few centuries later (Kobayashi 1961). Han and later mirrors and copies made in Japan were the most important and numerous of grave goods in the early *kofun*. More than 39 mirrors, including extremely large reproductions (46.5 cm in diameter; Fig. 13.5) of Late Han mirrors, were found in a tomb, at Hirabaru (Fukuoka prefecture; Harada 1991). Opinions are divided over the date of this exceptional tomb which may be either from the Late Yayoi or the Early Kofun.

There are also original forms of bronze objects indigenous to Japan. A typical item is the bronze cog-wheel ornament used to decorate shields and other objects. Its strange shape is thought to have derived from shell bracelets made from *Harpago chiragra*, a kind of seashell with long protuberances (Usa & Nishitani 1959).

Domestic casting of bronze

It is not always easy to distinguish between Korean and Japanese cast bronze, with the exception of the local Japanese weapon forms, because all the raw materials

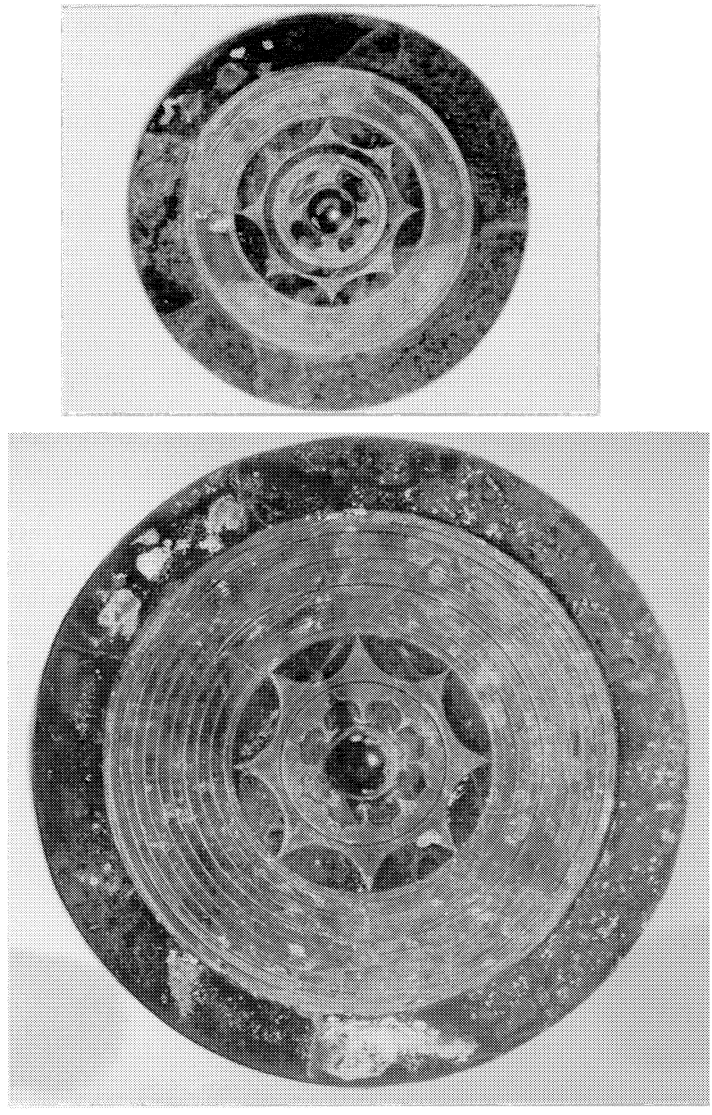


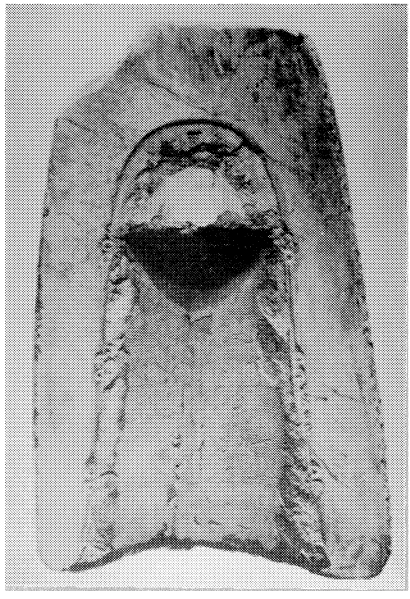
Figure 13.5 Chinese-style mirror, enlarged in Japan. Upper: Chinese casting. Lower: Japanese casting. Both from Hirabaru, Fukuoka (Harada 1991).

for domestic casting were imported from the mainland. The clearest evidence in documenting what forms were cast in Japan is moulds. The discovery of early moulds such as those for narrow types of sword and spearheads from Souza and Yoshinogari (Saga prefecture; Iwanaga 1991) has overthrown the former assumption that such types of bronze were all Korean products. Although moulds were found from more than 60 sites, discoveries of workshops are very few. In the

Yasunagata site (Saga prefecture), furnaces, moulds and bellow tuyères were unearthed in pit-dwellings (Fujise et al. 1985). Most of the moulds of the Yayoi period are of stone, although a few clay moulds are known as well. *Dotaku* bronze bells actually cast in the moulds unearthed at Higashinara (Osaka prefecture; Fig. 13.6; Tashiro et al. 1975) have been discovered from Gahaishiyama (Kagawa prefecture), Sakurazuka (Osaka prefecture) and Kehi (Hyogo prefecture). Such discoveries provide evidence that the casting of large bronze bells was done in a few major workshops and their products distributed over extensive areas.

The role of bronze

Precious bronze objects were not disposed of or left in settlement sites. Most bronze artefacts are found in graves or were deliberately buried in isolation, with no apparent relation to graves or settlements. Bronze grave furnishings for persons of high status are unusual and are seen only in northern Kyushu, although, as I argue later, this does not mean that evidence of social stratification is found only there. Bronze ware of the Yayoi period is often found deliberately buried in places far from settlement sites and graves. Such discoveries usually occur by accident during construction or other work; thus, archaeologists rarely have the opportunity to examine the burial context. Such burials are seen extensively in southwestern Japan, from Kyushu to the Chubu district. In the Kanto and other northern districts, discoveries of bronze are rare. The most intensive burial of bronze was discovered at Kojindani (Shimane prefecture; Shimane PEB 1985, 1986) in 1984–5, where 358 bronze swords, 16 bronze spearheads and 6 *dotaku* were found from two pits on the slope of a hill far from any settlement site (Fig. 13.7). There are various explanations for such a burial practice, including the following:



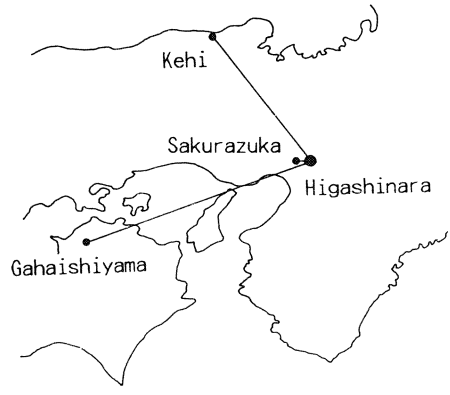


Figure 13.6 A stone *dotaku* mould from Higashi-Nara, Osaka, and discovery sites of *dotaku* which were cast by the moulds unearthed at Higashi-Nara.

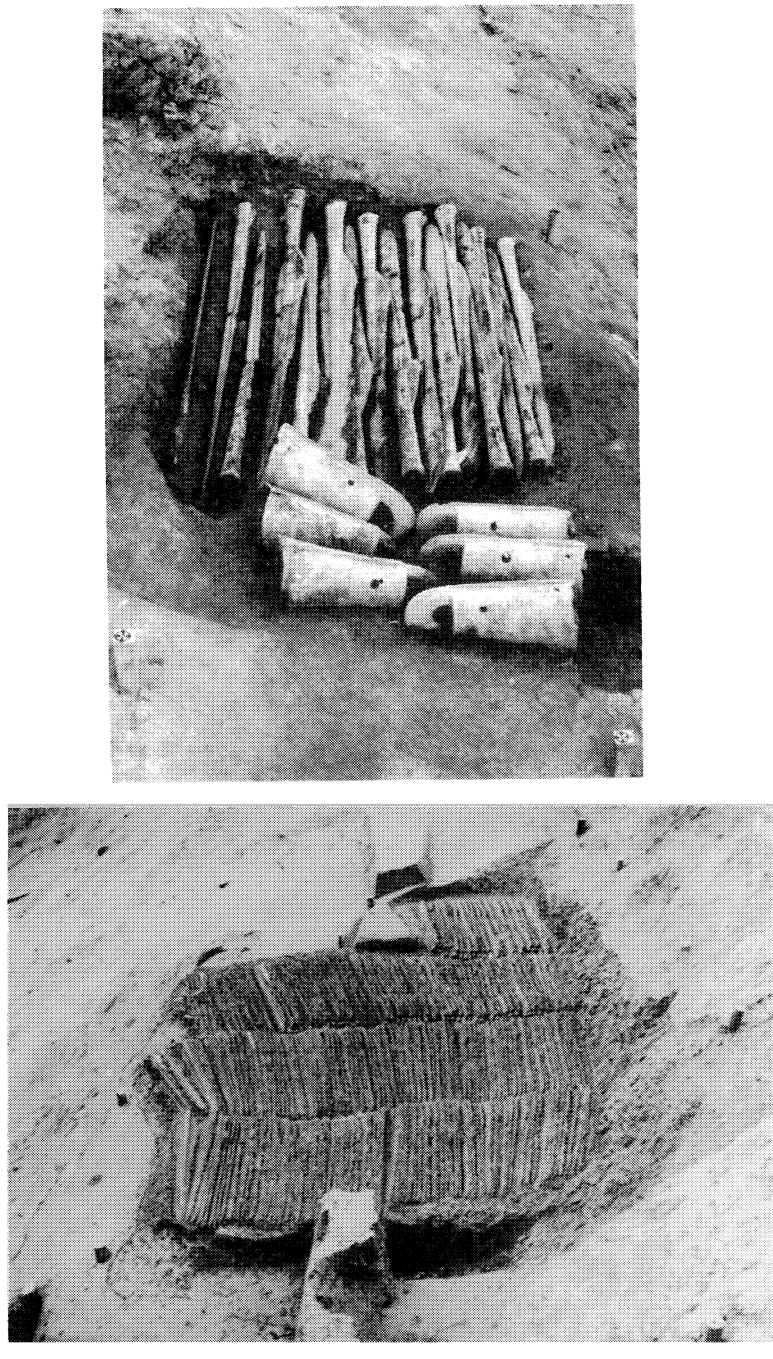


Figure 13.7 The largest burial of bronze tools discovered to date, at Kojindani, Shimane (Shimane PEB 1985, 1986).

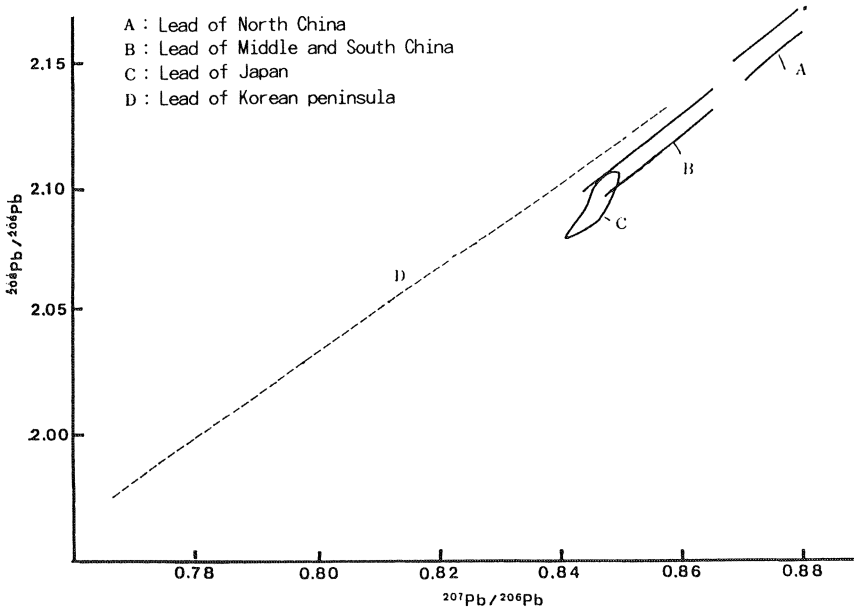


Figure 13.8 Isotope compositions of present lead specimens. All specimens from Yayoi bronze, both imported and domestically cast, are located in the A or D areas (Mabuchi 1986).

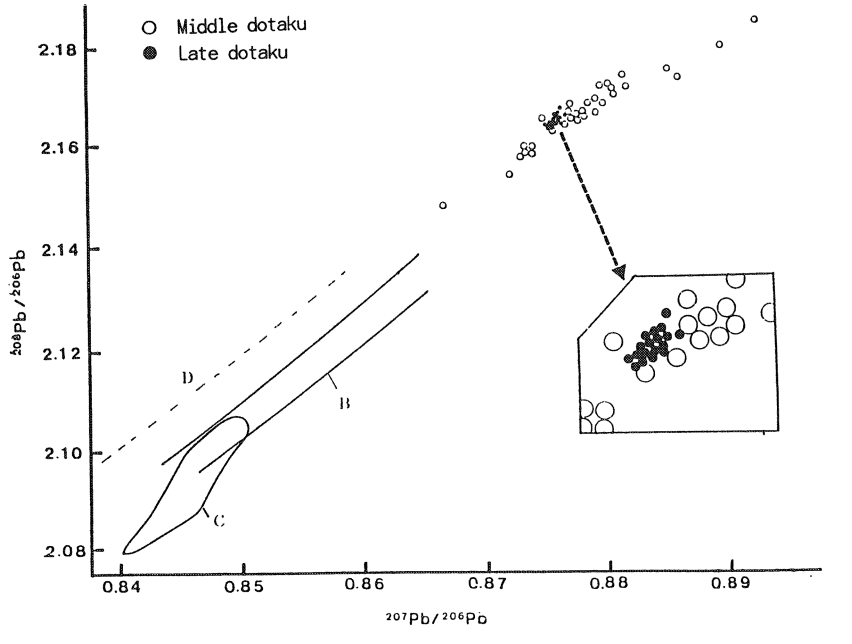


Figure 13.9 Isotope compositions of lead in *dotaku* indicated on a magnified part of the above graph (Mabuchi 1986).

- that it represents the emergency concealment of bronze goods in response to an enemy attack
- that they were normally stored underground and taken out only when necessary, so that when the cult of the bronze was abandoned, they were left in the earth (Sahara 1960)
- that they were buried as magical safeguards at the boundaries of their world (Harunari 1978)
- and finally, Ikuo Kobayashi interpreted cases where several *dotaku* had been buried together as a situation where separate settlements which each originally possessed one *dotaku* for their respective cults had been unified, and thus buried their *dotaku* together (Kobayashi 1967).

The procurement of bronze materials

For the study of the bronze source materials, the lead isotope analysis is very effective. This is a method used to determine the source areas of lead, which is added to the copper alloy. This method is based on the fact that the ratio between three kinds of lead isotopes is constant over a large area beyond the immediate locations of a mine, with changes apparent only beyond extensive areas (Yamazaki et al. 1979). Based on this method, Korean weapons and mirrors had been plotted along line D in Figure 13.8, a line identical to lead specimens from many present-day mines in Korea. This clearly shows that Korean material was used for such products. On the other hand, Chinese mirrors discovered in Japan concentrate in the range of A, which correspond to the isotope ratio of lead presently excavated from northern China. Bronze cast in Japan clearly separated between range A and line D demonstrates that bronze material from both Korea and China was used. The source materials used for producing *dotaku* bells in Japan are known to have changed over time. Early specimens are plotted along line D, indicating that Korean material or melted Korean bronze objects were used. *Dotaku* of the middle type fall within the range of lead isotopes from northern China, with those of the late type concentrated in a very small area within the range of northern Chinese lead (Fig. 13.9). Not only are the ratios of lead isotopes consistent, but also the composition of copper, tin and lead is very constant for these late bells. Hisao Mabuchi, who analyzed the material, argues that precisely compounded bronze alloys in the form of ingots must have been imported from northern China (Mabuchi 1986).

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CHAPTER FOURTEEN

Political unification

The introduction of wet-rice cultivation resulted in the rapid development of food production as well as large increases in population. It was followed by frequent armed conflicts, the emergence of social stratification, and shortly thereafter some form of kingship. Such small polities were merged until finally they were unified under the "Yamato" supreme kingship which, by the end of the third century AD, was based in Yamato, the present Nara Basin in the Kinki district. The question of whether the original "Yamatai" kingdom, which is recorded in a Chinese chronicle as having gained superiority over other kingdoms in the early to middle third century, was located in northern Kyushu or the Nara Basin has generated the greatest controversy concerning the ancient history of Japan. This controversy centres not simply on the location of a kingdom but on the relationship between the Yamatai Kingdom and the later Yamato kingship, and consequently on the very origins of the Japanese state.

Wars

Skeletons of probable victims of wars are often seen in the Yayoi period where broken tips of stone or bronze weapons remain lodged in the bone. Broken tips of weapons found in burials are also interpreted in the same way, even if they are not lodged in the bone. Tatsuya Hashiguchi has listed 33 cases in northern Kyushu where the use of jar burials improved the preservation of human bones (Hashiguchi 1986). He also listed eight cases in which arrowheads were found in jar burials but in a condition that suggested they were not grave goods (Fig. 14.1). Although the broken tips of bronze and stone weapons have been found, no broken fragments of iron have been discovered. This may be explained by the less fragile nature of iron tools in comparison with bronze and stone. Such victims are found in contexts that date to around the latter half of the Early (II) to Middle (III) Yayoi period. Around this time, the distribution of settlements extended into the upper reaches of river valleys as well as the low hilly areas. Population expansion and the development of rice fields increased to such an extent that these areas were required for cultivation. T. Hashiguchi argues that the shortage of suitable land

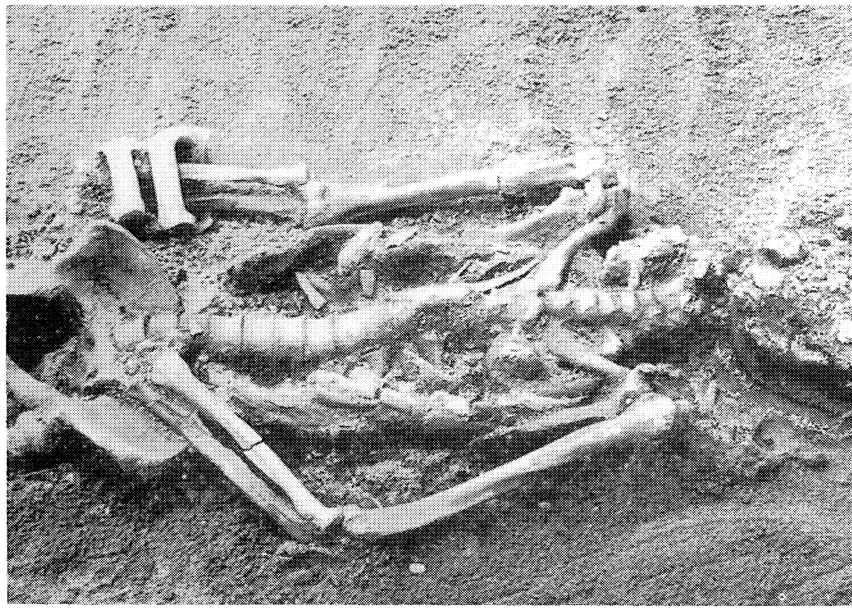

Figure 14.1 Skeleton of a war victim killed by stone and bronze arrowheads, Doigahama Yamaguchi (Kanaseki et al. 1960).

and of available water sources generated frequent conflicts between neighbouring settlements.

On the other hand, such conflicts resulted in the strengthening of relationships between settlements and the emergence of political leaders at the supra-village level. The *Han-shu*, the Chinese chronicle of the Early Han Dynasty (the first and second centuries BC) very briefly refers to Japan, which may indicate only northern Kyushu, as "being divided into more than one hundred polities".

Other evidence of armed conflicts and war includes moated settlements (Fig. 14.2), hill-top settlements (Morioka 1986), and the mass production of large arrowheads (Sahara & Kobayash 1964). However, discovery of a moated settlement at Naka (Fukuoka City) showed that such sites, which are always cited as evidence of conflicts, appeared from the time of the Initial (I) Yayoi, during the very early stages of agricultural development. Therefore, one may suspect that it was initially part of the appropriation of mainland culture or that early conflicts were brought about by the arrival of immigrant groups. The rapid adoption of new agricultural technology by the indigenous population seems to militate against the latter explanation. Nevertheless, large moats must have functioned as defence, although it is important to note that not all villages were moated during the Yayoi period. The construction of moats seems to have concentrated on a few short times during the Yayoi period, probably reflecting occasions of extensive political tension (Ishiguro 1990). Finally, the *Wei-shu* records that there were long disturbances of war before the rule by Queen Himiko.

Figure 14.2 Moated settlement at Otsuka, Yokohama, after completion of excavation (Kohoku NTRP 1976).

Social stratification

The earliest indication of social stratification is seen among burials in northern Kyushu. In the Yoshitake group of sites (Fukuoka prefecture), 1200 burials were excavated dating from the end of the Early (II) Yayoi to the beginning of the Late (IV) Yayoi (Fukuoka CEB 1986). The Takagi location of the sites consisted of 34 jar burials and 4 pit burials with traces of wooden coffins, and dated from the end of the Early Yayoi to the beginning of the Middle Yayoi (Fig. 14.3). Small burials, probably for children, were concentrated in the eastern section, whereas large burials were located in the western section of the area. Grave goods were found in 11 out of the 20 adult burials found there. These included narrow types of bronze swords, spearheads, halberds, mirrors with fine line patterns, comma-shape jade beads, cylindrical jade beads and bronze bracelets. Burial 3 was the most richly furnished, with four bronze weapons, a mirror and other ornaments. Persons of high status, as evidenced by grave goods, were buried only in the Takagi location during this phase. A little later, in the latter half of the Middle Yayoi, a so-called *funkyubo* burial mound was made in the public cemetery of Hiwatasi location of the same group of sites. Six of the 25 burials on the *funkyubo* mound had grave goods, none of the burials outside the mound was furnished. Thus, in the Yoshitake sites, special areas were reserved for persons of high status by the end of Early Yayoi, whereas an artificial mound in a public cemetery functioned to mark persons of high status in the latter half of the Middle Yayoi.

The Yoshinogari site (Saga prefecture; Fig. 14.4) is a very large settlement surrounded by enclosing moats (Saga PEB 1992). The outermost moat encloses an area of 1,000 by 400 m. More than 2000 jar burials were excavated both inside and outside the moats, and a *funkyubo* mound was found at the northern end of the interior area. Five out of the six jar burials found in the excavated area of the *funkyubo* had furnished goods, including bronze swords and cylindrical glass beads.

At the Mikumo–Minamishoji site (Yanagida 1985), two jar burials dated around the latter half of the Middle Yayoi were discovered. One was furnished with more than 31 mirrors, 4 bronze weapons, and 8 Chinese glass ornament *bi* in broad ring shape and glass beads, whereas the other jar burial included more than 22 mirrors and 13 comma-shaped beads of jade and glass. There were no other burials around these two jar burials, indicating that an extensive exclusive area was designated for supreme individuals. Similar isolated jar burials with very rich grave goods were discovered at location D of the Suku–Okamoto site (Shimada & Umehara 1930).

Thus, by the end of the Early Yayoi, distinct social classes began to emerge, followed in turn by the emergence of a few individuals at the top of the social hierarchy, who by the second half of the Middle Yayoi were distinguished even from other highly ranked clan persons. Such individuals might be called kings, and their territories appear to have corresponded to the countries of Matsura, Ito, Na, Fuya and others in northern Kyushu, which were named in the section of the "Wa" people in the *Wei-shu*. Such changes in society are most clearly seen in northern Kyushu, because of the practice of furnishing burials, but in other areas where such

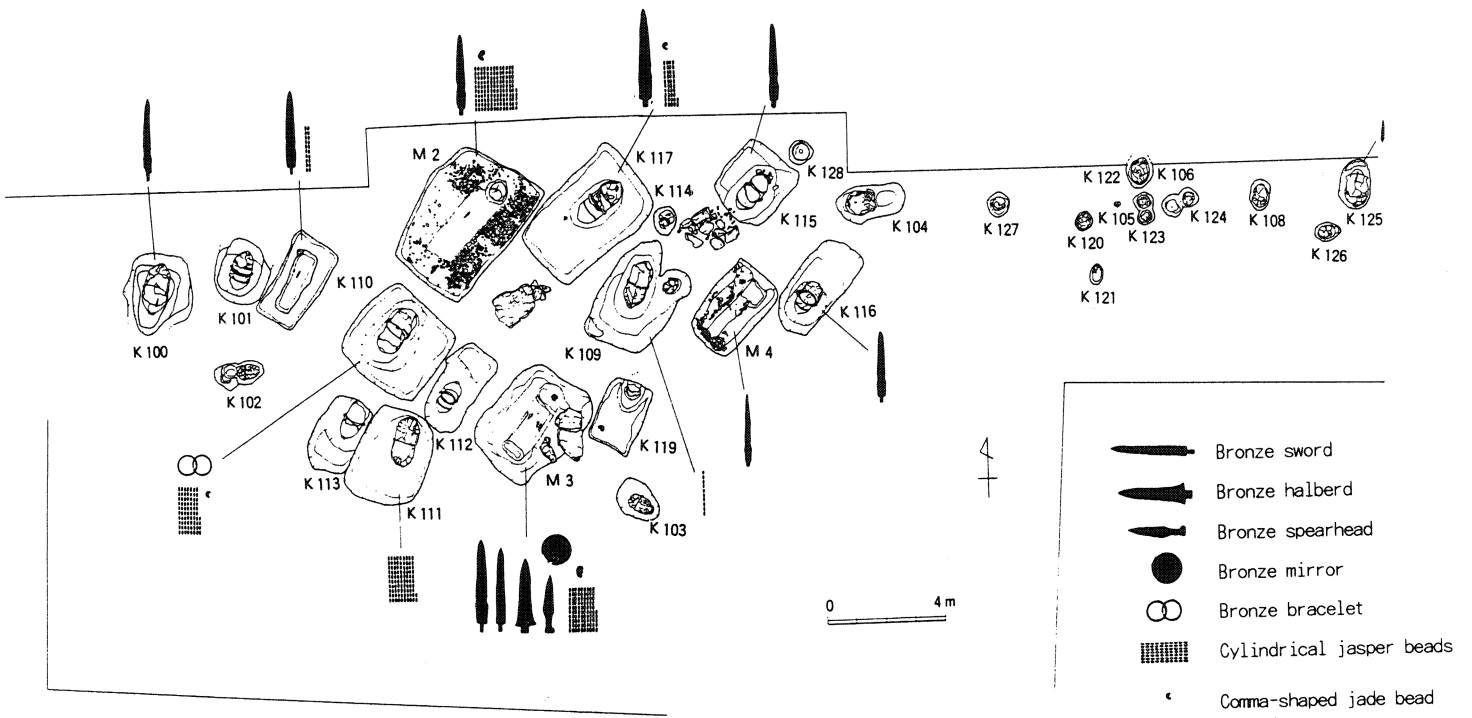

Figure 14.3 Burials and their furnished goods at the Takagi location, Yoshitake sites, Fukuoka (K and M indicate jar burial and wooden coffins respectively; Fukuoka CHM 1986).

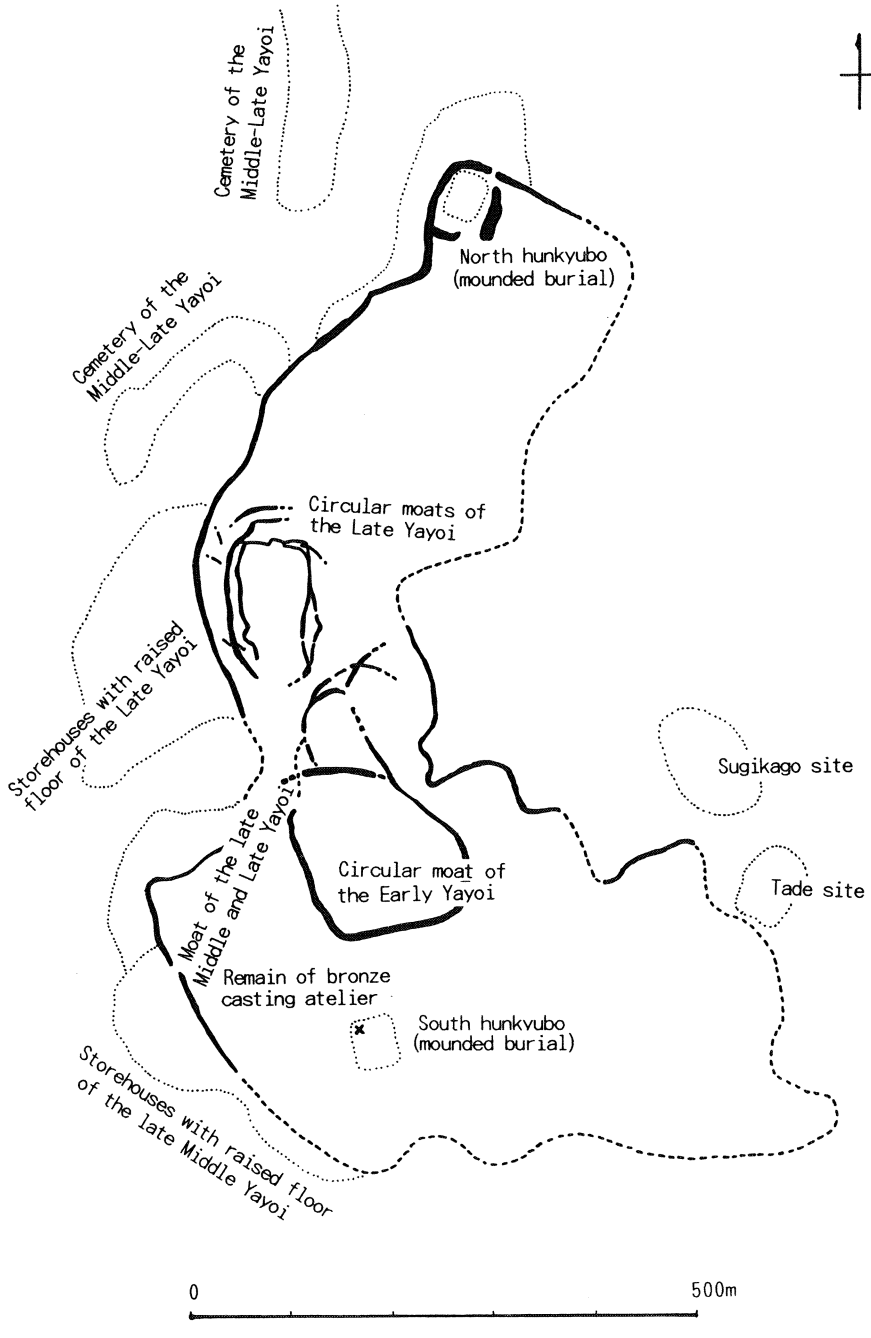

Figure 14.4 Moated settlement of Yoshinogari, Saga prefecture (Saga PEB 1992).

practices were uncommon, other clues are required to clarify changes in social positioning. The emergence of huge *kofun* from among *funkyubo* mounded burials, discussed below, reflects such transformations.

Role of trade

The importance of trade for early state formation is often pointed out. As noted previously, both finished bronze objects and raw materials used for manufacturing bronze objects were imported in great quantities by immigrant communities, who were apparently in charge of transportation. The most important trade item, however, may have been iron. The *Wei-shu* account notes that the Japanese procured iron in southern Korea and no definite domestic iron smelting sites in the Yayoi period have yet been discovered. By the late Yayoi phase, iron replaced most stone tools as far as the Tohoku district (Sahara 1979), which was far outside the distribution of bronze. Therefore, if all the iron was supplied from Korea, then the volume of imports must have been tremendous. This fact forms an interesting contrast to the decrease in immigrant settlements and imported bronze goods in northern Kyushu around this time, as mentioned in Chapter 12. Iron was clearly of considerable importance for wet-rice agriculture because it was essential for the manufacture of wooden farming tools and the development of new wet-rice fields. Thus, there must have been great demand for iron, as well as a need for extensive and secure transport routes. Such routes, which would have been difficult to maintain in the context of opposing neighbouring nations, could have been secured only by the effective control of a strong and super-ordinate political power (Shiraishi 1993).

Entry into international relations

Yayoi society had extensive cultural, trading and diplomatic exchanges with the continent as seen, for instance, in the introduction of basic technologies, the importation of bronze and iron, and diplomatic intercourse with Chinese dynasties. During the Early Han, a few out of the "more than 100 polities" of the "Wa" people (in other words, the Japanese) sent envoys to the Han colonial ruling headquarters of Lelang Province in northern Korea. The *Hou-han-shu* or "History of the Late Han" states that in AD 57 the Na kingdom, which is thought to have been located in the present Fukuoka prefecture, sent messengers to Luoyang, the capital of the Late Han where the Emperor Guang-wu bestowed a golden seal upon them. A golden seal inscribed as "King of Na of Wa of Han" was discovered accidentally in Fukuoka about 200 years ago, before the establishment of archaeology (Fig. 14.5). Long considered the actual seal recorded in the *Hou-han-shu*, its authenticity was recently confirmed by the discovery in China of another golden seal of the same dynasty, bearing traces of the same manufacturing technique. The King of

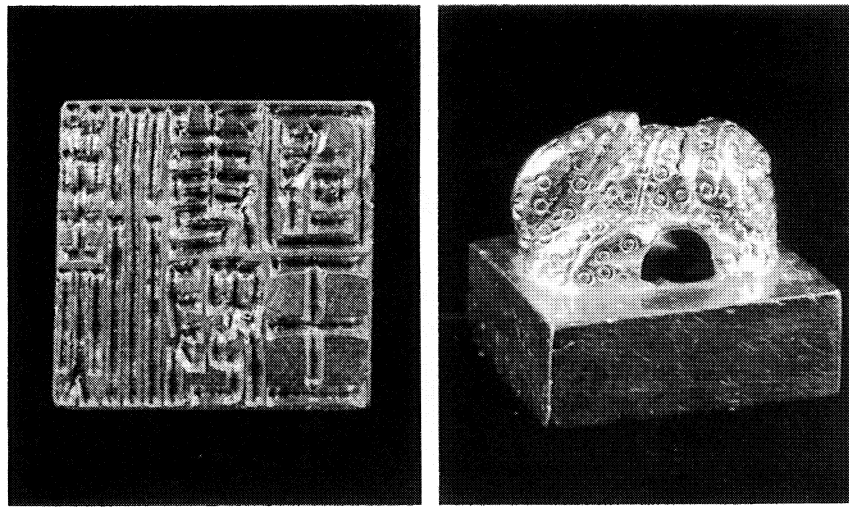

Figure 14.5 The gold seal of "King of Na of Wa of Han", bestowed by Emperor Guang-wu of the Later Han in AD 57, and accidentally discovered in 1784.

Na sought direct relations with the Han Empire, probably with the aim of gaining an advantage over other nations. The social conditions of the Middle Yayoi phase, as reflected in the archaeological material, suggests that such a motive was very likely.

From the first half of the Middle Yayoi period, the domestic manufacture of bronze weapons began and soon became dominant. Thence new and higher-prestige goods were demanded. Imported Chinese goods such as bronze mirrors, swords and Chinese style glass ornaments met the demand. As a result of such exchanges, information on Japan was obtained by China, and some accounts of Japan were recorded in a few Chinese chronicles such as the *Han-shu*, the *Hou-han-shu* and the *Wei-shu*.

The longest and most important account is found in the chapter on "Eastern Barbarians" of the *Wei-shu* of around the third century AD. According to the account, small kingdoms formed a coalition under the rule of the Yamatai Kingdom of Queen Himiko. "Yamatai" is the modern Japanese pronunciation of a name written in Chinese characters, although it is thought to have been pronounced like "Yamato" by the Chinese of the period. Japanese historians intentionally use "Yamatai" in order to distinguish the kingdom mentioned in the *Wei-shu* from the "Yamato" Kingship, which existed in the Nara Basin by the fourth century AD at the latest. The relationship between the two poses the greatest problem in the ancient history of Japan.

Himiko and her successor Queen Iyo (or Toyo) sent messengers and tribute a few times to Luoyang, the capital of Wei, one of the Three Kingdoms, and Chinese messengers visited Japan on return calls. The details of the section on the Wa people were based on these experiences. The timing of the calls is noteworthy. The

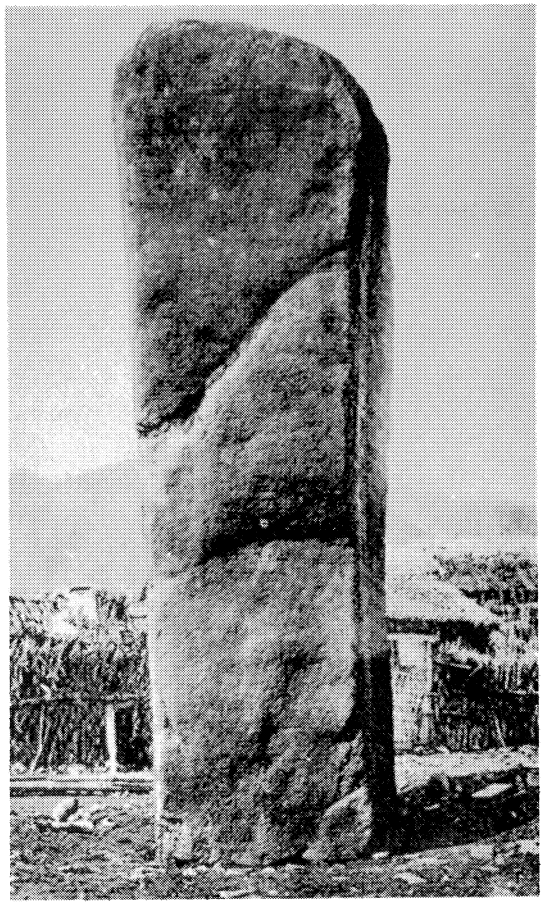

Figure 14.6 The stone monument of King Kwanggaet on the north bank of the river that marks the Korea/China border).

first messenger by Himiko was sent in the year AD 239, a year after Wei gained control over northern Korea. The messenger to Western Jin was sent by a queen, probably Iyo, in the year AD 266 following the establishment of the dynasty in AD 265. These events cannot be accidental, but tell that Japanese leaders were up-to-date with information from the mainland (Oba 1993).

The positive attitude of Wei to Wa, or old Japan, may be explained by the political situation in China during that period. China was divided into the northern Wei, southern Wu and southwestern Shu-Han, with each contending for mastery over the others. Wei appear to have thought that Japan stretched southwards behind Wu, and thus expected that an alliance with Yamatai would restrain Wu. It may not appear to be realistic to expect a coalition of small nations to play such an important role immediately after its birth. However, one is also surprised to find that in the next fourth century AD the Japanese army invaded Korea and battled against the Koguryo Kingdom, as recorded in an inscription on the King Kwanggaet monument of the kingdom (Fig. 14.6).

The Yamatai controversy

The question as to whether the Yamatai Kingdom was located in northern Kyushu or central Kinki prompted the greatest debate over the ancient history of Japan. This debate originated from a puzzling account of the itinerary from Korea to Yamatai in *Wei-shu*. The northern Kyushu theory doubts the description of distance and the central Kinki theory the direction. This has been a continuing debate over the past 200 years, involving not only professional historians, archaeologists and ethnologists, but also many amateurs, and thousands of books and papers on this question have been published. Therefore, not only is it impossible to put forward any conclusions regarding this controversy, but also even an introduction to the history of the debate is difficult. The main point is that, if Yamatai was in the Yamato (Nara) Basin, Kinai (central Kinki), then the unification of Japan under one power had been completed by that time. If it was in northern Kyushu, there must have been two or more large powers emulating and competing with the other, one based in northern Kyushu and another based in Kinai, which must have begun unification shortly thereafter. Thus, a new question arises as to which kingdom defeated the other(s). If the northern Kyushu kingdom defeated the others, it must have moved its centre to the Yamato Basin, because both had similar names.

Among the early *kofun* of the late third to fourth centuries AD, the large ones are concentrated in Kinai (especially in the Yamato Basin), providing evidence of the presence of a political centre there. Bronze mirrors from the time when the Yamatai kingdom was recorded in the Chinese chronicle, that is to say around the middle of the third century, are most abundant in the early *kofun* in Kinai, and mirrors cast with the same moulds were shared between *kofun* in Kinai and other areas, including northern Kyushu (Fig. 14.7; Kobayashi 1961). There are no very large early *kofun* in northern Kyushu, indicating that the formerly prosperous power did not last there into the Kofun period (Fig. 14.8). Did it move to Kinai? Or was it conquered and subjugated by the power of Kinai? The Yamatai controversy is not primarily about the location of a kingdom recorded in Chinese chronicles, but about the origins, date, location, and the forming process of the early Japanese state.

Part of the more recent political background, which fuels the debate on the location of Yamatai, is the myth of the founding of the Japanese nation by the legendary first emperor Jinmu. The myth recounts that the first emperor led an army from Kyushu to Yamato in Kinai and that he ascended the throne of the "Yamato Court" or the early Imperial Court. However, this myth was not recorded prior to the eighth century when Japan was establishing many systems and institutions following the Chinese pattern. One of them was a compilation of national history. Even if there were original legendary sources or original records lost long ago, the entire composition appears to have been fabricated around the imperial ideology dominant at the time when it was compiled. Critical examination of the documents disproves the actual existence of the first Emperor Jinmu and the several succeeding emperors (Tsuda 1919). It was a nightmare for many historians that such a

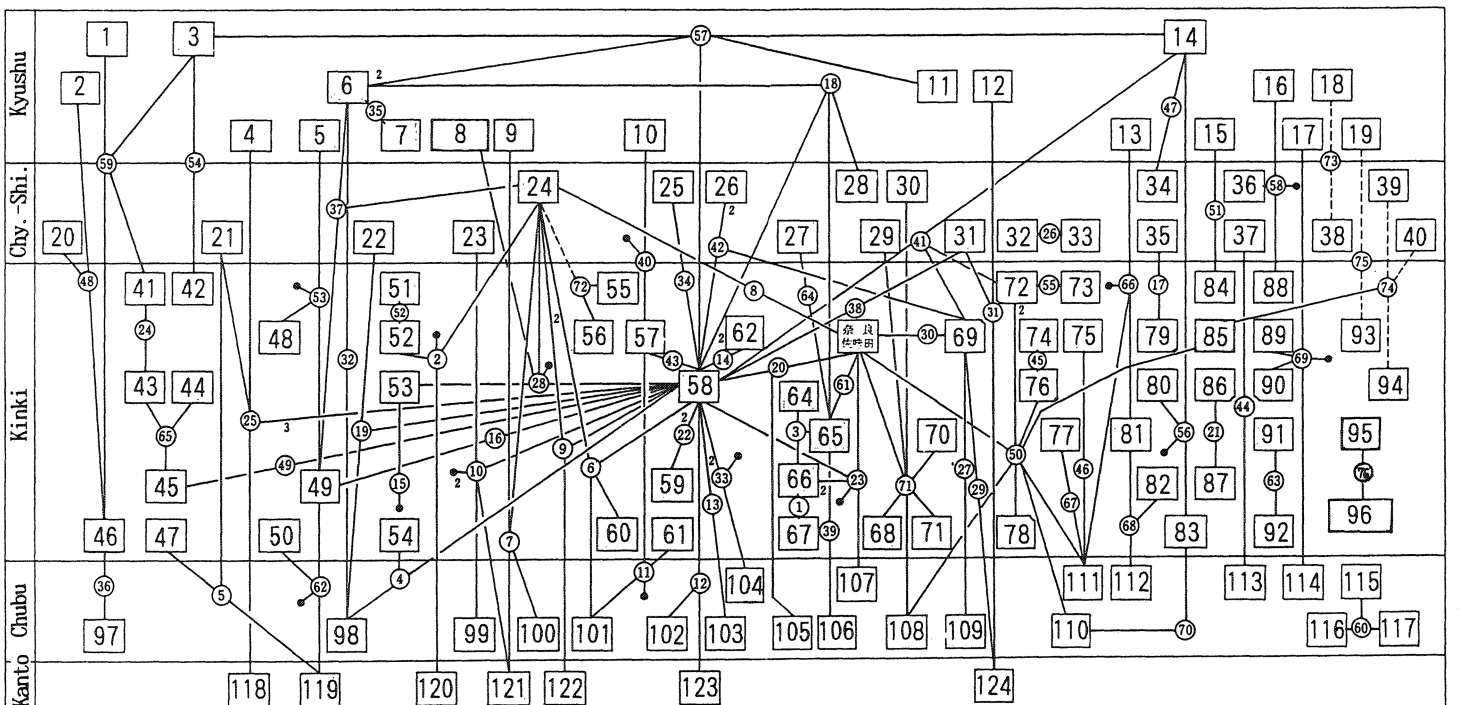

Figure 14.7 Diagram of interrelationship among the mirrors of gods-beasts type with the rim of triangular cross-section. Numbered squares and circles respectively denote individual *kofun* and moulds. Therefore, *kofun* connected by a line or lines possessed mirrors which had been cast with identical moulds (Kobayashi 1961, Kondo 1988).

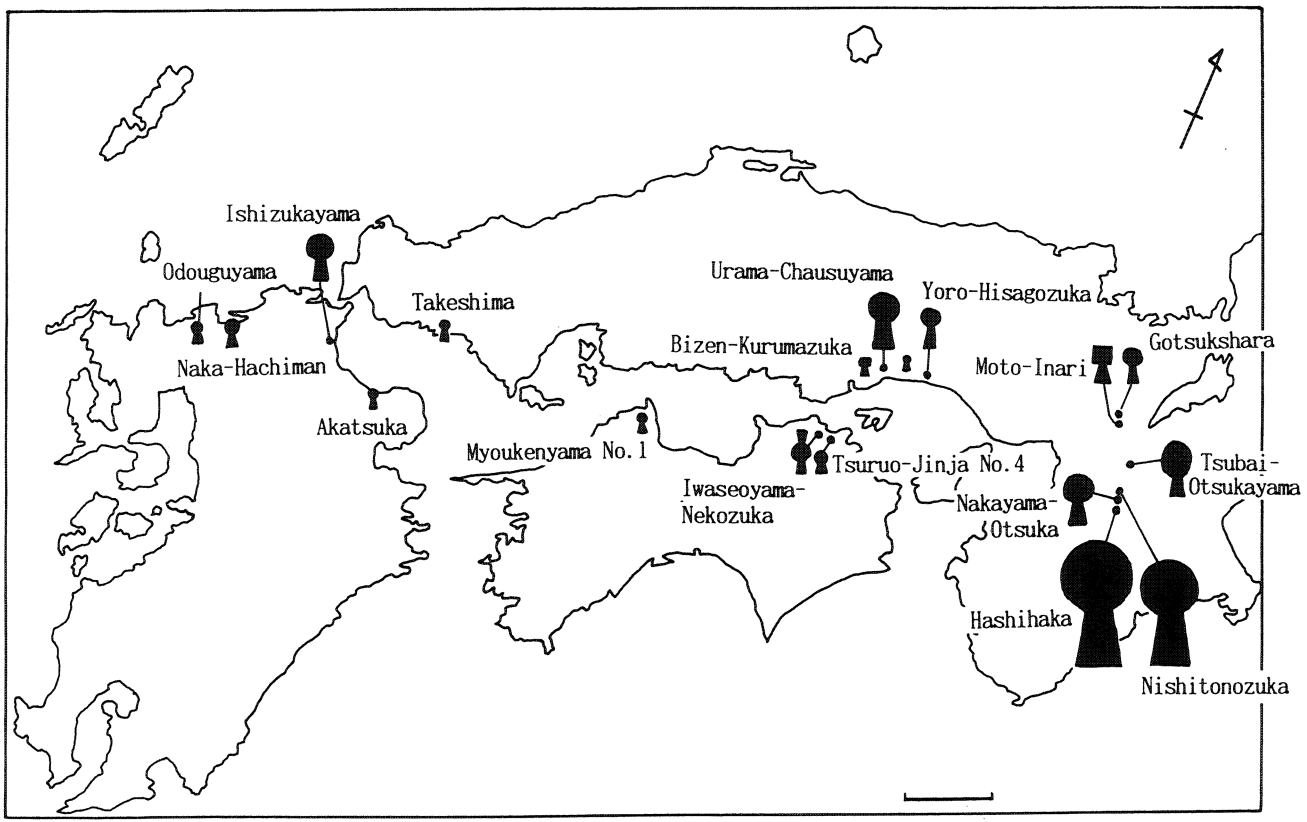

Figure 14.8 Distribution of earliest *kofun* and their sizes (Shiraishi 1993).

myth was taught as fact in schools before the Second World War and that it contributed to the formation of Japanese imperialism and militarism. This is one of the reasons that has kept most archaeologists, with the exception of some amateurs, from combining such myth with the archaeological data. However, this taboo was boldly breached by Koichi Mori (1993), who interpreted the myth within the context of archaeological data in his book, *Archaeology of Japanese myth.*

Another point to be made here is the recent discoveries of *funkyubo*, as well as huge central settlements at Yoshinogari and other sites in northern Kyushu, the absence of which had been a primary difficulty in the northern Kyushu theory. Such discoveries provided much support for the northern Kyushu theory, which looks to have advantage over the Kinai theory. However, such circumstantial evidence does not necessarily mean a definite conclusion can be reached.

From *funkyubo* to *kofun*

The prototype for the *kofun* was the *funkyubo* mounded burial. The most important features distinguishing them from *kofun* are their distinctive local variations (Fig. 14.9). *Funkyubo* in the San'in region have a characteristic square mound form, with four protuberances at the corners, as well as cover-stones. Round or square mounded forms with one or two square protuberances are seen in the Okayama and Kinki region, and the placement of special pottery jars and pedestals on the mound is a feature seen in Okayama prefecture, the Inland Sea region. In Kyushu, jars were the dominant body containers in *funkyubo*, and rich grave goods, especially bronze mirrors and weapons, are seen only there. *Kofun* were seemingly established through the synthesis of the many local features of the former *funkyubo*. The keyhole-shape mound, for instance, represented a change from a round

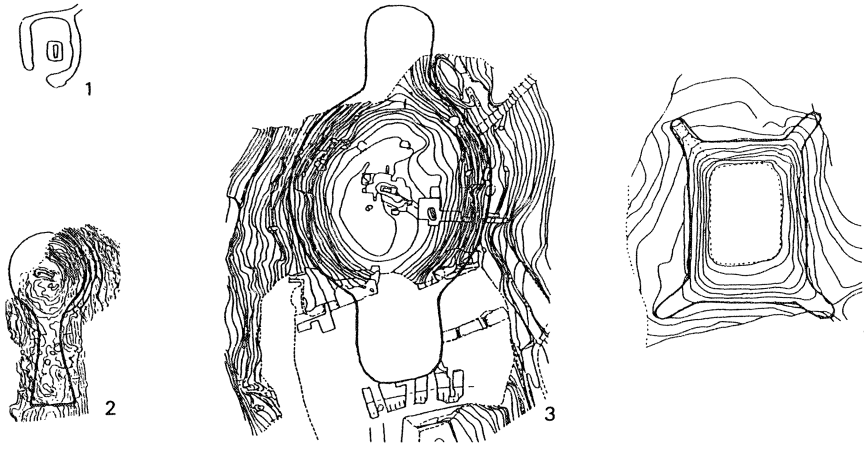

Figure 14.9 Various types of *funkyubo* mounded burial. 1. Hirabaru, Fukuoka; 2. Tsuruo no. 4, Kagawa; 3. Tatetsuki, Okayama; 4. Nishitani no. 3, Shimane (Harunari 1992).

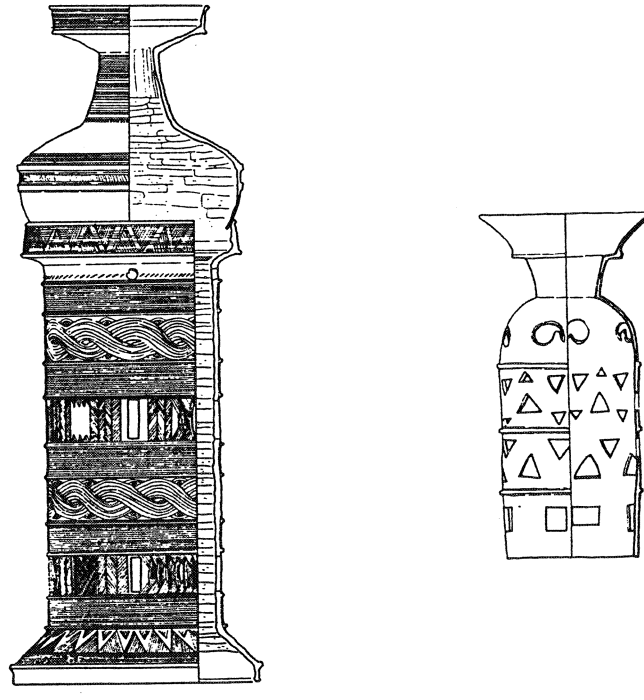

Figure 14.10 Special jar and stand (left) placed on *funkyubo* in the Okayama region, and haniwa (right) which was transformed from the former and came to be placed on *kofun* throughout Japan (Yamatogi et al. 1978, Ueda & Nakamura 1961).

mound with one square protuberance. Covering pebbles, which were formerly used only on some *funkyubo*, became a regular element of *kofun*. Pedestal-shape *haniwa* (ceramic objects put on *kofun* mounds; various forms such as humans, animals, and goods developed later) represent a continuation into a modified form from pottery jars and pedestals placed on the *funkyubo* mounds in Okayama (Fig. 14.10; Kondo & Harumari 1967). The practice of furnishing grave goods in the chamber spread from northern Kyushu throughout Japan.

In a situation where there was no formal system of governing succession to the throne, the building of *kofun* and the completion of funeral rites were the symbolic means whereby the spiritual power of the deceased chief was transmitted to his successor. The standardization of *kofun* was interpreted by Y. Kondo as signifying the creation of fictitious kinship among all the powerful clans, who were linked to common ancestors through adoption of the same ritual (Kondo 1983).

The largest *kofun* typical of the early form, Hashihaka in the Yamato Basin, measures 278 m long representing a tremendous increase in scale from any *funkyubo* (Fig. 14.11). It was determined as one of the oldest *kofun* based on the fragment of a pedestal-shape *haniwa* collected on the surface. For the northern Kyushu theory, the birth of the *kofun* can be explained as signifying the unification through victory

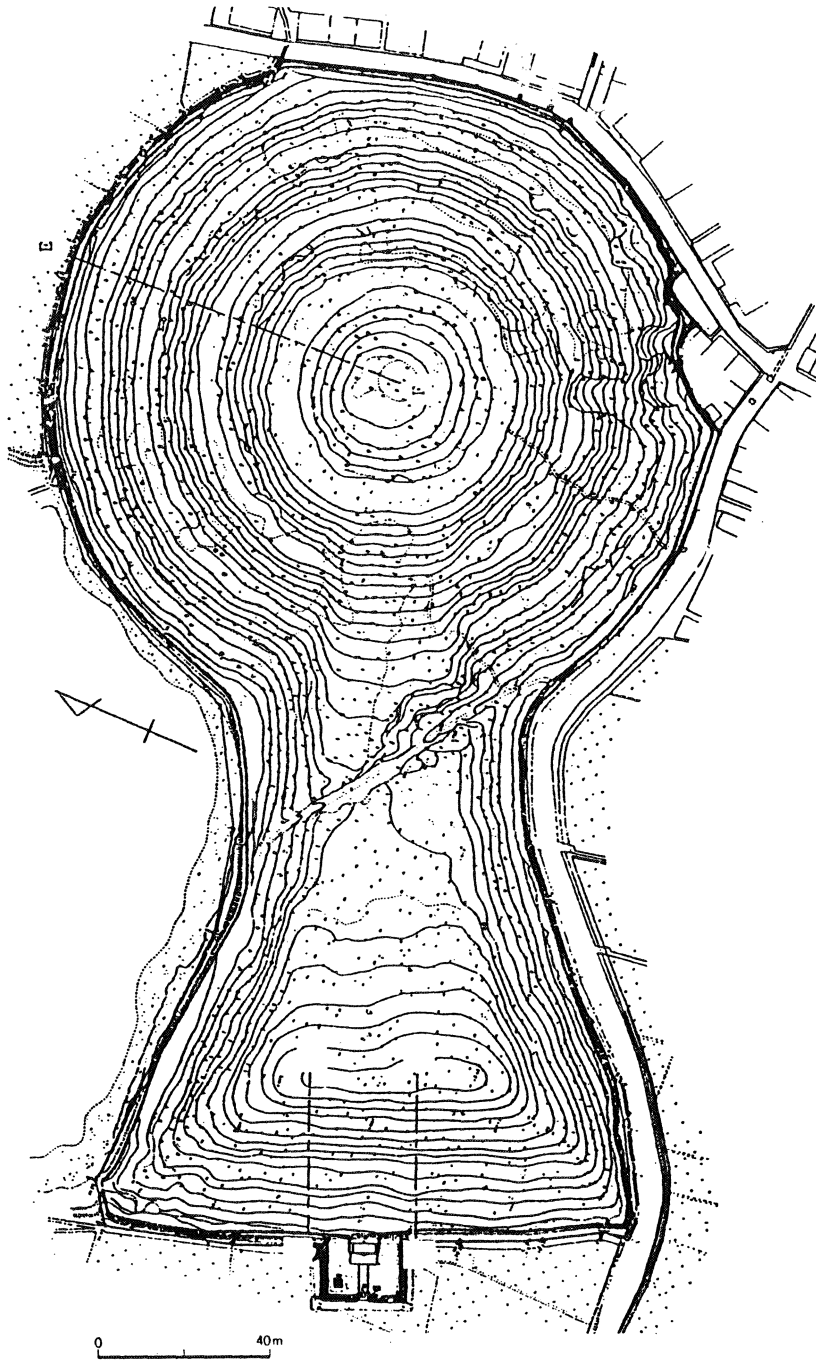

Figure 14.11 One of the earliest and largest *kofun*, Hashihaka, in the Yamato Basin, Nara prefecture (Kasano et al. 1989).

of northern Kyushu power over Kinai, following the movement of the political centre from the former to the latter. Meanwhile, the Kinai theory states that the unification was fulfilled before the establishment of *kofun* and so suggests some large political movement behind the uniforming of *funkyubo* into *kofun*.

Around the time of the first *kofun*, pottery in the Kinki tradition appeared in northern Kyushu, often concentrated within several settlements indicating migration of groups from the Kinki region into Kyushu (Morioka 1991). Such evidence does not provide a specific answer to the question of the Yamatai Kingdom. However, accumulation of such basic facts, and concrete evidence of the sequence and movement of cultural elements on a detailed chronology (the most basic and characteristic method of Japanese archaeology) will eventually provide a definite answer in the future.

Kofun were built not only in keyhole shapes but also in the shape of a simple round or square mound. In addition, some were built in a variation in which the rounded mound of the keyhole was replaced by a square. Such mound forms and sizes are considered to have been regulated by the status of the deceased. Therefore, the distribution of *kofun*, and their shapes and sizes, are thought to be excellent indicators of the distribution of political powers (Fig. 14.12; Shiraishi 1995). Kinai, including modern Nara, Osaka, and Kyoto prefectures, was the constant centre of power, and secondary powers were located in Okayama, northern Kanto, or northern Kyushu. Northern Tohoku, to say nothing of Hokkaido and the Nansei islands (composed of the Satsunan islands and the Ryukyu islands), were beyond the distribution of keyhole-type *kofun* throughout the Kofun period (see Fig. 10.9).

Most of the huge *kofun* in Japan are now in the custody of the Imperial Household Agency, since they are thought to be the tombs of ancestral emperors and their family members, and any excavation is prohibited. This rule means that *kofun* research is conducted without any detailed knowledge of the most important ones; thus, advances in the field are clearly obstructed. However, excavation techniques are rapidly progressing, so that the further in the future excavation takes place the better, as more detailed information will be recovered. Japanese archaeologists are busily occupied in coping with many rescue excavations – as many as 10,000 a year – and are being drowned in a flood of archaeological data. This is not the time to dig and break such important monuments, which are limited in number. However, the present conditions under which even surface examination on the mound is severely restricted, should be improved.

Did the establishment of standardized *kofun* signal the establishment of a state? Discussions about social developmental stages and the social process of state formation in an archaeological context is clearly insufficient in Japan. Moreover, the word "kuni", which is usually translated as "state" or "nation" in English, despite its wide application to various levels of polities from small ones (such as polities under the Yamatai Kingdom) to modern states, tends to keep scholars from being aware of the question and makes discussions difficult. Indeed, it should be pointed out that the terms "polity", "kingdom" and "state", which I have employed in this book, refer either to the Japanese word "kuni" or "guo" in the original Chinese text.

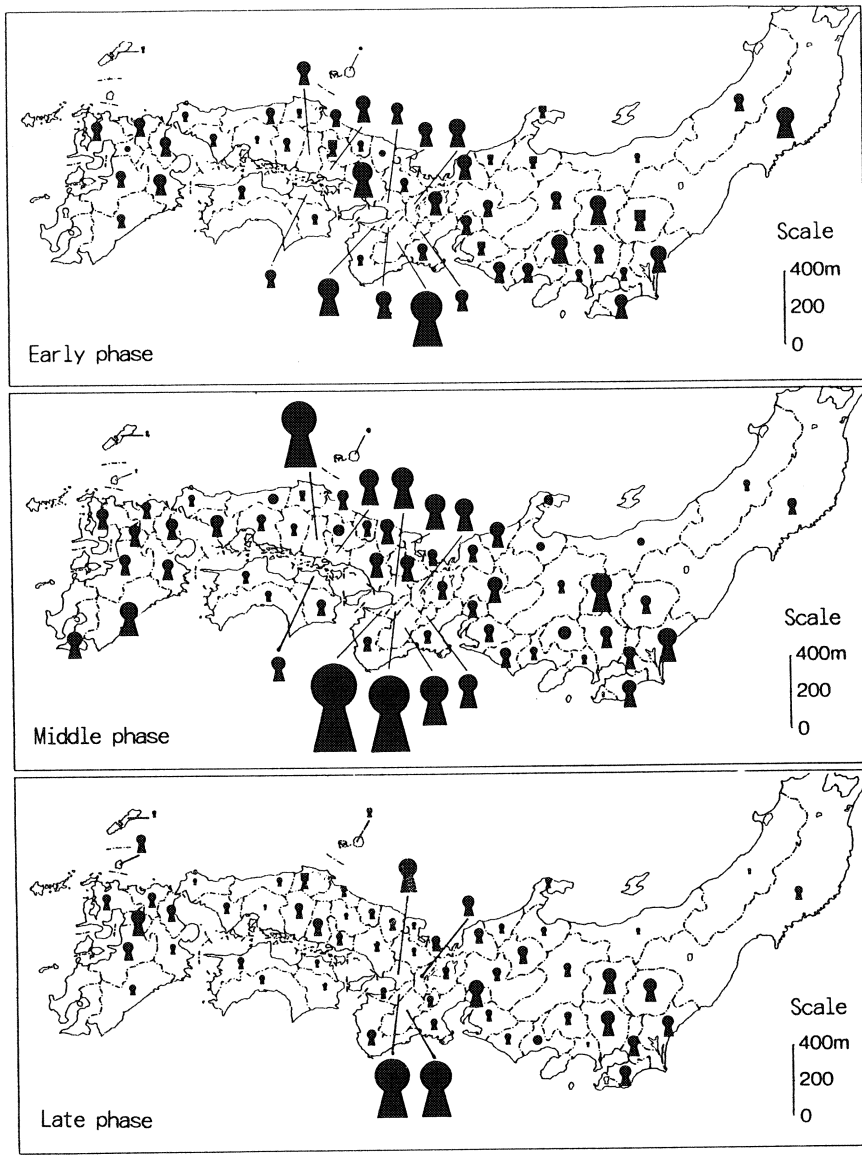

Figure 14.12 The largest *kofun* in each historic country. Their sizes and locations are thought to reflect distribution of political power (Shiraishi 1995).

Kondo's understanding of *kofun* as symbols of fictitious kinship relations suggests that, strictly speaking, there was not one political system throughout Japan. However, the aforementioned overseas military campaigns and the huge storehouses laid out in regular patterns (fifth century) discovered in previous occupational layers of the Naniwa Palace (Osaka City; Fig. 14.13; Osaka CACP 1989, 1990), suggest

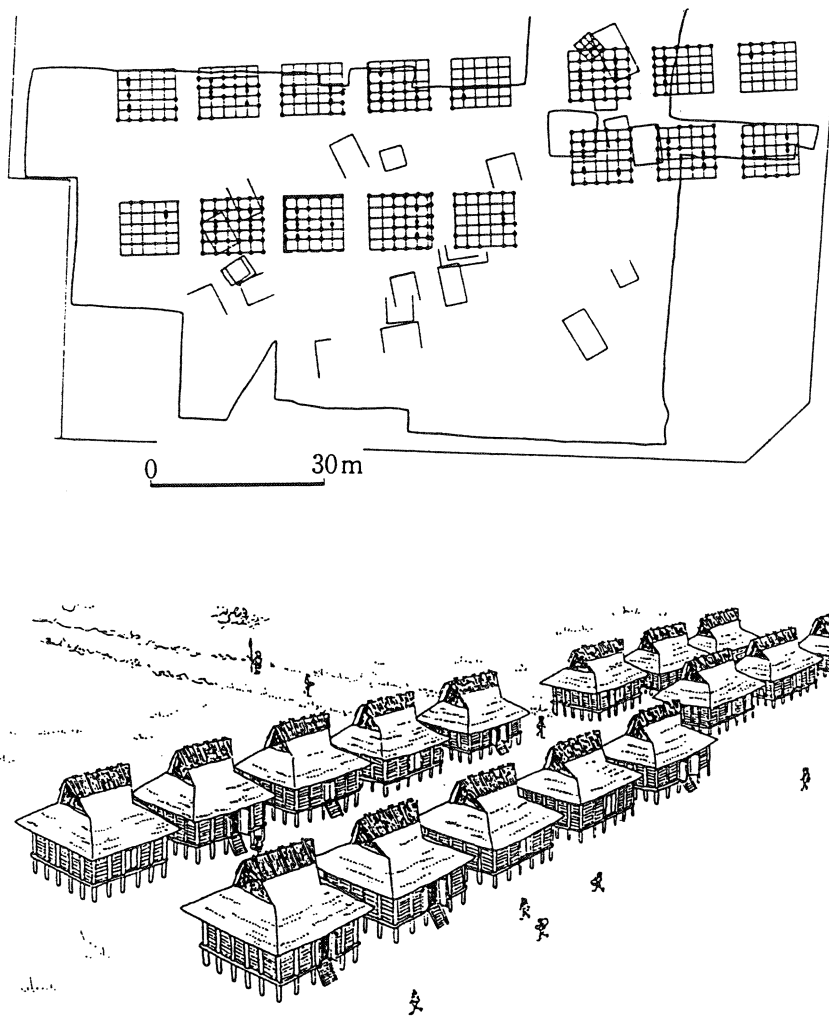

Figure 14.13 Reconstruction of large storehouses of the Kofun period, discovered at Ho'enzaka, Osaka city (fifth century AD; Osaka 1989, 1990).

both military campaigns on a national scale and the extensive collection of tribute or tax. Thus, the question of state formation should be carefully and systematically re-examined on the basis of various kinds of archaeological evidence.

CHAPTER FIFTEEN

Two late prehistories in the north and south

Jomon culture spread over the whole territory of the present Japan. Yayoi culture, however, did not reach to the same extent, thus leaving remnant Jomon cultures in the north and south. The acquisition of writing in the latter areas was so late that the prehistoric stage lingered for a long time. Also late was the development of political complexity. Through most of the historical period, the Japanese considered these areas to be outside of their own world. The late prehistory of the north and south of the Japanese Islands provides us with interesting material to consider the relationships through time between natural environment, subsistence pattern, cultural area, nation and state.

Three cultural areas

Jomon culture covered the area from Hokkaido in the north to the main island of Okinawa in the south. Yayoi culture, which was established in northern Kyushu on the economic base of wet-rice cultivation under the influence of the Korean Peninsula, spread only to the northern tip of Honshu and to southern Kyushu or the northern Nanasei Islands (composed of the Satsunan Islands and the Ryukyu Islands), leaving cultures of the Jomon tradition surviving in Hokkaido and most of the Nansei Islands. The early stage of these local cultures in Hokkaido and Okinawa (Ryukyu is its classical name) are called the Epi-Jomon (Yamanouchi 1939) and Late Shellmound periods (Okinawa AS 1978) respectively. Distinctive local cultures were maintained for a long time in the north and south, dividing the territory of the present Japan into three.

The central area where Yayoi culture spread experienced rapid social changes followed by state formation. Similar changes were seen about a thousand years later in the southern area and yet no developed political system was seen in Hokkaido until the colonization by the mainland Japanese to the northern area. In contrast to the south, where the Ryukyuan people began to write records by themselves by the sixteenth century, the northern area did not acquire writing, so remained "pro-

tohistoric", with records by Japanese from the "mainland".[1] The language preserved in the early writing and the modern language of Okinawa are called the Ryukyuan language and are regarded as a dialect of Japanese. Many features common to old Japanese have been pointed out in the Ryukyuan language by linguists. On the other hand, the Ainu language of Hokkaido is so different from either ancient or modern Japanese that it clearly cannot be closely related to Japanese.

The division into three cultural areas originated from the differential spread of Yayoi culture. The cold climate of Hokkaido, which was not suitable for rice cultivation, surely hindered the diffusion of Yayoi culture to that island. Although Okinawa is very temperate, areas with suitable topography for wet-rice cultivation are limited and frequent typhoons deprive them of stable annual harvests. The later state formation there derived from a combination economy of dry-field and wet-rice cultivation and overseas trade between their lands and Japan, China or Southeast Asia.

The historical territory of Japan

For most of their history, the Japanese did not consider Hokkaido and Okinawa, which were inhabited by peoples with quite different cultures from their own, as part of Japan. Hokkaido, from the seventeenth century and from its south to north, came under the indirect control of the Tokugawa central government after the *bakufu* licensed exclusive trading rights for merchants from the mainland who had been acting there. This was the beginning for the Japanese to regard Hokkaido as a part of Japan. Most of Hokkaido, however, remained the land of the Ainu people. In the eighteenth century, the central government despatched expeditions to Hokkaido and Sakhalin, and declared possession of them against Russia, which was extending its power eastwards. Therefore, Hokkaido was incorporated in Japan mostly for political reasons. Its increasing economic importance for Japan was a backing condition as well. Active immigration of Japanese since the late nineteenth century rapidly rendered the Ainu an ethnic minority there. Okinawa was divided among three powerful clans in the fourteenth century. One of them gained power over the others and unified the territory during the fifteenth century. This was the Ryukyu Kingdom. These clans repeatedly sent tributary missions to China and Japan, missions that amounted to trade among the two countries and Southeast Asia. In the early seventeenth century, more or less at the same time as Hokkaido fell under direct Japanese influence, a feudal lord of Satsuma in southern Kyushu made a military attack on Ryukyu and gained mastery over it. However, the Tokugawa government not only left the control over the islands to the Satsuma domain but also refrained from regarding Ryukyu as a part of Japan. The reason seems to have been to avoid conflict with China. In 1879, the newly established Meiji

1. This word is used to designate the Japanese area except Hokkaido and Okinawa in this book.

government incorporated Ryukyu as Okinawa prefecture, with the backing of increasing military power.

Thus, the border of Japan was fixed through the opposition against neighbouring powers. However, it is very interesting that the borders of modern Japan coincide with the extent of Jomon culture with only the small exception of some islands to the south of the main island of Okinawa. Some additional explanation may be necessary, however, since not all archaeologists may agree on the extent of Jomon culture. Generally speaking, clear separation of cultural areas is more difficult than temporal division. Hokkaido lay in the Jomon area throughout the period in spite of occasional intrusions of cultural elements from continental Asia (see Ch. 16). Hokkaido is definitely recognized as being within the extent of Jomon culture, because of the use of stone tools common to the Jomon in general, the distribution in southern Hokkaido of the same pottery types to those of Honshu and, above all, the common application of *jomon* or cord-marking on pottery all over Hokkaido. The last point provides quite an appropriate reason to draw a border line between Hokkaido and Sakhalin, because very few potsherds with cord-marking have been discovered in Sakhalin from the period corresponding to the Jomon (such pottery incerased in the time of Epi-Jomon).

It is more difficult to judge whether Okinawa belonged to the Jomon or not. The first fact to be pointed out is that no use of cord-marking has been identified in prehistoric times of the area. Arrowheads, a typical Jomon stone tool, have been discovered only in small numbers. Nevertheless, many archaeologists regard Okinawa as within the Jomon area, because of the distribution in Okinawa of Sobata and Todoroki pottery types of the Early (III) Jomon of Kyushu (Chinen 1991) and because several pottery types most frequently discovered in Okinawa are known to have been branches of Late (V) Jomon types of Honshu through the mediation of the Ichiki type of southern Kyushu. Many pit-dwellings have been unearthed in Okinawa; this type of dwelling is common in the Jomon but rare in southern Asia, further supporting this conclusion. Meanwhile, neither elements that might have been the origin of the Okinawa prehistoric culture nor evidence of the reach of Jomon culture have been discovered on any islands to the south of the main island of Okinawa. Therefore, it is most appropriate to draw a border line to the south of Okinawa Island.

Late prehistory in Hokkaido

In Hokkaido, Jomon culture continued without substantial change into the period contemporaneous to the Yayoi period in Honshu. This is called the Epi-Jomon. Although a small quantity of iron tools were imported, the major edged tools were still stone tools, such as arrowheads and spearheads for hunting, and knives and axes. The dominant pottery form was a deep bowl, as it had been in the Jomon period. The various forms in the early stage of the Epi-Jomon in southern Hokkaido are exception, which were remnants of the Kamegaoka type (see Ch. 9) of

the Final (VI) Jomon. Salmon fishing and hunting were important. Wooden heads of fish-spears, clubs and stone butchering knives, as well as a large quantity of salmon bones, were found at Ebetsubuto (Fig. 15.1; Takahashi et al. 1979). There were few kinds of useful nuts other than walnuts in Hokkaido. Judging from Ainu folklore, salmon, deer and lily bulbs are thought to have been the major foods in the Epi-Jomon (Tsuji 1983, Wanatabe 1972a).

This Epi-Jomon culture changed into the Satsumon culture around the seventh century through influences from mainland Japan at the end of the Kofun period. "Satsumon" literally means "brushed pattern", although in fact it refers to pottery surface smoothing through scraping with the coarse edge of a wooden board. Satsumon pottery forms are similar to those of Haji pottery (Hajiki) of the Tohoku

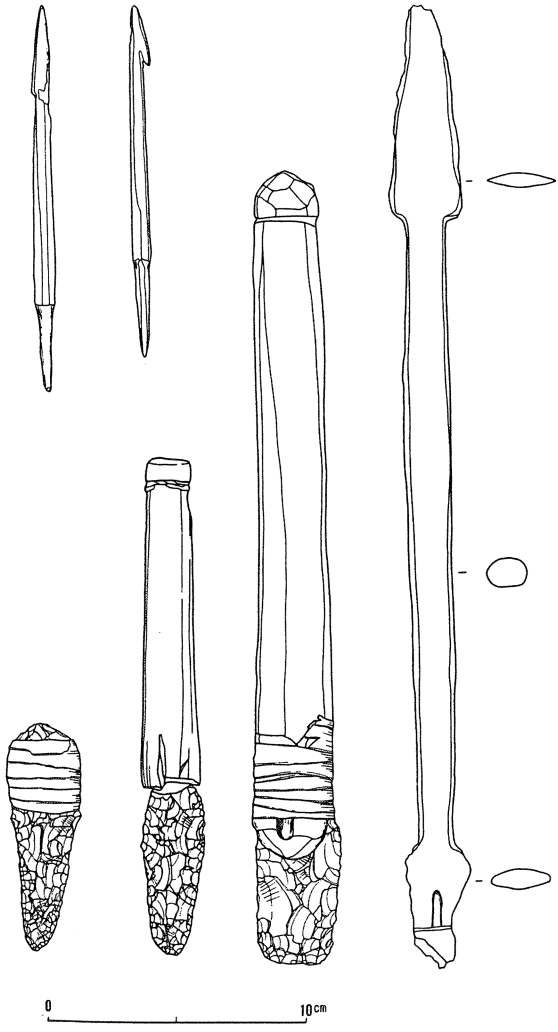

Figure 15.1 Wooden and stone tools from Ebetsubuto, Hokkaido (Epi-Jomon; Takahashi et al. 1979).

district. The shape of incised patterns and the presence of patterns itself are signs of the tradition of Epi-Jomon pottery, because patterns were long before lost on the surface of pottery in mainland Japan. Square pit-dwellings with an oven are similar to those of the Kofun and early Historical periods (Fig. 15.2). Iron tools seem to have prevailed around the end of Epi-Jomon, so that stone tools disappeared in the Satsumon period. Among subsistence activities, hunting, gathering and fishing continued to be the most important. Locations of large settlements at estuaries indicate the importance of salmon (Fujimoto 1982). Actual evidence of this fishing is provided by stockades, recovered at Sakushu-kotoni (Yokoyama et al. 1986) and other sites, which are similar to the *tesi* of the Ainu, constructed in streams to stop salmon swimming up. In ideal locations, such as the Sakaeura II site (Tokyo UAD 1972) between the sea and a river, thousands of depressions remain from pit-dwellings that have not yet completely filled naturally with soil.

Although cultivation of buckwheat and barley is presumed for the Epi-Jomon, reliable evidence increases for the Satsumon as follows: buckwheat, rice, barley, wheat, sorghum, foxtail millet, barnyard millet, Chinese millet, green gram, perilla, melon, adzuki bean and hemp (Yamada 1993). The rice may have been imported from the mainland or, if cultivated at all, grown in dry fields. Opinions divide among those who, taking Satsumon culture as the periphery of the Kofun culture of the mainland, argue that such crops supplied a large portion of the diet (Yoshizaki 1988), and those who think it provided only a small part and the culture was basically a continuation of the Epi-Jomon (Fujimoto 1982). Two points must be noticed, that there is a large gap of frequency in the discovery of crop remains between southwestern and northeastern Hokkaido and that cultivation was not the major way to obtain food even in later Ainu subsistence.

Even the largest Satsumon settlements show scarce evidence of social stratification. The "Hokkaido type *kofun*", which have been discovered in several sites in southwestern Hokkaido such as Goto (Takahashi 1981), are very important in this

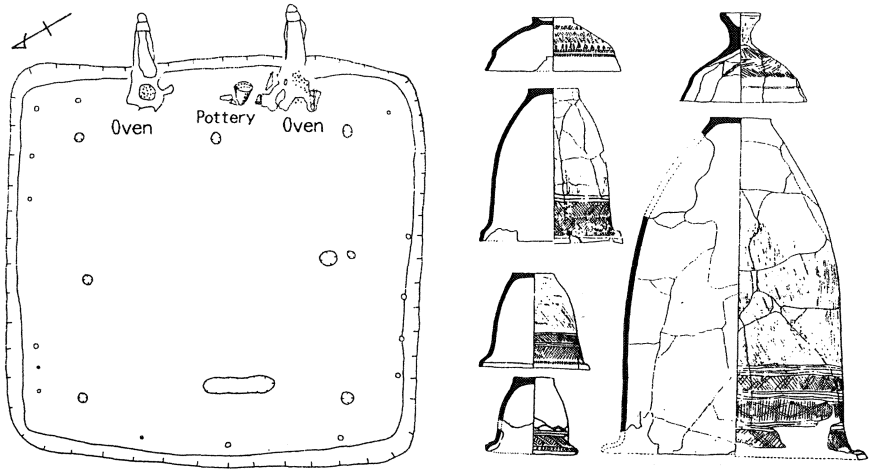

Figure 15.2 A pit-dwelling and pottery of Satsumon culture (Tokyo UAD 1972, 1977).

context. They are at the tail end of the "final *kofun*" of northern Tohoku, which themselves were late, extreme reductions of normal *kofun* of the central area which had fallen into disuse by the time of the Hokkaido type. There are various opinions about the status of those buried in Hokkaido type *kofun*. Some see them as immigrants from Tohoku, others as indigenous chiefs who had a special relationship with the government of the mainland, and that such a scale of tomb could be made by normal heads of family.

From the seventh to the tenth centuries, almost contemporary with the former half of the Satsumon, the distinctive Okhotsk culture spread along the coast of the Okhotsk Sea of northeastern Hokkaido (Utagawa 1988). Characteristic pottery and large pentagonal or hexagonal pit-dwellings (Fig. 15.3b) are prominent. The culture possessed iron tools and made various bone and antler tools, as well as many stone tools for hunting and fishing, in contrast with the Satsumon which had few stone tools. Many of the sites of the Okhotsk culture are accompanied by middens of bones of fish and animals, especially sea mammals. Adding to these features, site locations confined to coasts clearly indicate their subsistence mode (Fig.

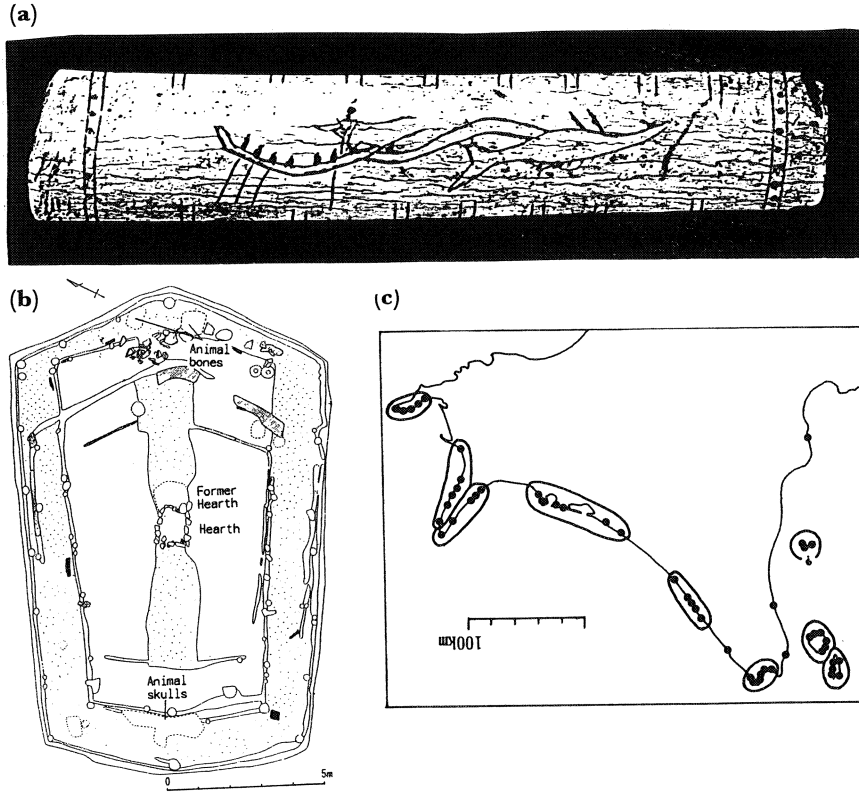

Figure 15.3 Okhotsk culture (a) depiction of whale hunting on a bone needle case (by courtesy of Mr Kitagamae); (b) a pit-dwelling (Komai et al. 1964); (c) distribution of sites (Ohi 1982).

15.3c; Ohi 1982). The Okhotsk people were also skilful sculptors and they left realistic bear, whale, seal and female representations in bone and wood.

The origin of the Okhotsk culture cannot be found within Hokkaido and it is thought to have been diffused from the north through Sakhalin. A culture called the Tokarev with quite similar pottery and bone tools to those of the Okhotsk is known on the northern coast of the Okhotsk Sea, suggesting that Okhotsk-like cultures spread in an very extensive area surrounding the sea (Yama'ura 1993). A mobile mode of life in chasing sea mammals may have brought about such an extensive distribution. The Okhotsk culture of Hokkaido mixed with the Satsumon in eastern Hokkaido and produced a hybrid culture called Tobinitai (Kikuchi 1972), which in its turn faded out of archaeological evidence by the thirteenth century. Although the Okhotsk cannot have been the major progenitor of Ainu culture, it is possible that the prominent worship of the bear in Okhotsk culture passed down to the Ainu (Wanatabe 1974).

As was mentioned above, Satsumon culture had similarities with the Kofun and early Historical periods of mainland Japan through pottery, pit-dwellings, iron tools, special tombs and agriculture. However, it should be noted that these similarities did not produce a homogeneous culture all over Hokkaido and Honshu, and their respective identities were firmly maintained. At the same time as the diffusion of the mainland culture into Hokkaido, southward diffusion of the Epi-Jomon and Satsumon from Hokkaido into Tohoku is recognized through many pottery finds (Ueno 1992). It has long been pointed out that in northern Tohoku many place-names probably originate from the Ainu language (Yamada 1974). The distribution of the place names can be more interesting compared with the northern limit in the middle Tohoku district of keyhole-shaped *kofun* and the *saku* or "palisades" of the Yamato government mentioned in Chapter 10 (see Fig. 10.9).

Although there is little room for doubt that Satsumon culture was ancestral to that of the Ainu, the precise link between the two is not yet established. One reason is that the end of Satsumon culture was around the thirteenth century, accompanied by the disappearance of pottery and pit-dwellings, which play critical roles in archaeological research of the preceding periods. Pottery changed into ceramic-pans with inner lugs, which were imitations of iron pans and pit-dwellings into surface buildings, which leave few recognizable traces. It is also important that, whereas Satsumon culture is a purely archaeological concept, Ainu culture is an ethnological one composed from ethnographical data (Wanatabe 1972b). Among the Ainu remains that can serve as objects of archaeological research are the *chasi*, which were surely built by the modern Ainu as forts and for ritual precincts (Fig. 15.4, Utagawa 1992) and sites of the "sending back ritual" (Utagawa 1989) of consumed animals to nature. The ritual of *iomante*, which has close links with the formation of sending back ritual sites, has been ethnologically recorded and is still maintained. The best data that prove the sequence from the Epi-Jomon to the Ainu through the Satsumon are harpoons, which show a series of stylistic transformations (Fig. 15.5; Utagawa 1988). When we discuss the origin of the Ainu, attention needs to be paid to the distribution of local Ainu populations in Sakhalin and the Kuril Islands as well.

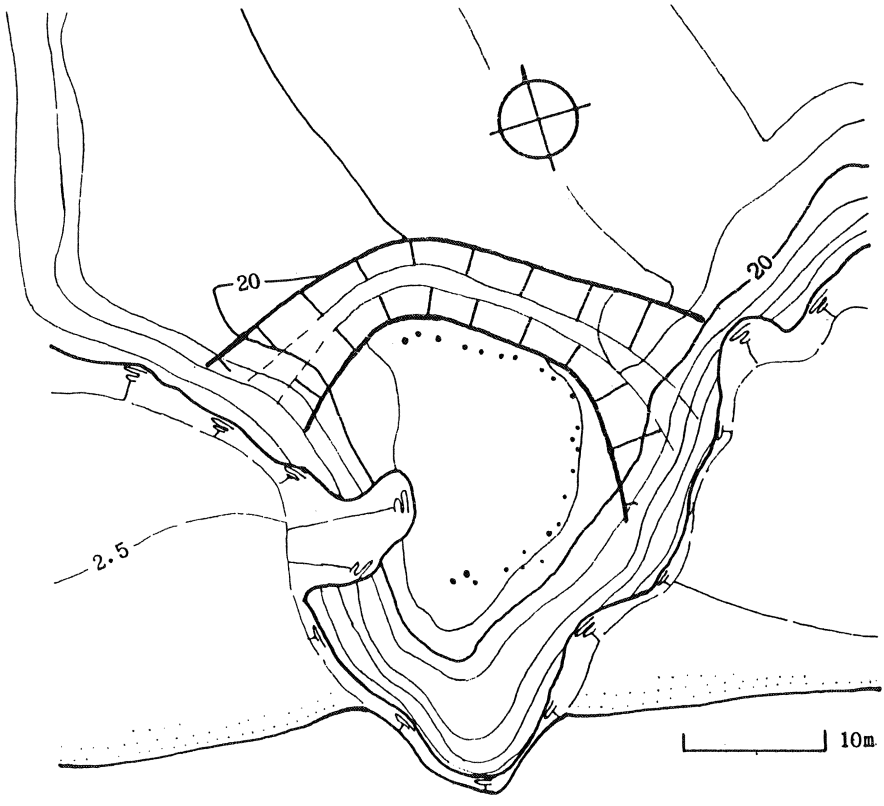

Figure 15.4 The *chasi* of Fushiko-Kotan, Hokkaido (Sawa et al. 1975).

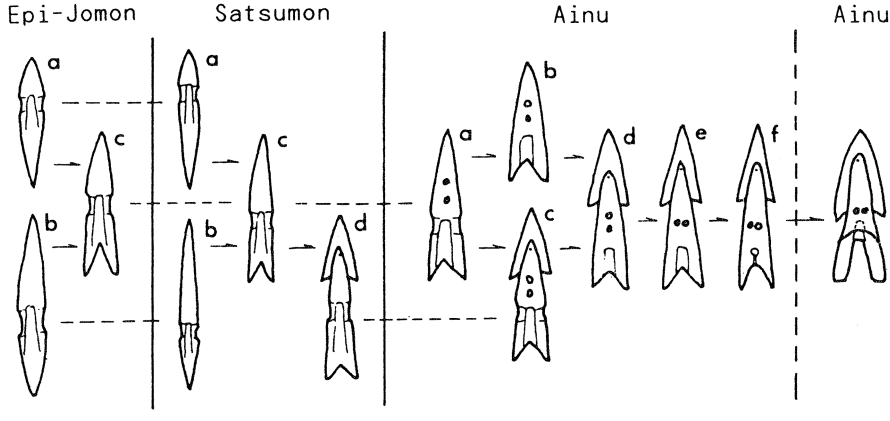

Figure 15.5 Stylistic changes of harpoon with open socket, from the Epi-Jomon to the Ainu, through the Satsumon (Utagawa 1988).

Late prehistory in Okinawa

Yayoi pottery has been found from several sites in Okinawa that were contemporaneous to the Yayoi period of the mainland. Such pottery is small in quantity and is accompanied by the major indigenous pottery, which is clearly descended from the Jomon pottery of Okinawa. This indigenous pottery has not characteristic Yayoi forms but generally simple shapes, with pointed bases and little decoration (Fig. 15.6). In other words, the surviving pottery in the Jomon tradition was accompanied by a small quantity of Yayoi pottery, probably imported from Kyushu. Although stone axes of Yayoi type, ground stone arrowheads, glass beads and a bronze mirror – all of which characterize Yayoi culture – have been found, the number is too small for Okinawa to be included in the Yayoi area. No sure evidence of rice cultivation is as yet known, in spite of arguments by some archaeologists for its possible presence. Stone reaping knives, which diffused throughout mainland Japan with rice cultivation, have not been discovered either. Land suitable for wet-rice cultivation is not extensive in Okinawa. Although small plains along the lower reaches of small rivers were and are used as rice fields, very few sites in Okinawa (contemporaneous to the Yayoi) are located close to such modern rice fields. Many prehistoric sites are located on coastal dunes around peninsular-like lands. Such locations are by no means suitable for rice cultivation, but they could easily be used to catch fish on the reefs at low tide. Frequent typhoons in the ripening season would make such a mode of agriculture hazardous there. There-

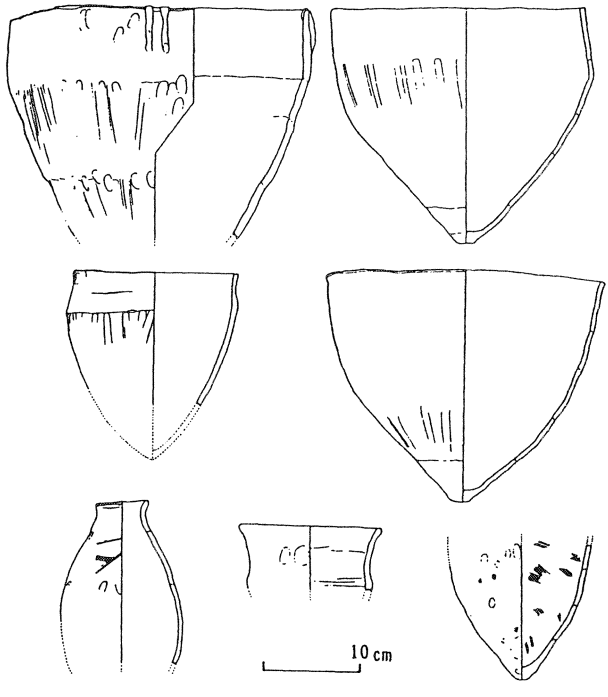

Figure 15.6 Pottery of the Late Shellmound period (Asato et al. 1979).

fore, rice cultivation could not have been an important subsistence activity for Okinawa, even if it was introduced into a few settlements. Fishing was probably most important. Bracelets of two kinds of shell, "Gohoura" (*Eustombus* or *Tricornis latissimus*) and cone shell (*Conus geographus*), which inhabit the seas of Okinawa, became prestige goods in the Yayoi of Kyushu. Hoards of these kinds of shells, discovered in more than 20 sites in Okinawa, clearly prove that they were much used for barter with the mainland (Fig. 15.7). Frequent traffic between Okinawa and Kyushu is also known from the other items mentioned above. Therefore, the reason why Okinawa was not incorporated in the area of Yayoi culture is not its geographical isolation but most possibly non-adoption of wet-rice cultivation as the economic base, as in Hokkaido (Fujimoto 1988).

This period was followed by another with meagre archaeological information until the Gusuku period. During this time, which was contemporaneous with the Kofun and early Historical period, the local culture of Okinawa must have continued without receiving substantial cultural influence from the mainland.

Political unification in Okinawa and Hokkaido

During the Gusuku period (*c.* twelfth to sixteenth centuries), most of the archaeological sites that have been discovered and researched are *gusuku*. Although there are various opinions on their function, many of them seem to have been constructed for defence and as political bases (Asato 1991). Although it is hard to infer the subsistence pattern from sites of such a special character, their general location overlooking low flat land suggests that agriculture was important in the area the *gusuku* aimed to control. Most of these lands seem to have been more suitable for dry fields rather than for wet-rice fields. A Korean document of the fifteenth century informs us that the farming of Okinawa was composed of cultivation of barley, foxtail millet, wet-rice, and cattle breeding. The development of this agriculture caused military tension and then the construction of defensive *gusuku* (Fig. 15.8). Early documents indicate that political unification progressed rapidly during the fourteenth to fifteenth centuries, although we have no information about the preceding period. Unification accompanied by military conflict, tributary calls to China with the aim of obtaining an advantageous position over other clans, the existence of historical records in neighbouring countries – all these situations are very similar to what happened about a thousand years earlier in the Yayoi period of the mainland.

Although political unification progressed towards state formation in Okinawa, Hokkaido was left in a different situation. Extensive regional revolts of the Ainu arose against the Japanese from the mainland, but seemingly without permanent organization. Such revolts could have been occasions to bring about lasting political complexity, but were suppressed by the mainland power without producing permanent kings. *Chasi* are important subjects of archaeology, especially for consideration of political development in Hokkaido. Many large *chasi* appear to have

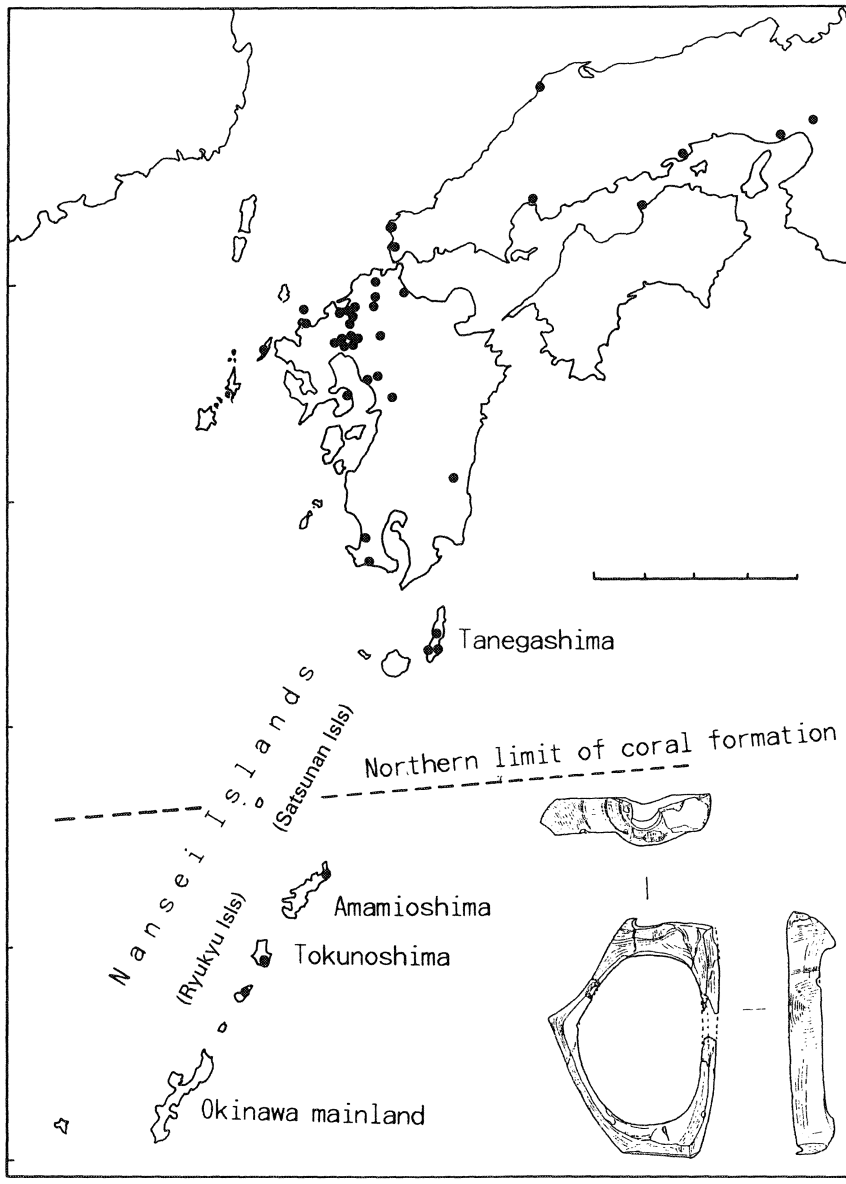

Figure 15.7 Distribution of bracelets of "Gohoura" (*Tricornis latissimus*) shell (Tateiwa 1977).

been forts, with their defensive locations, moats, and palisades. However, old *chasi* do not suggest such functions but rather seem to have been precincts for rituals (Utagawa 1988). It is argued that one of the purposes of *chasi* may have been a threat to drive intruders from fishing spots or hunting fields and that its function

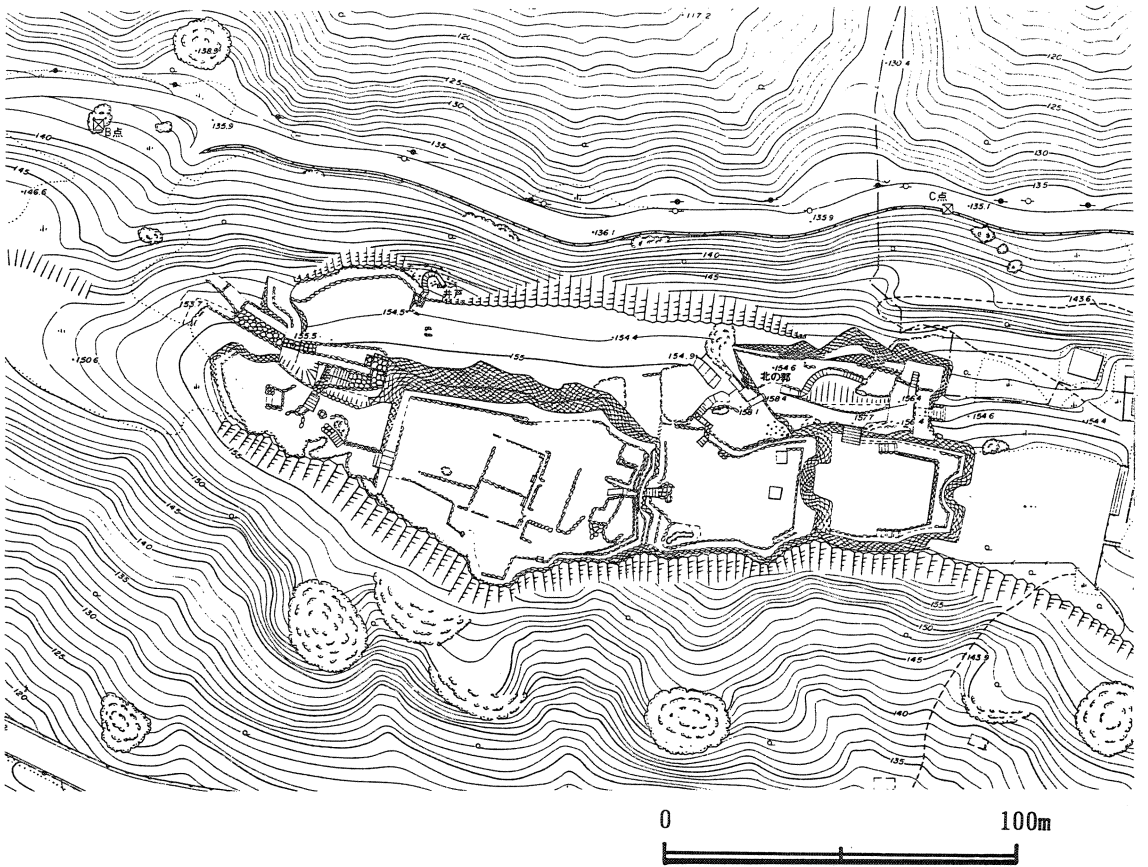

Figure 15.8
The *gusuku* of Nakagusuku, Okinawa (Nakagusuku TEB 1982).

as a fort was enhanced through conflicts with the Japanese. Anyway, it is not very probable that tension among Ainu groups promoted the construction of *chasi* as bases for battles, as no written records refer to this. We find no clear indication of social stratification, nor the existence of kings who commanded extensive areas, in the considerable number of records written by Japanese. The indigenous society of the Ainu ended before attaining distinct social stratification or extensive political complexity.

Morphological and genetic differences among the three populations

Thus, the area of the Jomon was divided into three; the middle, where wet-rice cultivation was introduced early and soon advanced to state formation and high civilization, and the north and south, where wet-rice cultivation did not become very important and indigenous culture lasted much longer (Fujimoto 1988). It is interesting that these cultural and social differences correspond with biological differences of the populations. Although the Jomon people were morphologically fairly homogeneous, the present mainland Japanese (the Wajin or Yamato population), the Ainu in the north and the Ryukyuans (local Japanese of Okinawa) in the south show recognizable differences from each other. How did these differences originate?

From skeletal morphology, the similarity of the past Jomon population to the present Ainu and to the Ryukyuans is closer than that to the mainland Japanese. The mainland Japanese are more similar to the peoples on the Northeast Asian continent than to the Ainu and the Ryukyuans. This is understood as follows: the morphological features expanded by carriers of Yayoi culture in the central area of Japan drove Jomon features, which had been distributed throughout Japan, up to the most northern and southern areas of the archipelago (Hanihara 1993). As we have seen in Chapter 11, population groups similar to the continental peoples appeared in northern Kyushu and Chugoku in the Early Yayoi and are thought to have been immigrants.

This view is further supported by genetic research (Omoto 1993). Several genetic markers, such as types of blood protein polymorphisms, link the Ainu and the Ryukyuans over the mainland Japanese spreading between the two, and several other markers, such as a high frequency of the dry type of earwax link the mainland Japanese to continental peoples.

With respect to the increase in continental genes, I previously stressed the possibility of their increase within Japan, based on the successful method of food production rather than the direct contribution of immigrants. Among the populations with strong remnants of Jomon biological features, the Ryukyuans are more similar to the mainland Japanese than to Ainu populations. This accords with the fact that the Ryukyuan language is much closer to mainland Japanese than to Ainu (Hattori 1976, Hudson 1994). However, the Japanese language cannot be a simple

branch of the Korean language spoken on the Korean Peninsula, the leaving point of migration for the Japanese Islands, because its grammar and vocabulary are too different from those of Japanese. There is no space here to introduce the arguments on the origin or formation of the Japanese language, but, in spite of many varied hypotheses, there is no established theory as yet. This fact suggests a complex background to the development of Japanese.

Thus, against the processes of cultural and social change in the mainland, those in Hokkaido and Okinawa provide us with interesting cases of formation of ethnic variety and identities.

CHAPTER SIXTEEN

The prehistory of Japan and its position in East Asia

The Japanese islands, located in the seas off the eastern edge of the Asian mainland, have quite naturally shown evidence of having been part of the Asian cultural area and signs of isolation where unique features not seen on the continent developed. These periods of contact and isolation have been prominent at different times. In fact, it has become a feature of Japanese prehistory and history that, alternately, there were times of active importation of the continental culture, and times when the continental cultural influence was passive but maturing indigenously, when the uniqueness of the domestic culture progressed.

In the early Holocene, contemporaneously with the beginnings of agriculture in China, the efficient Jomon economic system, which was adapted to temperate forests, became established. It was not until the introduction of an even more efficient economic system – the wet-rice agricultural complex with high productivity – that the Jomon economy was abandoned throughout Japan with the exception of Hokkaido and Okinawa. Appropriation of a new economic base resulted in very rapid social changes which have rarely been seen in other areas of the world. Therefore, the contrast between the long-lasting stable hunting–gathering community, and the rapid changes leading to an agricultural society within a short time-span, is the most remarkable feature of Japanese prehistory.

The Yayoi agricultural society of prehistoric Japan has interesting similarities to those of Yunnan and Vietnam which, although located on the opposite side of China, were also based on rice agriculture. The two areas to the northeast and south of China, however, proceeded in different ways during subsequent stages in their respective histories. Natural social development within Yunnan and Vietnam was violently interrupted by absorption into the Chinese Empire. Meanwhile, Japan maintained its independence and a somewhat equal diplomatic relationship with China, eventually accomplishing autonomous state formation. Thus, although the nations around China became linked to it in differing ways, all became various components in the ancient East Asian World.

Palaeolithic

The Japanese Palaeolithic had similarities with mainland cultures as well as its own unique features. This fact is seen in stone tools. Development of blades, prevalence of knife-shape tools, and common use of edge-ground stone axes are counted among the latter. Knife-shape tools are surely known at Xiachuan, China (see Fig. 3.13), whereas Japanese ones are known to have developed from primitive ones of the "Early Palaeolithic" context (see Fig. 3.9). Thence, diffusion from China is not a necessary explanation. The knife-shape tools of Japan and China are probably independent inventions and they suggest both the presence of extensive demand for such a tool and a technological background leading to their creation in East Asia.

From another perspective, the existence of hand-axes in the Early Palaeolithic (see Fig. 3.11) and development of blades in the Late Palaeolithic in Japan may be glimpses of parallel development in the western and eastern areas of the Old World.

One piece of concrete evidence that ties Japan with the mainland is the characteristic Suyanggae-type knife-shape tool (see Fig. 3.14) which was discovered in both Kyushu and southern Korea. More positive evidence is the wedge-shape microblade core and the accompanying Araya type burins. These characteristic cores and burins are extensively distributed in Korea, northern China, far eastern Russia, Alaska (see Fig. 3.16) and, as far as lithic assemblages are concerned, Japan, which became a part of the Northeast Asian cultural area during the period. It is important that the first pottery emerged in or immediately after the extensive diffusion of the microblade culture, that is, the time when Japan had exceptionally close cultural relations with the mainland. Although there has been no discovery of pottery as old as that in Japan on the continent, except the pending possibility of the pottery from Gasya, in far eastern Russia, we still have to keep in mind the above-mentioned situation under which pottery appeared in Japan.

The successful Jomon economy and the late beginnings of agriculture

After this period of active cultural exchange, Japan entered into a time of general isolation during the Jomon period.

Although the earliest date has not yet been ascertained, agriculture with foxtail millet and rice began respectively in the Yellow River Basin and Changjiang Basin in China during the early Holocene (see Fig. 5.1). Almost simultaneously, the typical Jomon economy, which depended on favourable natural resources, especially those from temperate forests, was established in Japan. The temporal correspondence among them is not to be taken as accidental but rather as a reflection of various ways of adapting to changing environments experiencing increasing temperature and precipitation, as well as to different vegetational conditions.

It has been known for a long time that the Jomon hunting and gathering econ-

omy lasted for a very long period and that diffusion of agriculture into Japan was very late. Moreover, the recently discovered earliest origins of agriculture in China magnify the contrast with Jomon culture in Japan, making the long duration of the hunting and gathering community in Japan more conspicuous. This phenomenon is not to be explained merely by the isolated geographical situation Japan has had as an archipelago. Jomon culture stayed in isolation on the whole, although the following evidence is known to prove that there was contact with the mainland, including navigation and cultural exchanges at both ends of Japan, that is, between Hokkaido and Far Eastern Russia as well as between Kyushu and Korea. First, blade arrowheads which originated on the continent are seen in northeastern Hokkaido during the Initial Jomon (II) (Sato 1964, Kimura 1992). These peculiar stone blades retouched into the shape of arrowheads are sometimes accompanied by pottery in the mainland tradition and more frequently by the pottery type of Hokkaido. Obsidian from Hokkaido is also known to have been carried to the continent for use as raw material for tools (Masao Suzuki, pers. comm.). Next, during the Early Jomon of Kyushu, pottery style was changing in a similar way, reflecting the change in southern Korea (Mizunoe 1988, Lee 1994). Jomon pottery itself (Sample 1974) and Japanese obsidian (Nishitani 1982) have been found at the Tongsamdong shell midden in southeastern Korea. On the other hand, a Korean type of composite fish-hook has been discovered at the Late Jomon Oya site in Japan's Kumamoto prefecture (see Fig. 9.9). Stone saws or possible blades of composite-type fish spears have been found distributed on both sides of the Korea Strait (see Fig. 9.9; Wanatabe 1985). For all these contacts, Japan still did not receive influence strong enough to change its cultural base.

The late diffusion of agriculture into Japan cannot be explained by a general assumption that cultures diffuse slowly because many phenomena disprove this assumption, such as the expansion of the wedge-shape microcore in East Asia and the rapid extensive diffusion of some elements of certain types of pottery in Japan and China.

Then is it possible to say that Japan was a part of Northeast Asia under so cool a climate as to be unsuitable for agriculture? At a glance at the map we know that southwestern Japan is located at the same latitude as that of the early agricultural area of northern China (see Fig. 5.1). Moreover, its temperature and precipitation are close to that of the Changjiang Basin where rice agriculture was started very early. So, climatic unsuitability is not applicable except for Hokkaido.

The relatively late beginning of agriculture can be explained simply by the fact that it also began late in southern Korea,[1] meaning there was no chance for agriculture to be introduced at an early date. Keep in mind that the sea between the lower Changjiang in China and Japan is as wide as 1,000km, presenting an obstacle to direct diffusion.

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1. Early rice remains have been reported from Namgyongni, Hunamni, Songgungni and other sites. Opinion varies on the dates of these sites. However, it can be safely said that they do not precede 1000 BC much. Recently, a rice grain was discovered in a natural layer dated to *c.* 2000 BC at Ilsan near Seoul.

The major gateway to the Asian mainland was northern Kyushu, which is Japan's closest point to the Korean peninsula. Although there are three inferred routes by which domesticated rice could have reached Japan, the northern route via the Korean peninsula is the only one supported by the wealth of archaeological evidence. Rice had to spread north from its likely area of origin in central China before it reached Japan through the Korean peninsula. It is possible that this process took a long time because varieties of rice had to evolve which were adopted to the cool and fairly arid environment of northern China and where, in addition, other kinds of agriculture had previously been developed. This may partly explain the time-lag for the beginning of rice cultivation in southern Korea and Japan.

Adaptive conditions of agriculture

It is important to remember, however, that full-scale agriculture in Japan was wet-rice cultivation and not dry-field agriculture, even though the latter had previously spread throughout northern China and was in much closer geographical proximity to Japan than the wet-rice agricultural area of central and southern China. Millet agriculture on dry-fields in northern Korea goes back to 4000 bp at the latest, as is shown at Chitamni. The sporadic discovery of rice, barley and millet in Japan from around 3000 bp may be signs of the furthest reach of this influence. However, such cultivation did not bring about the beginnings of full-scale agriculture. Any fundamental change or extinction of important elements of Jomon culture such as seen during the transition from Jomon to Yayoi is hardly recognized at this time. It almost looks as if Japan waited for wet-rice cultivation before beginning full-scale agriculture.

The question then is why wet-rice agriculture, which was only introduced later, was adopted, whereas dry-field agriculture, which could have been introduced much earlier, was not. A possible explanation of this apparent anomaly follows.

The warm and humid climate of southwestern Japan is more favourable to wet-rice cultivation than for millet cultivation on dry fields. However, because dry-field agriculture is not impossible there, this answer alone cannot suffice. Another point that must be considered is the high productivity and stability of the system of wet-rice agriculture in which the water supplies nutrients and suppresses land weed growth while providing almost endless annual harvests in the same fields. Excavated wet-rice fields and agricultural tools indicate that Japanese rice agriculture began with already highly developed technologies.

The stability and development of the Jomon culture depended on the abundant resources provided by the temperate rain forest, as well as the rivers and seas. Jomon people exploited these resources in various ways, largely in seasonally scheduled subsistence patterns. Only a more advantageous subsistence pattern could have changed their mode of life. Thus, dry-field agriculture, which was not well adapted to the Japanese climate and forested environment, could not surpass the affluence already provided by the Jomon subsistence economy.

Some further explanation should be added as to why the Japanese environment is said to be unfavourable to dry-field agriculture. Japan's temperate climate and high precipitation, especially in the summer, promotes the sustained growth of vegetation, but does not necessarily promote the growth of crops. Under the Japanese climatic conditions, cereals readily succumb to the vigorous growth of weeds and other herbaceous plants. The herbaceous plants in turn give way to shrubs and trees which monopolize and screen-out the sunlight. Grasses cannot become the dominant natural vegetation, and it is even more difficult for crops introduced from overseas. However, the removal of plant competitors by humans give crops the opportunity to respond to favourable climatic conditions. The technique of raising rice seedlings on preparatory plots, then transplanting them onto fields that had previously been ploughed to suppress weed growth, is a most effective way of giving rice a competitive advantage over other plants. This process requires much human care and co-operation. The product will be naught if clearance and after-weeding is not done, but the area that one person can weed is limited. Thus, the precondition for the adoption of agriculture in Japan is sufficient productivity to counterbalance the amount of labour that must be invested and which might otherwise be directed towards other subsistence activities. The critical level of productivity was accomplished for the first time by wet-rice cultivation, which was the mainstay of Yayoi agriculture, even though dry-field cultivation was also practised. It was no accident that the first system of agriculture to be adopted was highly productive, because, under Japanese climatic conditions, it was only advantageous to adopt a highly productive system. The key point was not the presence or absence of cultivation, but rather the techniques that could convert labour into a high-yield agricultural product (Imamura 1993).

Receptive capacity of agriculture

It is necessary to ask whether the Jomon people had the capacity to adopt such an advanced system of agriculture. It is clear that the introduction of wet-rice cultivation techniques depended on immigrants from the Korean peninsula. As has been suggested, however, and as the change from Jomon to Yayoi pottery suggests, there were no massive population movements or replacements. Therefore, it is clear that the local populations must have had the capacity to appropriate and implement this system of agriculture. Jomon people had already adopted a sedentary life, which is the basic condition for agriculture. They also practised annual scheduling of food production (Fig. 16.1; Kobayashi 1975) and storage, as is seen in the storage of nuts in large underground pits. Moreover, the habits of hard work required to carry out wet-rice cultivation were already well developed among the Late Jomon people, who routinely practised such painstaking processes of food preparation as making horse chestnuts edible (see Fig. 9.3). Their manual skills had also been developed in the manufacture of sophisticated tools for hunting and fishing, and could be applied to make various farming tools. In addition, they had the knowledge to cultivate useful plants.

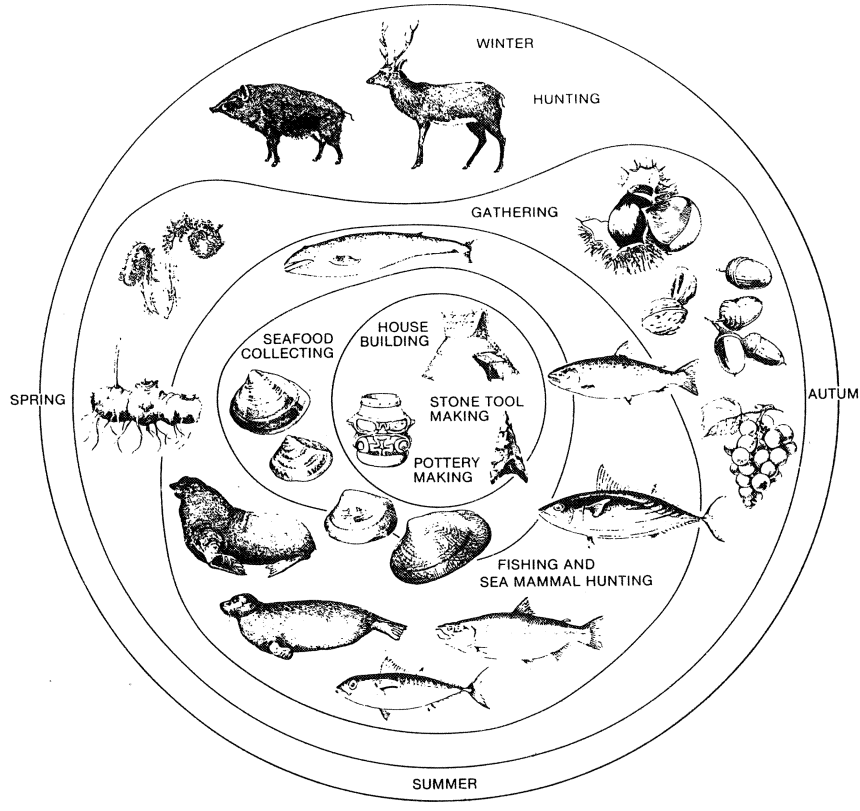

Figure 16.1 Schematic representation of an idea on the seasonalities in subsistence activities of the Jomon people (Kobayashi 1975).

Cultural diffusion is not a question of transport and transmission. It is more a question of whether the object or technique is sufficiently attractive to warrant adoption and whether it can be effectively used once it is appropriated.

Spread of the continental gene

From the beginning of the Yayoi period to the early Historical times, migration from the Korean peninsula continued intermittently. Judging from the number and scale of settlements of immigrants compared with indigenous ones, the scale of migration was small, even in the peak period. Therefore, if, as K. Hanihara thinks, the continental gene contributed far more than the indigenous Jomon gene in the formation of the morphological features of the modern Japanese (Hanihara 1993), we have to consider another explanation, such as, for example, that the expansion of the continental gene was caused by rapid population growth among migrant or migrant–indigenous mixed groups with advanced food production

technologies, rather than by migration itself. The effect of this differential in growth rates must have been largest during the beginning of agriculture when the technology had not yet diffused over an extensive area and when local population was not very large. The prominent expansion of the Ongagawa type pottery from Kyushu to eastern areas in the Early (II) Yayoi appears to be the best candidate for the occasion of spread of the continental gene (Harunari 1990).

What spurred the diffusion of continental agriculture?

Since we have mostly seen only the situation of the receiving area, a glance at the launching area for continental agriculture is necessary, although available evidence is insufficient and the following discussion cannot help but be based on guesswork.

The main issue I would like to discuss here is whether the diffusion of agricultural technology into Japan happened only accidentally at the time we have discussed or whether there was any specific cause for it. In considering the evidence of occasional contact between southern Korea and northern Kyushu, and sporadic discoveries of cereal remains before the Yayoi period, one would expect to find a particular event or events that brought about the sudden diffusion of advanced agricultural technology accompanied by a considerable scale of migration. One possible cause is the political conditions in China about the time. During the fifth to fourth century BC, or the time of diffusion of wet-rice cultivation into Japan, China was divided into many conflicting states during the period of Eastern Zhou (the Spring and Autumn period and the Warring States period). It may be possible that disturbance and confusion during that period caused migration of groups with advanced technology beyond Chinese territory proper and that the forefront reached into Japan.

Another possible cause is the technological innovations that took place during the same period, including progress in agricultural technology and increases in product. Iron smelting began in China around the end of the Spring and Autumn period (fifth century BC) and the casting method for iron, which was unique in the ancient world, realized mass production and rapidly brought about the prevalence of iron tools (Fig. 16.2; Yin 1984). Wet-rice cultivation of the type introduced into Japan required construction works, including excavation of canals and the preparation of horizontally segmented fields. It goes without saying that iron tools were efficient in creating such works. Although the majority of excavated farming tools in Japan were made of hard wood, iron cutting tools must have been indispensable for the production of such tools. Therefore, the emergence of iron tools must have had an enormous effect on agriculture, especially that of wet-rice fields. Thence, it is a noteworthy fact that an iron axe was discovered at Magarita (Hashiguchi et al. 1983–5), the earliest farming village of Japan, despite its date immediately after the first appearance of iron tools (excluding those made of meteoric iron) in China. This specimen shows clearly the close link between iron and wet-rice cultivation, further suggesting that the expansion of wet-rice cultivation itself might have been

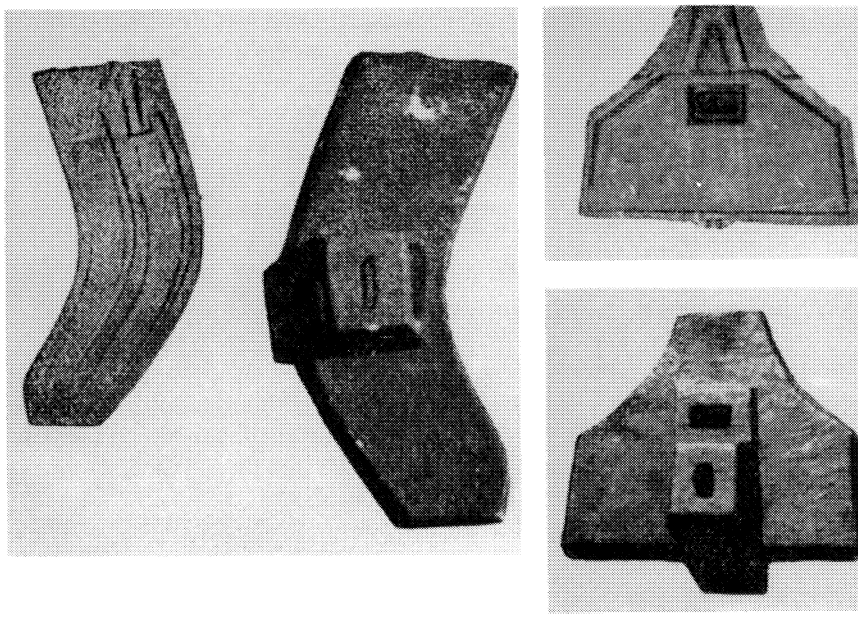

Figure 16.2 Iron molds for casting (iron!) tools from Xinglong, Rehe province, northern China (Warring States period; Zheng 1965).

brought about by the prevalence of iron tools. Progress in production in China might have resulted in an increase of population followed by an outward migration seeking favourable land for wet-rice cultivation. At any rate, basic evidence on the mainland must be obtained before we know where the form of wet-rice cultivation that came to Japan developed and where the tool types that reached Japan became associated with it.

Rapid changes in society

Once accepted, wet-rice cultivation set off a chain reaction of increased production, increased population, and the further development of new rice fields, which once again led to increased production. Around 300 years after the beginning of agriculture, conflicts and frequent warfare are reflected in archaeological material and recorded in Chinese chronicles. Rice fields were production facilities obtained through construction work. They were also the most basic means to get annual harvests. Areas that could be turned into wet-rice fields by early technological standards were limited by natural conditions. When increased population required new fields, available areas were in further short supply. Water was indispensable for the operation. Once a drought occurred, obtaining water became a life and death problem. Thus, wet-rice cultivation was apt to generate conflicts.

Around this time, distinct social classes also appeared, soon followed by the appearance of special individuals who were buried with exceptionally rich grave goods in complete isolation from normal cemeteries. These individuals must have been kings who ruled comparatively small areas such as one of the "more than one hundred polities" referred in the *Han-shu*. Local kings made their tombs with their own local styles, but these were later standardized into a uniform style called *kofun* in the late third century AD. The very representative Hashihaka *kofun* was built in the Nara Basin where the earliest recorded capital of "Yamato" or the Japanese state was located in the sixth century AD. This uniforming into *kofun* is considered to have been brought about either by a coalition of powerful clans (Kondo 1983) or through political unification. Thus, it took only seven to eight centuries from the beginning of wet-rice cultivation for a unified polity or, according to another opinion, a coalition of local polities to be formed throughout the historic territory of Japan (not including, of course, Hokkaido, northern Tohoku and the Nansei islands). All these consecutive changes were ignited by the introduction of advanced agricultural technology.

This rapid social change can be compared only with the Meiji Restoration in the nineteenth century, which saw the positive importation of Western civilization, including science, technology, and social and political systems after the long national isolation of the Edo period. The main cause of this rapid process was clearly the high level of the agriculture being introduced. Progressive prevalence of iron tools surely accelerated the speed. Moreover, the existence of advanced societies on the continent must have sustained the pace of social change, because it meant that Japan need not invent by itself but could learn from the continent the advanced technologies and social systems that were essential for social development.

At any rate, the economic change must have been the very foundation of all development, since warfare and social stratification, which were the major manifestations of social change, are matters that are scarcely, if not at all, learned from foreign societies. The importance of the economic base is also known from the case of Hokkaido, where society hardly developed beyond the standards of the Early Yayoi period until the modern period, in spite of the use of iron tools and the existence of developed societies in close proximity.

The above is the explanation I have prepared for the two prominent features of Japanese prehistory: the long-lasting successful Jomon economy of gathering, fishing and hunting, and the rapid social changes compressed into a short timespan following the adoption of wet-rice agriculture (Imamura 1993).

The existence of similar societies around China

The above-mentioned social changes were not unique to Japan, but were similar to those witnessed contemporaneously in many places around China. Movements towards state formation through wars, social stratification and various polities were

taking place not only in Korea and Japan to the northeast of China but also in Yunnan and Vietnam to the south of China. There seems to have been important social changes even among horse-riding peoples to the north of China, who had quite a different economic base. They frequently began to invade the northern territory of China. These events were briefly recorded by the Chinese side in chronicles, and archaeological materials provide evidence from the actual areas.

Bronze shell containers unearthed from the royal necropolis of the Dian Kingdom of Yunnan depict scenes of warfare and their control over alien tribes. In the Tianzimiao cemetery site of the early stage of Shizhaishan culture, one very large tomb furnished with many rich goods was intermingled among many of medium and small size (Kunming 1985). In the next stage of the society, rich large and medium-size tombs, excluding small one, were located in specially reserved cemeteries such as at Shizhaishan and Lijiashan (Yunnan 1959, 1975, Yoshikai 1990). The Shizhaishan cemetery is known to be of the Dian because of a seal found there with the inscription "King of Dian" (Fig. 16.3).

Shell containers also show us that the Dian rulers played shamanistic roles, such as Queen Himiko of Yamatai, in addition to having actual political roles (Imamura 1992b). Dian tombs were furnished with many bronze objects, including beautifully decorated weapons that seem to have been ceremonial in nature. In southern Vietnam and Thailand these objects were further modified into large flat forms, indicating their complete transformation into ritual objects just like the enlarged Yayoi bronze weapons (Fig. 16.4). In southern China and Southeast Asia, bronze drums were the most important ritual object, and very large ones with a variety of beautiful patterns were developed (Fig. 16.5b). They might be seen as equivalent to the Yayoi *dotaku* (Fig. 16.5a).

Could there be any common cause for these similar phenomena occurring around China, such as the same stimulus upon societies based on rice cultivation? In Japan these social changes are generally taken as a part of the chain reaction ignited by the adoption of wet-rice cultivation. In Yunnan and Vietnam, on the

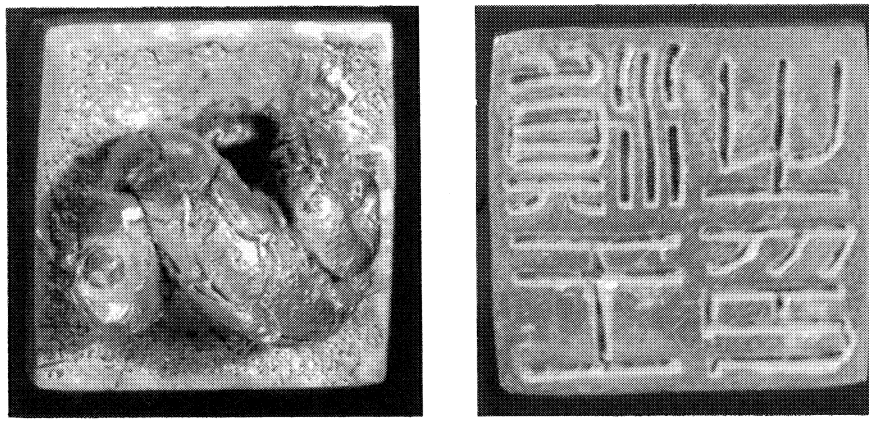

Figure 16.3 "Seal of the King of Dian" of gold, bestowed by Emperor Wu of the Early Han in 109 BC, and discovered in tomb 6 of Shizaishan, Yunnan (1959).

other hand, the beginnings of rice cultivation go back further, although the earliest time has not yet been ascertained. Therefore, there is a time gap between the beginnings of agriculture and extensive social changes. In spite of this difference, social change happened almost simultaneously around the periphery of China. For example, the emergence of completely distinct tombs for the ruling class appeared in the third century BC in Yunnan and Vietnam and in the first century BC in Japan.

The first thing to be pointed out is the special situation of China at the time, unique even in its own long history. Various innovations in technology and social systems – such as mass production of iron tools, construction of irrigation canals, development in manufacture of items such as ceramics, economic development based on increase in products and monetary circulation, and innovation in legal and governing systems – were accomplished in response to the struggle for survival

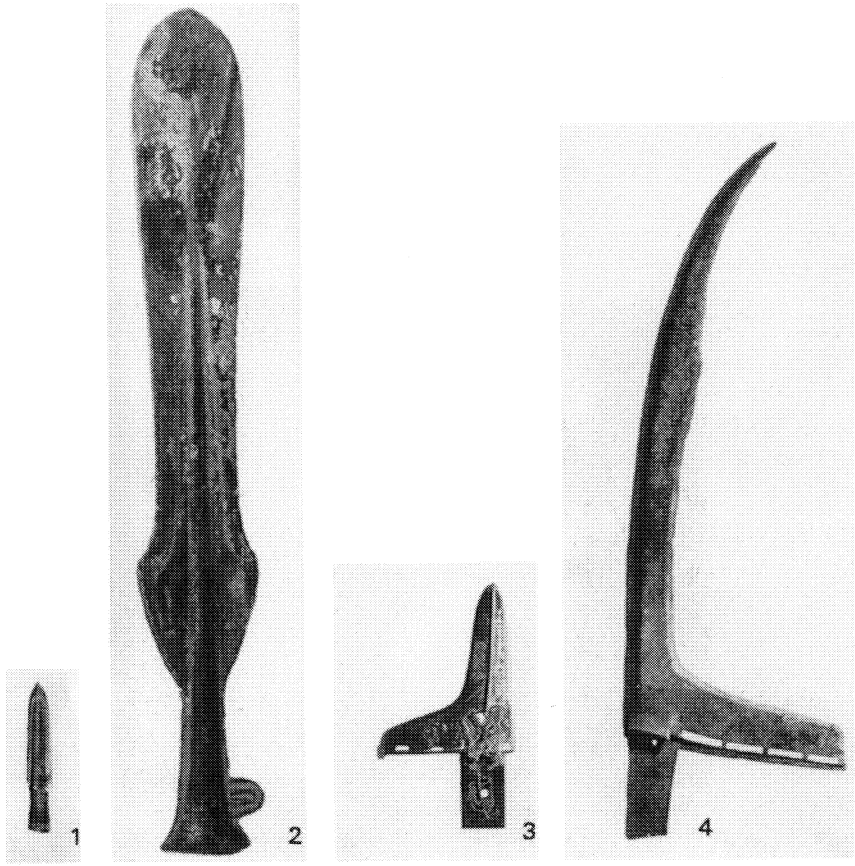

Figure 16.4 Enlargement of bronze weapons in Japan and Southeast Asia, whose style was originated in China. 1. Spearhead from terracotta army pits of the tomb of Qin Shihuang Di, China (length 153mm); 2. spearhead from Kubiru, Nagasaki, Japan (length 843mm); 3. halberd from Dubaishu, Sichuan, China (length 252mm); 4. halberd from Udorn, Thailand (length 725mm).

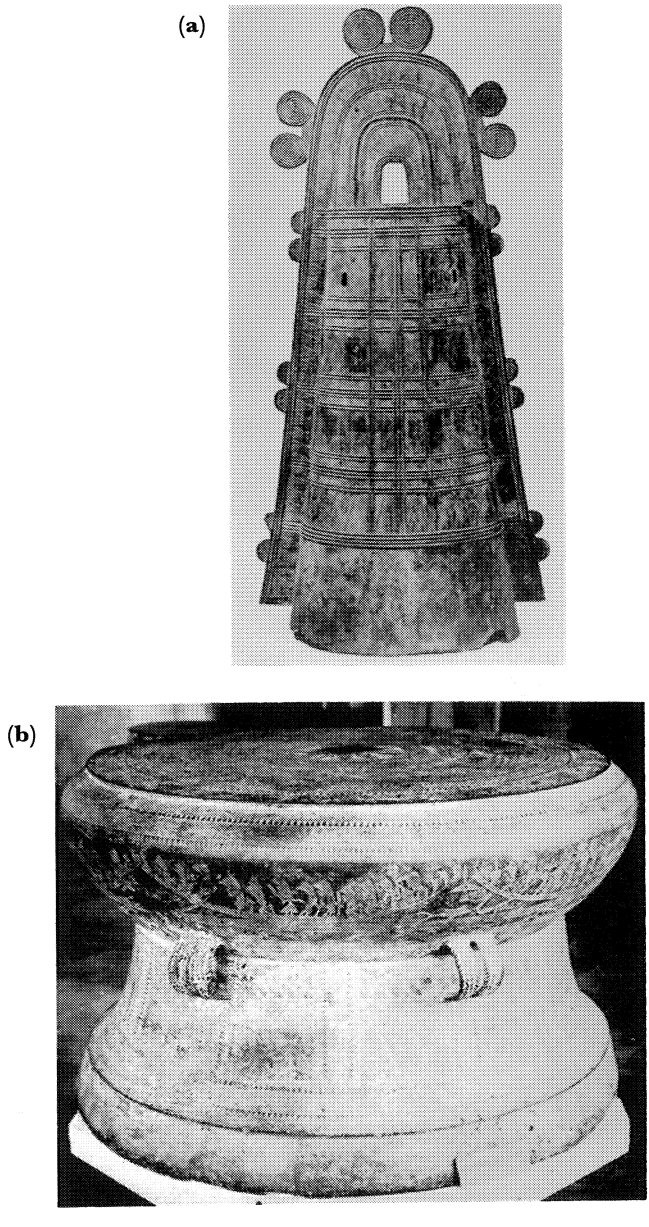

Figure 16.5 Representative cult objects in early rice-cultivating communities: (a) *dotaku* of the Yayoi in Japan; (b) bronze drum of Dongson culture in Southeast Asia.,

among warring states. At the end of these developments in various aspects of society, the whole territory of China was unified into the Qin Empire and followed by the Han Dynasty, which absorbed all the powers of the warring states. Thus, a

huge power never seen before in East Asia was born. These events could not but influence the surrounding world. As I pointed out above, even the diffusion of wet-rice cultivation into Japan could have been caused by the first of these movements in China. Technological innovations, political tension and, finally, the establishment of a huge power could in turn act upon the surrounding world.

In spite of the account in *Shi-ji* that the king of Dian did not know of the existence of Han, the construction and furnished goods of their tombs clearly show influences from central China. Some artefacts such as daggers and knives discovered there, provide evidence of long-distance trade and cultural relations with the steppes of northern China (Imamura 1984). They show that areas and nations of East Asia were not isolated from each other but rather were in contact.

Yunnan was forcibly annexed into the Han Empire as one of its provinces in 109 BC. Vietnam also was forced to become a province of Han after the fall of the Nanyue Kingdom, which had kept its independence with its capital at present-day Guangzhou. In these areas, autonomous social change towards state formation was interrupted by absorption into the Han Empire. These annexations do not seem to have been accompanied by planned cultural assimilation. It led, however, to fairly rapid replacement of the local culture by Han culture, as is seen in tombs and the furnished goods. Within a century the style becomes completely Han. Within this context, the great revolt by the Trung sisters from AD 40 in Vietnam and the subsequent suppression by Han forces has symbolic meaning.

On the other hand, relations between Japan and China were pursued from Japanese willingness, and submission to Han was only nominal. Tributary calls to the Chinese Emperor by Japanese kings were carried out at convenient times in accordance with important political changes in China. Japanese rulers were clearly obtaining information about China, and were taking appropriate measures (Oba 1993). Such kings must have felt the necessity to deal with the international situation.

Seals that Chinese emperors gave to their vassals and foreign kings were strict status markers, which were differentiated by material, colour of tassel, and the last character of the inscription. Such seals formed a pyramid-like hierarchy, with the emperor's seal on the top, corresponding to the ideal order of Chinese society (Kurihara 1961). Bestowal of such a seal to Japan meant its incorporation into their own world. It is amazing that two golden seals have been discovered – one bestowed by the Early Han to the King of Dian in Yunnan (Fig. 16.3) and the other by the Later Han to the King of Na in Japan (see Fig. 14.5). The Dian seal was forced on the king by Han, but the Na seal was wished for by the Japanese side. They were respectively inscribed as "Seal of the King of Dian" and "King of Na of Wa (Japan) of Han". The Dian seal does not have the letter "Han", because there was no necessity to designate such a clear fact that Dian belonged to Han. However, the "Wa of Han" of the other seal reveals the Chinese intention that Japan should submit to Han. Therefore, the letter "Han" of the Na seal paradoxically suggests that Japan maintained substantial independence from Han.

As is seen in these situations, various centripetal forces were at work. After this period, East Asian nations around China could not decide their own course without regard to the will and situation of China.

Establishment of the ancient state

Unlike Yunnan, Vietnam and northern Korea, where the Han Empire ruled directly, Japan autonomously proceeded towards state formation. On this point, Japan becomes an important field where natural social changes can be observed.

There are two opinions concerning the Japanese Kofun period: either that it remained at the stage of chiefdom (Kondo 1983) or that it attained the stage of state (Tsude 1991). Following the logic of the first opinion, the relationship throughout the historical territory of Japan during this period was a coalition of local powerful clans based on a type of fictitious kinship. This means that what really existed was many clans without substantial governing organization. The other opinion enumerates archaeological data which indicate clear social stratification, systematic collection of taxes, commandeering of labour for huge construction projects, and standing army as evidence for the existence of a state.

The three kingdoms of Koguryo, Paekhe, and Shilla were formed in Korea when Japan was being unified under the kingship of Yamato. There are quite opposite understandings of the relationship between Japan and Korea at the time, one being that Japan frequently invaded Korea, assisting Paekhe through use of Kaya in southeastern Korea as a bridgehead, and the other being that what really existed was Korean rule over Japan. The former is the opinion of many Japanese scholars and the latter is a newly proposed opinion of several Korean historians (Kim 1976). Japanese emperors who built huge *kofun* as their tombs and who were thought to be the ancestors of the present emperor, according to Song chronicles (of the period of South and North Dynasties), repeatedly requested that China approve the title "general with military right over the Korean nations". Recently, several keyhole type *kofun* and *haniwa*, which had been thought unique to Japan, were discovered in southwestern Korea. Therefore the research into the relationship between Korea and Japan during the Kofun period of Japan is expected to make great progress in the near future.

Whatever the real relationship between Japan and Korea may have been, Japan of the Kofun period was very positive towards the introduction of Korean culture. Immigrants from Korea played important roles. Ceramic manufacture in kilns, horse riding and various tools, from daily utensils to luxuries for the ruling class, were introduced by Koreans. They were followed by writing and finally by Buddhism and its temples by the end of this period. From AD 632, students were sent to Sui, then to Tang Dynasty China in order to import advanced culture systematically. It soon resulted in the establishment of one of the ancient states of East Asia. Organized ruling based on governing with law and bureaucrats put the construction of *kofun* out of date. Worship of ancestors' spirits and succession rituals of divine kingship conducted on *kofun* gave way to Buddhism as the national guardian religion. The building of the capital, palaces and temples became central among national projects. The assimilation of Japan into the Chinese cultural mode was positively and autonomously pursued from the Japanese side.

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C.P.: Cultural Properties; E.B. Educational Board; Hist.: History; Mus.: Museum; Pref.: Prefecture; Prov.: Province; R.P. Research Party

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