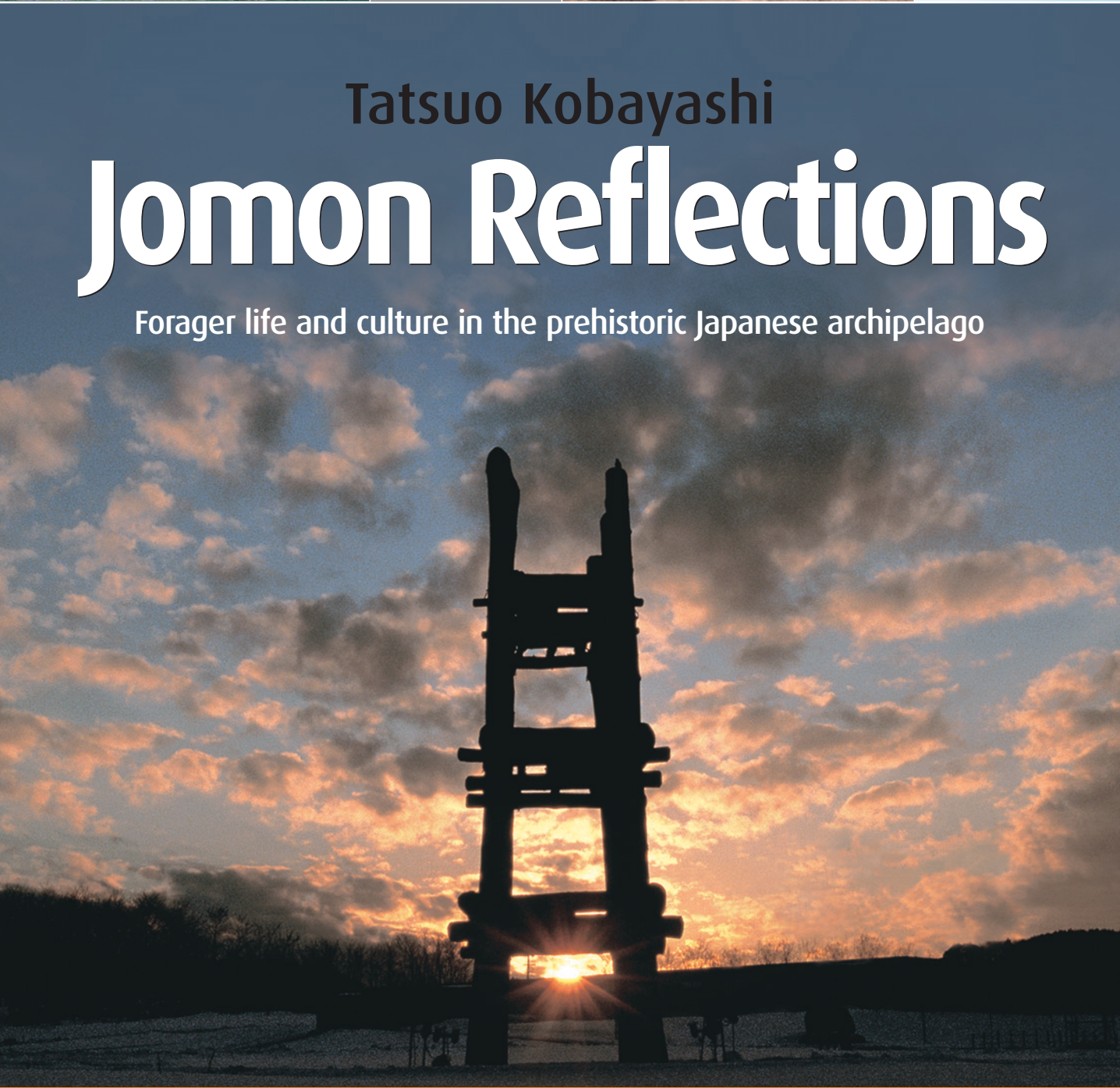



Tatsuo Kobayashi

Jomon Reflections

Forager life and culture in the prehistoric Japanese archipelago



Edited by Simon Kaner with Oki Nakamura

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Contents

Note

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Japanese personal names are given throughout this book in Japanese order, i.e. family name first (e.g. Kobayashi) followed by the given name (e.g. Tatsuo). This order is adjusted on the cover in order to avoid any bibliographic confusion for Western readers.

Latin and Japanese names for plants and animals are given in the Appendix. Throughout the text macrons have been omitted.

Editors' Preface

There are probably more archaeological investigations undertaken in Japan than any other country in the world. By the mid 1990s permits were being issued for over ten thousand investigations a year at an annual cost of over five hundred million pounds.[1] The great majority of these excavations take place in advance of development, including the construction of towns, roads and rice paddies. Many of these digs produce exciting new discoveries which have the potential not only to contribute to our understanding of the history and prehistory of the Japanese archipelago, but also to add to a broader history of humanity and its relationship with the world humans inhabit. The quantity and quality of archaeological excavations, the scale on which sites in Japan are investigated, and the distinctive attributes of the Japanese archaeological sequence are of interest to anyone concerned with how the remains of the distant past can cast light on what it is to be human. These attributes include the oldest dated pottery tradition in the world, the earliest use of lacquer, and the remarkable florescence of a series of fishing, hunting and gathering cultures which produced a very rich material culture including highly decorated pottery, ceramic figurines and monuments.

Each Japanese archaeological excavation results in a detailed report, many of which comprise hundreds of pages and sometimes several volumes. These important works, along with the artefacts, photographs, record sheets and other materials produced during excavation and subsequent analysis, comprise the archaeological record. This record is the only surviving testimony to the lives of many generations of previous inhabitants of the Japanese archipelago. The reports are written by modern archaeologists in Japanese, a language which Jomon people themselves would not have understood.[2] This they had in common with most of the readers of this book, which is intended to bring a knowledge and understanding of Jomon archaeology to those without a specialist interest in the prehistory of the Japanese archipelago, but who would like to know more about this fascinating and intriguing episode of the human past. Our guide through the mass of data is the leading authority on Jomon archaeology in Japan, Kobayashi Tatsuo, whose works combine an unparalleled overview of the state of the field of Jomon archaeology with a personal style which brings the detail to life in an accessible and engaging way.

The Japanese word *Jomon* literally means cord-marked, a term given to decoration applied to pottery with the impressions of twisted cords. The term was first used in the report of what is widely regarded as the first scientific archaeological excavation in Japan, at the Omori shell mounds near present-day Tokyo, written by Edward Sylvester Morse in 1879. This term was subsequently used to refer to the archaeological period during which this pottery was used.[3]

Morse also dated his report 2539, situating it in the Japanese official chronology of the time which began with the accession of the Emperor Jimmu, supposedly in 660 BC.[4] Work since Morse has demonstrated that cord-marked pottery is in fact part of what is currently the oldest dated pottery-making tradition in the world. In 1999, archaeologists reported calibrated radiocarbon dates of over sixteen thousand years ago for pottery sherds from Odai Yamamoto in Aomori Prefecture.[5] The Jomon is now thought to start from that date, a period elsewhere known as the Late Palaeolithic, a time when the Japanese archipelago was much closer to the East Asian mainland, the lower sea-levels of the last glacial maximum exposing broad expanses of land now inundated by the sea. The Jomon came to an end with the appearance of rice cultivation in paddy fields and the associated technological and cultural assemblages between two and three thousand years ago, at the beginning of the Yayoi period.

The very earliest pottery was not decorated with cord-marks, and we now know that it was not until around eleven thousand years ago that cord-marking became a major decorative technique. Kobayashi, however, in accordance with prevailing Japanese archaeological thinking, considers that pottery making itself represents a key component of what constitutes the Jomon and includes all of the pottery making cultures of the Japanese archipelago between the appearance of pottery and the appearance of rice cultivation in his definition of Jomon Japan.

The notion of Japan as a unified geo-political entity greatly post-dates the period to which this book refers. Indeed, the concept of the Jomon was developed after the establishment of the modern Japanese state in the Meiji restoration of 1868. The Jomon is, however, contained within the current boundaries of the modern state of Japan, even though pottery recognisable as Jomon is found further afield, and indeed forms part of a broader cord-marked pottery complex across much of East Asia.[6]

The Jomon in Japan and beyond

Jomon archaeology has enjoyed something of a boom in popularity in Japan over the last decade. Archaeologists, aided by an eager media, have worked tirelessly to bring the fruits of their labours to the Japanese public. Spectacular discoveries at sites such as Sannai Maruyama in Aomori Prefecture have created intense media interest and great public fascination.[7] Open days at archaeological excavations are very popular and many museums offer workshops, for example introducing techniques of Jomon pottery manufacture. Each year for the past decade the Agency for Cultural Affairs has organised a travelling exhibition of the most important discoveries made in the course of the previous year, making sure that new discoveries attract the greatest possible public attention. At the same time, a new form of public involvement has appeared: non-profit organisations. One of these, set up by a group of Jomon enthusiasts inspired by Kobayashi Tatsuo, is called Jomonesque Japan. This term was also used for the inaugural exhibition at the Niigata Prefectural Museum of History which opened its doors to the public in 2000, and where Kobayashi Tatsuo is the first Director.

The introduction of the Jomon to audiences outside Japan began with the publication of Edward Morse's report of his investigations at Omori. An early synthesis was *Prehistoric Japan* published in 1911, written by Neil Gordon Munro, a Scottish doctor who undertook what were probably the first excavations of a Jomon village and went on to write important ethnographic accounts of the Ainu, amongst whom he lived in his later years in Japan. Munro's collection of Japanese archaeological objects is now housed in the National Museum of Scotland. The most comprehensively illustrated work in English on Jomon ceramics remains Edward Kidder's magnificent *Jomon Pottery*, often referred to in the notes of the present work. Douglas Kenrick's *Jomon of Japan* provides further illustrations of this remarkable ceramic tradition. One of the editors of the current work published an extensive annotated bibliography of Western language writings about Jomon archaeology to 1990, and most recently Habu Junko has provided an exemplary textbook survey of the field. The views of Japanese archaeologists about Jomon archaeology are occasionally made available through summaries and translations in journals and recently individual Japanese scholars have included the Jomon in their books on Japanese archaeology. These books, however, are aimed largely at an archaeological audience. *Jomon Reflections*, on the other hand, is based on essays by Kobayashi Tatsuo designed as an accessible summary of Kobayashi's approach to the Jomon.[8]

In recent years, Jomon artefacts have been used as material ambassadors for contemporary Japan: exhibitions featuring Jomon objects elsewhere in Asia, the Americas and Europe prove to be very popular. For example, a 1998 exhibition of Jomon pottery at the Maison de la culture du Japon in Paris intrigued

the French President, Jacques Chirac, and the accompanying catalogue was introduced by the eminent anthropologist Claude Levi-Strauss, who described the Jomon as a civilisation, a contention which is the topic of some controversy in Japan.[9] The Jomon came to Britain in Japan 2001, being among the highlights of the Japanese-government sponsored exhibition on Shinto at the British Museum[10] and the focus of the Flaming Pottery exhibition at the Fitzwilliam Museum in Cambridge. At the time of writing a major exhibition of Japanese archaeology, including many Jomon objects, is being held in Germany.

A number of archaeologists, both Western and Japanese, have noted how the Jomon is being used in the construction of modern Japanese identities.[11] Images of the Jomon as representing a lost Eden, with people living in harmony with nature and little evidence for conflict, provide a nostalgic escape from the frenetic hurly-burly of contemporary Japanese urban life. The idealised hunter-gatherer lifestyle often conjured up in popular accounts of the Jomon has been seized on and fetishised.[12] Kobayashi is sensitive to issues concerning the relationship between archaeology and nationalism but is also keenly aware of the need to communicate about archaeology in a way which engages his audiences.[13] The book of essays upon which *Jomon Reflections* is based was designed for a Japanese lay audience and Kobayashi does not hesitate to use metaphors and analogies from modern Japan to bring his account to life and make the Jomon contribution to the formation of the Japanese historic environment seem relevant to his readers.

Kobayashi also draws on his extensive knowledge of world archaeology and anthropological studies of indigenous peoples, in particular from the northwest coast of North America and the Ainu. The use of what is called ethnographic analogy in the interpretation of the archaeological record requires the exercise of considerable caution, especially in the case of the Ainu.[14] The early decades of Jomon archaeology were greatly concerned with establishing the affinities of these indigenous peoples of northern Japan and it was long argued that there was a direct link between Jomon populations and the Ainu. The archaeology of the Ainu themselves, however, is revealing a much more complex and fascinating history and seeing the Ainu as a relict Jomon population is no longer popular in most academic circles. Kobayashi's use of ethnographic analogy in *Jomon Reflections*, however, is not concerned with establishing links between different populations nor with comparing groups perceived as being at similar stages of social and cultural evolution. Rather, he is interested in what these records of diverse groups of indigenous peoples known to modern anthropology can bring to an understanding of Jomon lifestyles.

Kobayashi Tatsuo

Kobayashi Tatsuo is one of the most prolific writers on Jomon archaeology. Based at Kokugakuin University in Tokyo since 1982, he was formerly at the Agency for Cultural Affairs, the Japanese government body which has overall responsibility for archaeology in Japan. He has undertaken many excavations of Palaeolithic and Jomon sites.

Kobayashi is greatly concerned with placing the Jomon in its proper perspective within world prehistory. He has travelled extensively outside Japan, and spends his sabbaticals in North America, especially in Vancouver, among his beloved northwest coast Indian art, and in Britain. Over the years he has presented many conference papers and published a large number of articles in English.[15] He often travels with a group of Japanese archaeologists and opinion formers, introducing them to the highlights of archaeology outside Japan. In this way, Kobayashi has taken up the call to internationalise Japanese archaeology. It was his idea, for example, to hold a special session at the Society for American Archaeology meetings in Montreal in the spring of 2004 to address the recent scandal surrounding fraudulent claims for an Early

Palaeolithic in Japan in front of an international audience. He is currently involved in fieldwork in eastern Russia, part of a Japanese government sponsored Centre of Excellence project based at Kokugakuin University. He has brought many foreign archaeologists to Japan, and over the years has been a supporter and facilitator for visiting students and scholars.

Kobayashi has been greatly influenced by the non-Japanese anthropological and archaeological thinking he has encountered during his travels. Many of these influences are evident in the present work, from the anthropology of art of Franz Boas and the cultural anthropology of Alfred Kroeber, to contemporary avant-garde Western archaeological theory including that of Ian Hodder.[16] Within all of this, however, he retains his own distinctive approach, bringing the Jomon to his readership with concepts which are very much his own take on issues of concern to contemporary archaeology around the world, for instance the socialisation of nature.

Jomon Reflections

The eight chapters of this book explore the worlds of Jomon peoples, the inhabitants of the Japanese archipelago from the final stages of the last Ice Age, around sixteen thousand years ago to the appearance of rice agriculture in the later part of the first millennium BC.

The first chapter introduces Kobayashi's broad themes, in particular the distinctive nature of the Jomon and the way that Jomon archaeology can contribute to a diversified human history, providing a counter to more unilineal, progressive accounts of what happened in the past. This is very much in the spirit of much contemporary archaeological thinking which eschews grand narratives.

The second chapter addresses the nature of the diverse cultures of the Jomon period and considers how they differed from the preceding Palaeolithic period. Drawing on the concept of revolution in archaeology, a new interpretation of the beginning and earliest stages of the Jomon period is presented which includes a consideration of the significance of very early pottery in the archipelago, now dated to approximately sixteen thousand years ago. The relationship is explored between pottery use and changing patterns of lifestyles, from mobile hunting to more sedentary villages.

The third and fourth chapters provide an overview of what is perhaps the most remarkable expression of Jomon material culture, pottery. Many aspects of Jomon pottery are considered, including the appearance and development of some seventy major regional styles, the reasons why pottery making was taken up so enthusiastically by prehistoric foragers in the Japanese archipelago, the principles behind the typological approach used by Japanese archaeologists, and the character and interpretation of pottery style and designs. The approach to Jomon pottery developed by Kobayashi is based on the premise that it is possible to classify the pottery excavated from Jomon sites, and that this classification has some meaning. It is also assumed that this system of classification bears some resemblance to a system of categorisation that would be recognised, at least in a practical if not in a discursive fashion, by the Jomon potters themselves. These points are similar to those made by archaeologists seeking to understand what is called the "folk classification" of pottery.[17] We should expect that Jomon people saw the world in very different ways to contemporary Japanese archaeologists, or indeed anyone else. Would they have thought about making their pots in terms of rims, bellies and bases? Perhaps each of these parts had very different names and significance. Importantly, though, what Kobayashi provides is a framework within which to place the great variety of Jomon pottery styles. This is an enormous achievement and opens up new possibilities for understanding what happened in the Jomon.

The fifth chapter considers how the great diversity of natural foodstuffs and other materials available to Jomon peoples affected their cultural development. These foodstuffs range from salmon to seaweed, from bears to birds, and from nuts to insects. The issue of the possibility of Jomon agriculture is addressed and the reasons why it was not taken up are considered. The second part of the chapter sets out Kobayashi's propositions for what he calls the artificialisation of nature, ideas which draw on and critique the application of Ian Hodder's discussion of domestication in the European Neolithic.[18] Kobayashi develops a concept he terms the *jomon shisei hoshin*. This implies a particular attitude to the natural world, which in essence depends on the exploitation and use of the widest possible range of resources in what is a very rich natural environment.

The sixth chapter investigates the nature of social relations in the Jomon period and how these are expressed through burials, architecture and the structuring of space within settlements. The Jomon settlement record, including large numbers of different types of site, many excavated on a very large scale, is probably the best evidence we have for prehistoric hunter-gatherers of the temperate zone anywhere in the world. The notion of an underlying structural principle of dualism is proposed and explored through artefacts and the spatial arrangements of features such as hearths and graves. This idea is developed into a consideration of the nature of social differentiation in Jomon communities. Particular attention is paid to the large buildings now identified on many Jomon settlements. The development of social complexity among hunter-gatherers is an intriguing topic of interest to many contemporary archaeologists and Kobayashi makes a distinctive contribution to this debate.[19]

The seventh chapter examines the evidence for ritual activities in the Jomon period. The role of ritual or cult objects, notably stone bars and clay figurines, is discussed and the meaning of the great variety of figurines is addressed. In addition, the significance of jade, found widespread throughout the Jomon world, though deriving from just one known source in central Japan, is incorporated into Kobayashi's model of increasing ritualisation at certain times through the Jomon.

The eighth chapter draws on the material and ideas introduced in the previous chapters to further develop the idea of the socialisation of nature. The theme is enhanced by discussions of the conceptualisation of landscapes in the Jomon and the archaeo-astronomical significance of Jomon stone circles such as Oyu in northern Honshu. The importance of monuments in the Jomon is beginning to be recognised and Kobayashi provides some provocative suggestions which will fuel future debate on this fascinating topic.[20] The socialisation of nature in the Jomon is related to other phenomenological aspects of Jomon culture, in particular sound, and this chapter includes a discussion of the various musical instruments known from the Jomon.

Overall the book provides an accessible and innovative approach to the archaeology of Jomon Japan. It is offered as a contribution to the increasingly lively debate about the nature of Jomon worlds and their significance for understanding human prehistory.

Acknowledgements

The idea of publishing *Jomon Reflections* arose out of the Jomon Project, a series of linked initiatives which resulted in an exhibition of Jomon pottery at the Fitzwilliam Museum in Cambridge and a conference organised by the Sainsbury Institute for the Study of Japanese Arts and Cultures held in Cambridge and Norwich as part of Japan 2001. The aim of the Jomon Project was to bring Jomon archaeology to a broader non-Japanese audience, and the publication of the present volume continues this remit.

This book has benefited greatly from the assistance and support of the Sainsbury Institute for the Study of Japanese Arts and Cultures, and drew inspiration from the remarkable Jomon objects which form part of the collections of the Sainsbury Centre for Visual Arts. For this we are greatly indebted to the vision of Sir Robert and Lady Lisa Sainsbury. We are grateful to the Trustees, Management Board and Staff of the Sainsbury Institute, in particular Dame Elizabeth Esteve-Coll and the Director, Dr Nicole Rousmaniere, for their continuing encouragement of research into Japanese archaeology at the Institute.

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Figure 1.1 Japan in the 21st century

Chapter One
Introduction

Most of the world is familiar with the Japanese archipelago today, surrounded by the sea, blessed with a moderate climate and rich in flora and fauna. What the archipelago was like in the distant past, however, is less well-known. Using the results of more than a century of careful investigations, archaeology allows us to build a detailed picture of life in the prehistoric Japanese archipelago. And this picture presents the modern viewer with many surprises.

This book introduces the archaeology of the archipelago from the end of the last ice age, some fifteen thousand years ago, to the arrival of rice agriculture, nearly three thousand years ago. Archaeologists have named this period Jomon, after the pottery decorated with cord-marks which was produced in large quantities across the archipelago. This was long before the nation we now recognise as Japan appeared, and we usually call the people who inhabited the archipelago during this period Jomon people. Environmental conditions in what were to become the Japanese islands were very favourable for these Jomon people, enabling Jomon populations to rise to some of the highest densities known among prehistoric hunting and gathering peoples, as well as providing the basis for the energetic cultural manifestations of the Jomon, traces of which are painstakingly recovered and recorded by modern archaeology.

Life was not always easy for Jomon people. The Jomon period was punctuated by natural disasters including fearsome volcanic eruptions and witnessed dramatic, if longer-term, environmental changes including shifts in temperature and climate. Widespread epidemics also on occasion helped to shape the trajectory of Jomon prehistory. In the face of such adversities, however, the strength of the multiplicity of Jomon cultures endured, forming a relatively uninterrupted tradition lasting over ten millennia.

Just as the modern nation of Japan has taken its place in world affairs, we can ask how the achievements of the prehistoric inhabitants of the Japanese archipelago compare with the rest of the world. With the establishment of modern environmental conditions across the Old World following the end of the last ice age, a series of civilisations rose and fell around the Mediterranean, in Egypt, Mesopotamia, India and China, setting the world on a remarkable course of ever more rapid development and change.

The traditional view has been that during the Jomon, while Pharoahs ruled in Egypt and until Confucius was advising the rulers of small warring states in China, not much was happening in the Japanese archipelago. Prehistoric Japanese culture seemed rather unchanging, perhaps even stagnant, hardly a player on the world stage of competing civilisations accompanying social, technological and economic innovation. Not until the end of the first millennium BC was this quiet backwater drawn into the historical

drama that was shaping East Asia as China was unified under the First Emperor and subsequently the Han Empire, bringing rice agriculture, metal working and the establishment of a new cultural formation, the Yayoi, to the archipelago. As the newly emergent leaders of regional polities in the archipelago, such as Queen Himiko of Yamatai, named in early Chinese chronicles, began to send envoys to the Chinese courts, the Japanese archipelago belatedly began to appear in world history.[1]

The viewpoint adopted in this book, however, suggests a rather different scenario. It will be argued here that the Jomon period was not merely a long succession of relatively low-level cultures, marking time in the absence of any major developments. Instead we view the Jomon as a time of considerable cultural creativity, established on stable ecological and social foundations that were well-suited to, but not determined by, the environmental conditions of the archipelago. In the course of this fascinating period, cultural manifestations became increasingly refined, embedded and distinctive. While wishing to avoid any cultural essentialism, and while recognising the many traits Jomon communities shared with small-scale non-agricultural peoples elsewhere through history, we will consider what underlies the individual and particular nature of the Jomon tradition.

Many renderings of the history of the Japanese archipelago, and of Japan itself, are based on a notion of history as progressive, an underlying theme often being Japanese efforts to catch up with the rest of the world and surpass the cultural level of previous eras, the understanding of that cultural level being determined by comparison with other countries. The degree of success in these endeavours is often measured in terms of speed of development. This can clearly be seen in accounts of the Meiji Restoration, which saw the rapid adoption of what were regarded at the time as the essential elements of the modern nation state, and also in the period following the end of the Second World War, with the implementation of the machinery of western democracy. Culture and economy were progressed in accordance with externally-derived ready-made sets of values. Discussion of the economic stagnation of the past decade, compared with the post-war boom, has been shaped by the same discourse of progress, the most prominent voices declaiming the stalling of the rate of development.

Human cultures are very diverse, each with their own individual traits and each following their own independent paths. This diversity, however, was threatened by the appearance of agricultural civilisations which had a tendency to expand beyond the areas where they first developed, encroaching upon surrounding areas and following a trajectory of unidirectional development. The ever-increasing comfort of at least some of the people involved in these agricultural civilisations becomes the measure by which the success of these civilisations is gauged. Nature becomes domesticated, controlled and over-exploited. These were the conditions which gave rise to modern science, the mechanical application of which further spurs on the homogenisation of culture and economy around the world at the expense of diversity. This process, set in train by the agricultural revolutions of prehistory, is now seemingly unstoppable and irreversible.

In our increasingly globalised world, it is perhaps difficult to see how archaeology can assist in the resolution of the deadlock and inertia to which the power of progress has brought us. Any actions we take to try and change the seemingly inevitable course of events seem ineffectual and ephemeral. What is needed is a fundamental reassessment of our understanding of the development of human cultures which sets diversity at the heart of a global human history.

It is in this way that archaeology has a great contribution to make. Careful excavation and research has gradually revealed the world of the Jomon to us and recent discoveries in particular are forcing archaeologists themselves to reconsider the nature of Jomon culture. Through the medium of archaeology, the Jomon is attempting to break its long silence to speak to the modern world.

This re-evaluation of the Jomon is still going on. Until recently the Jomon was regarded as a relatively unchanging, stagnant, cultural tradition based on hunting, fishing and gathering, which was not even able to make progress towards an agricultural economy. It is now clear, however, that Jomon people led lives far removed from those of typical hunter-gatherers, characterised by the philosopher Hobbes as being nasty, brutish and short, frequently moving from place to place in pursuit of elusive foodstuffs in a hand-to-mouth existence.[2] In fact many Jomon people lived in established village communities and were expert in a variety of technologies which allowed them to develop a rich and substantial material culture. Debate over whether or not the Jomon were really hunter-gatherers, or whether they were in fact dependent on cultivated plants and domesticated animals has gone on for many decades. As we will see in Chapter Five, there is now good evidence that Jomon people were indeed manipulating the resources available to them in the natural environment to some degree. Whether this represents full-blown agriculture or farming still seems unlikely and a more useful concept for understanding the Jomon subsistence economy is that of wild gardening.[3] A few archaeologists have perhaps been over-enthusiastic in suggesting that some Jomon people were in fact farmers before we have much hard evidence in support of this hypothesis, while others are as emphatic in their denial of the possibility of Jomon agriculture. And yet the intriguing discoveries of the remains of apparently domesticated plant species such as gourds, perilla and green gram do point to some form of cultivation in the Jomon. The approach adopted in this book avoids the progressive evolutionism implicit in much of this debate and at the same time allows the achievements of the Jomon cultural tradition to be appreciated on their own terms.[4]

We must be careful not to confuse cultivation with agriculture. Agriculture requires the bringing together of many disparate elements into an organised economic system. The intention is to increase the return from the cultivation of an increasingly restricted range of crops through the careful management of time and human labour. Agricultural systems require a social structure which enables the production of these increased returns to be organised in the most efficient fashion. Often the territorial expansion characteristic of many agricultural systems leads to conflict over land between communities and societies, part of a process which leads to greater regional integration and eventually to the establishment of nation

states. The cultivation which took place in the Jomon was qualitatively different to the agricultural regimes based on rice farming which developed first in China and then spread to the Korean peninsula and subsequently to Japan. Jomon cultivation formed part of a carefully planned and managed set of subsistence strategies which made use of as wide a range of resources as possible and which provided the basis for the stability of the Jomon tradition. In the progressive discourse, agriculture is normally regarded as being superior to or more advanced than other subsistence strategies. As part of our questioning of the assumptions underlying this discourse, we need to consider what Jomon subsistence strategies can tell us about the relationship between humans and nature, and perhaps readdress the pre-eminent position normally afforded agriculture in human history.

In order to undertake these tasks, we must not stop at collecting very detailed information about food, clothing and shelter in the Jomon just for our own intellectual satisfaction. Instead, we need to think about the significance, meaning and value of our knowledge of Jomon culture in the modern world. We can then begin to bring this knowledge to bear on some of the apparently intractable issues which we face today. It is for this reason that a greater and broader understanding of the Jomon is of such importance, and it is in this spirit that the present study is presented to an international audience.

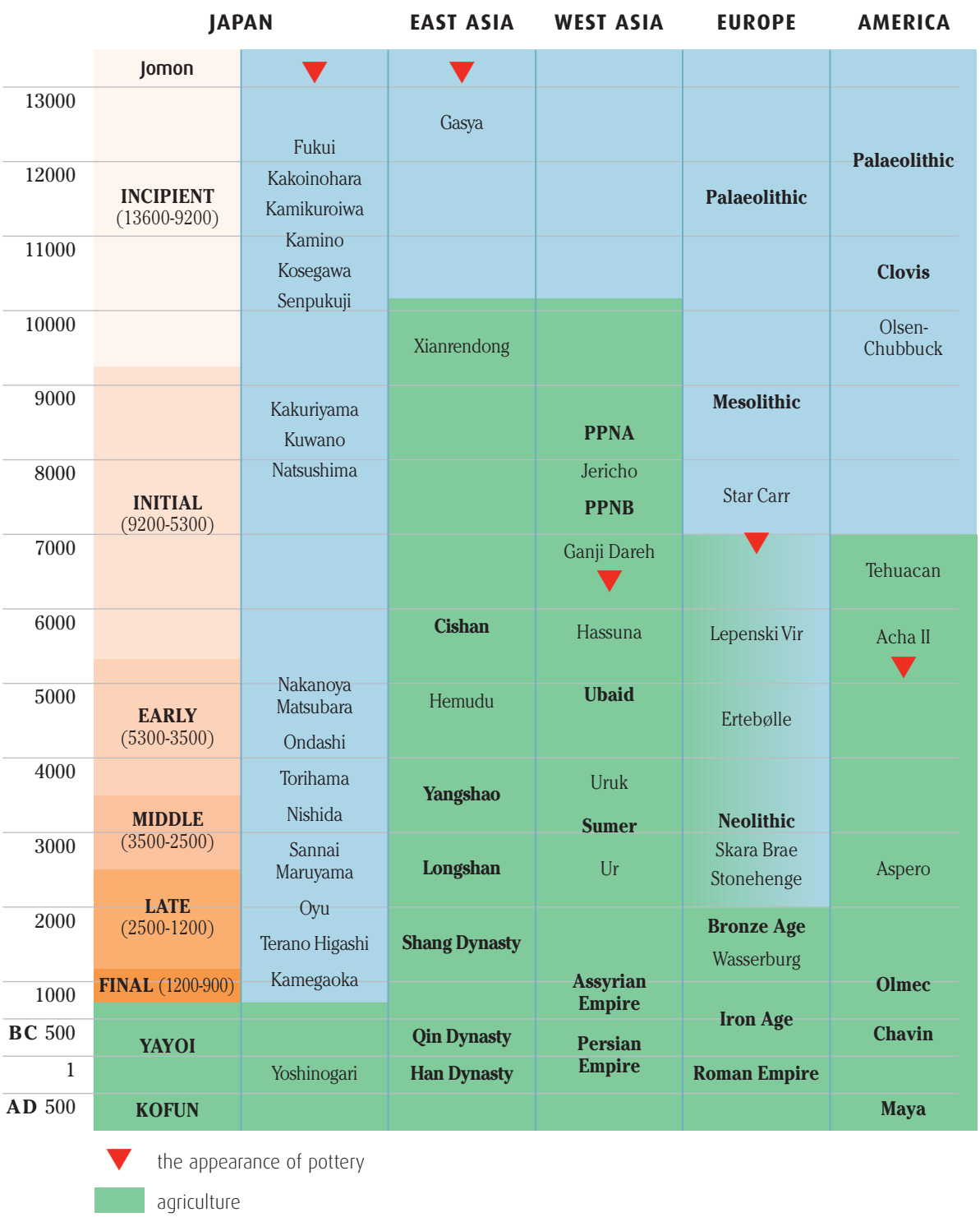


Figure 1.2 Timeline of the Jomon in the context of world archaeology

Figure 2.1 Map showing sites mentioned in Chapter Two

Chapter Two

The beginnings of the Jomon revolution

From about fifteen thousand years ago, the world started to emerge from the long Ice Age as temperatures gradually increased. It was a time of major events in the history of the Japanese archipelago resulting in dramatic changes in the lifestyles of the Stone Age inhabitants of the islands, including the use of pottery and archery, the domestication of the dog and the invention and adoption of revolutionary new technologies and tools. This was the time when the very long Jomon period began, starting with the Incipient Jomon, and continuing into the Initial and Early phases, and on into the Middle, Late and Final stages, a period with a history lasting over twelve thousand years.[1]

The dawn of a new culture

Current evidence suggests that the Japanese archipelago was occupied by human beings at least thirty thousand years ago. It is possible that there was even earlier occupation, and indeed we know that the East Asian continent was home to earlier forms of human beings, including *Homo erectus*, more than half a million years ago. Reliable discoveries of remains from the early part of the Palaeolithic period, however, have yet to be made in the archipelago.[2]

By about thirty thousand years ago, the Palaeolithic inhabitants of the archipelago were making stone tools which had relatively standardised shapes (Figure 2.2). We can recognise a series of forms in these early toolkits, including spearheads for hunting game, blades with sharp edges for cutting meat and other materials, scrapers perhaps for working bone and animal hides, and awls for piercing skins. Many of these tools were based on the development of stone-working technology to make blades. These blades were made by people who carefully selected their raw materials, and who could

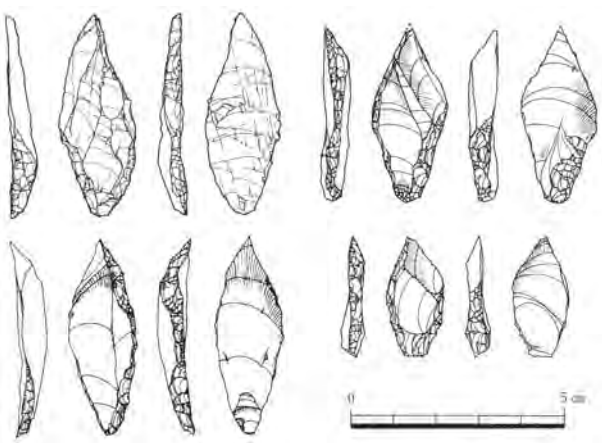


Figure 2.2 Palaeolithic stone tools from Yanagimata A, Nagano Prefecture. These knife-shaped backed blades are typical of the standardised stone tools made from about 30,000 years ago.

envisage the form of stone tool they wanted to make even before they started knocking flakes off the lumps of stone they were working. The first stage of producing these standardised shapes was to prepare a core from the stone lump from which regular and predictable blades could be struck.[3]

In Europe, the appearance of blade technology and the development of standardised forms of stone tools represent the start of the Upper Palaeolithic, although these advances were still based on the removal of blades from stone cores. In the Japanese archipelago, at the same time as blade technology appeared, stone tools, in particular axes, whose edges were partly polished were also made. Polished stone tools are made in a very different way from flake tools. Their manufacture requires that the surface of the tool be ground down to leave a smooth, polished finish. Polished stone tools do not appear in Europe until the Neolithic, along with agriculture and pottery. This distinction hints at the major differences between the European archaeological sequence and the prehistory of the Japanese archipelago. One of the themes that we will follow in this book is the distinctive aspects of the archaeology of the early inhabitants of the Japanese islands who, although their cultures shared some characteristics with stone age cultures elsewhere in the world, from early on developed some rather independent features.[4]

Shortly after sixteen thousand years ago, a new form of stone tool began to appear in the archipelago. These were much smaller than the knife blades which had been made previously, and were often only a few millimetres in length. These so-called microliths were designed to be set in wooden hafts along with other microliths, to make what archaeologists term composite stone tools (Figure 2.3). These tools were sharp, adaptable and well suited to the changing conditions which began to prevail towards the end of the last Ice Age. Although the wooden and bone hafts, into which the microliths were carefully set in fine grooves, rarely survive, the tiny stone blades are found across a broad region of northeast Asia,

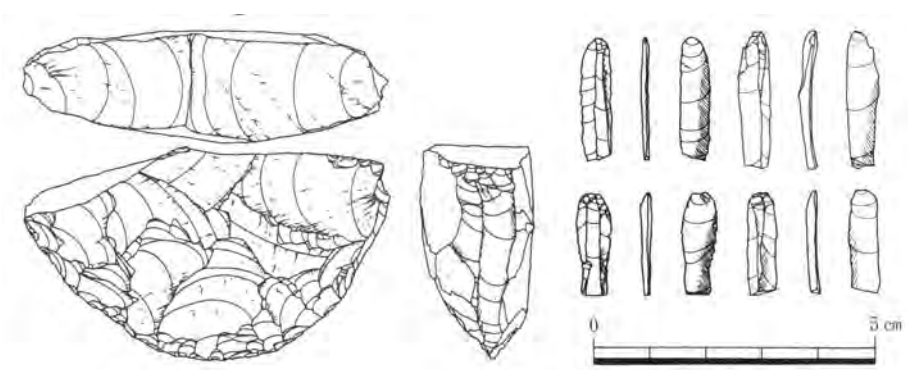


Figure 2.3 Microlithic stone tools. (Left) A stone core and (right) microblades from the final Palaeolithic at Yanagimata A, Nagano Prefecture. From about 16,000 years ago, very small stone tools often made of stone such as obsidian and andesite, were made for use in composite implements.

incorporating the area now comprising the Japanese archipelago. Some of the individual islands we know today were joined together and to the continent by land-bridges, exposed by the lower sea-levels which resulted from a large proportion of the water in the world being frozen in the polar ice caps and glaciers during long periods of the Palaeolithic. The microliths found on Japanese Palaeolithic sites represent part of what we can describe as an early international culture, although of course it would be millennia before the nation states which currently occupy East Asia actually came into being. The use of microliths formed an important background to the subsequent development of Jomon culture.

In the summer of 1960, an important discovery was made which cast light on the end of the Palaeolithic and the beginning of the Jomon culture. Serizawa Chosuke and Kamaki Yoshimasa were undertaking archaeological excavations at Fukui Cave in Nagasaki Prefecture in the western part of Kyushu.[5] They identified a series of three cultural layers beneath a modern layer of soil, apparently late Palaeolithic in character, containing microliths. What was of very great significance, however, was their discovery in the upper part of the first cultural layer of some fragments of pottery bearing what has come to be known as fingernail-impressed decoration (*tsumegatamon*), made using a fingernail or a tool which left a fingernail-shaped impression in the clay, and just below this, in the second layer, they found some pottery decorated with thin strips of clay, subsequently termed appliqué linear relief pottery (*ryusenmon*). Below this, the third cultural layer contained no pottery sherds, although it did produce microlithic stone tools. This stratigraphic sequence of cultural layers demonstrated for the first time that there was a direct continuity from the late Palaeolithic to the pottery-using Jomon, and that at least some of the people responsible for microlithic culture were among the first to make pottery in the Japanese archipelago.[6]

In the great historical scheme of things, this transfer from old Palaeolithic to new Jomon cultures took place over twelve thousand years ago according to radiocarbon dating. By the end of the 1960s this was largely accepted by Japanese archaeologists. During the 1970s, Aso Masaru investigated archaeological deposits within Senpukuji Cave, like Fukui Cave in Nagasaki Prefecture.[7] There, from a layer beneath that in which he found microliths mixed with linear relief pottery, he found pottery with small beads of appliqué clay as decoration, now known as bean appliqué pottery (*toryumon*).

Then, in 1979, some sherds of undecorated (*mumon*) pottery were discovered in the upper layers of the Kanto loam at Kamino in Kanagawa Prefecture (Figure 2.4).[8] At the time, these remains were considered to represent the oldest pottery yet found in the archipelago. Microliths and spearhead-shaped stone points were discovered along with the undecorated pottery at Kamino. From the layer above came some sherds of pottery with linear relief decoration. In the summer of 1980, during excavations by Kokugakuin

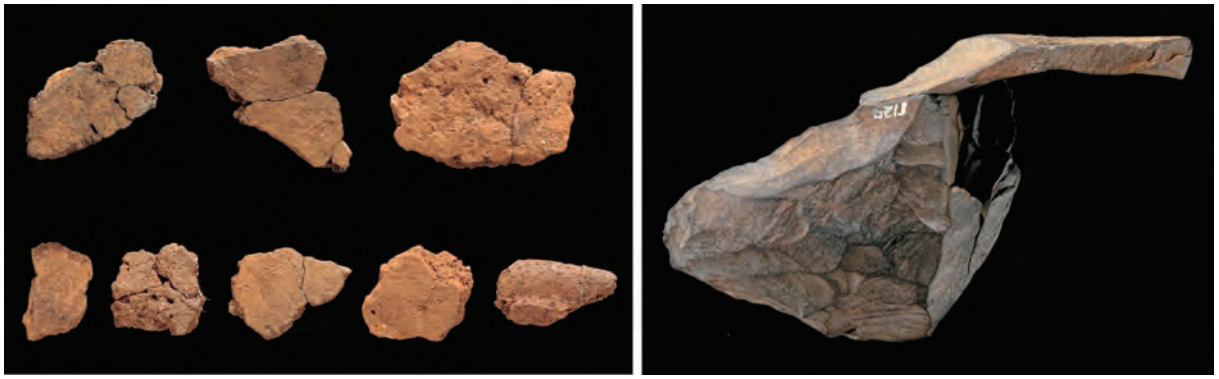


Figure 2.4 Incipient Jomon pottery and stone tools from Kamino, Kanagawa Prefecture. By the 1970s the great antiquity of pottery from the Japanese archipelago was widely accepted. These fragments of undecorated pottery were found in association with microlithic stone tools, demonstrating continuity between the Palaeolithic and the Jomon. Stone tools were made at Kamino and it is possible to reconstruct the sequence of manufacture by refitting the blades to the cores from which they were flaked. Width of top right, 3 cms. Height of refitted piece, 4 cms.

University at Jin in Niigata Prefecture, sherds of linear relief pottery were found in the layer below the layer containing fragments of pottery decorated with holes pierced through the body of the vessel (*enkomon*) (Figure 2.5).[9] From the layer below pieces of undecorated pottery were discovered. Gradually a sequence of very early types of pottery was being constructed.

The great Australian-born archaeologist V. Gordon Childe considered that the invention of pottery represented the first deliberate use of chemical transformation by humankind. While this gave the development of pottery a special significance in the story of the development of human technology, it does not provide a sufficient account of the various important, indeed revolutionary, implications of the appearance of pottery in human history.[10]

Firstly, pottery allows clay to be used for a whole new range of types of object, not restricted to containers. When fired, clay becomes waterproof through a process of chemical transformation. In the Palaeolithic people already used containers of one sort or another. We know that people in the European Palaeolithic made fired clay figurines, known as "venuses", for example at Dolni Vestonice in central Europe. Along the Nile in Africa there are examples of clay fired sufficiently to have been waterproof dating to the Upper Palaeolithic.[11]

People used containers long before pottery appeared and even today societies which do not use pottery still make containers from other materials. These include bags made out of animal skins, baskets and

Figure 2.5 Incipient Jomon pottery from Jin, Niigata Prefecture. The discoveries at Jin confirmed the stratigraphic sequence of different types of pottery in the Incipient Jomon. (Upper) Pottery with pierced decoration (enkomon). Height of sherd on left, 10 cms. (Centre) Pottery with linear relief decoration (ryusenmon). Height 9 cms. (Lower) Undecorated pottery (mumon). Height 10 cms.

boxes made from tree bark. Although they do not survive, it is very likely that containers made of materials such as these were made in the Palaeolithic. Pottery is therefore significant as it represents a whole new technology rather than because it allowed new types of artefacts to be made.

Pottery was very different from the existing tools, which were made from stone, wood, bone and horn, in other ways than just the way it was made. Namely, these other materials were worked through a process of reduction, by cutting and carving, chipping or grinding, and the object was given form as the original amount of raw material became smaller. On the other hand, pottery is created through a process of adding lumps of clay together, in an accumulative fashion, the direct opposite of the method used to work stone and other materials. Kimura Shigenobu has called these two types of forming processes the "subtraction method" and the "addition method" respectively.[12]

Moreover, when making stone tools, it is not possible to re-attach flakes which have already been struck off the core. The stone-knapper cannot return to the previous stage in the production of the object. Accidents cannot be repaired. The potter, on the other hand, is free to start again, returning an unsatisfactory shape to the amorphous lump of clay whence it was summoned up in the first place. The potter can make adjustments and alterations at any stage while the pot is being formed. In this way, pottery making was of a quite different character to the technologies available until then and represents a structural change in the history of human technology.

Therefore for Jomon people pottery was not merely a new form, but provided a whole new freedom of expression, a new canvas upon which to express their world view. In other words, Jomon pottery, while undeniably functioning as important everyday containers, also had a weighty cultural role to play.

In this way, pottery, as well as representing a major technological advance, opened up many new social and cultural dimensions which were not available to the pre-ceramic Palaeolithic cultures. While the origins of pottery production and use are to be found in the context of the late Palaeolithic, and accepting that there was continuity between the Palaeolithic and later occupation in the Japanese archipelago, the appearance of pottery represents the dawn of the Jomon and heralded the beginning of the Jomon revolution.[13]

There are still many aspects of the actual dynamics of this Jomon revolution which remain uncertain, still many details over which archaeologists continue to quibble. Until the eve of the revolution, the Japanese archipelago was part of a microlithic culture which was spread across much of northeast Asia, indicating

Figure 2.6 Stone tools from the Incipient Jomon. (Clockwise from top left) Tanged points from Takada Kakiuchi, Nara Prefecture. Arrow shaft straighteners from Kitano Uchikatabiro, Nara Prefecture. Chipped stone axes, length of axe on right 19 cms. End scrapers, semilunar stone tool, 8 cms long, and spearhead. Arrowheads (above) and stone awls (below). Lower right, 7 cms long. Artefacts in lower three panels from Kosegasawa cave, Niigata Prefecture.

a strong communality with the mainland. Therefore, the Jomon revolution did not arise from a microlithic culture which was isolated in the archipelago, nor was it the result of just a single wave of influence from the continent, but rather several phases of intervention and interaction.[14] This resulted in many kinds of diverse tool assemblages appearing in the archipelago, flourishing and disappearing with a bewildering rapidity. A whole gamut of stone tool forms came and went, many of which failed to win an established place in the tool kits of the Jomon (Figure 2.6). These included: half-moon-shaped stone tools; smooth stones with a central groove, thought to be for straightening arrow shafts; blades with straight edges; triangular pointed tools which were probably used for drilling holes in a variety of materials; large, partly polished stone axes; small flat stones pierced by a central hole; and small pebbles bearing some incised lines, considered to be early stone figurines, to which we will return in Chapter Seven.[15]

Figure 2.7 Incipient Jomon artefacts from southern Kyushu. (Upper) Pottery decorated with raised clay ridges (ryutaimon) from Shikazegashira, Kagoshima Prefecture, height 26 cms. (Centre) Gouge-shape polished stone axe from Kakoinohara, length 15 cms. (Lower) Quern from Kakoinohara, length 54 cms, weight 39 kgs. These artefacts are indicative of a relatively stable lifestyle in southern Kyushu over 11,000 years ago.

Of course the late Palaeolithic cultures of the East Asian continent were not just one single monolithic entity, and this diversity of new types of stone tool derived from various culture zones, brought into the archipelago perhaps along the route from eastern Siberia into Hokkaido, or across the land-bridges and narrow channels which were to become the Tsushima straits, into Kyushu from the Korean peninsula. There is an epic tale to be told of these important tool types overlapping with each other, with only the best and most appropriate ones

selected along the way, the others being weeded out. It was a busy time of adoption and assimilation of cultural traits from the continent, all of these new influences forming a melting pot from which the cultural power of the Jomon was forged, and it was this cultural power that brought success to the Jomon revolution.

From mobility to sedentism

One of the classic sites from the dawn of the Jomon revolution is Kakoinohara in Kagoshima Prefecture. Until recently it was thought that Jomon culture had developed in eastern Japan, but it is now known that there were a number of large very early Jomon sites in southern Kyushu. In October 1993, the Kaseda City Board of Education reported new discoveries from the site of Kakoinohara which were clearly of the greatest significance for understanding the beginning of Jomon culture.[16]

The site was covered by layers of volcanic tephra, material ejected from the depths of the earth in the violent eruption of the nearby Sakurajima volcano, whose active peak still dominates the skyline of south Kyushu. Each volcanic tephra layer can be dated scientifically to a particular episode of eruption, and a sequence of layers is often given a name. Named after this region of southern Kyushu which, throughout much of subsequent Japanese history has maintained a distinct identity within the Japanese archipelago, the Satsuma tephras which overlie the archaeological remains from Kakoinohara date to about eleven thousand years ago. This means that the site itself must date to before this, flourishing before the volcanic eruption which produced the tephras. The quantity and range of different types of artefacts discovered at Kakoinohara were remarkable, including: over one thousand sherds of pottery decorated with raised lines of clay (*ryutaimon*); arrowheads; stone axes, both partly polished and flaked; and quernstones and grinders for processing plant foods (Figure 2.7). These unprecedented discoveries meant that archaeologists have had to rethink their understanding of the start of the Jomon.

In addition to the artefacts at Kakoinohara, there were three hearths, each comprising a setting of stones arranged in a boat-like shape (Figure 2.8). These were very different from simpler square or round hearths, and some attention needs to be paid to their distinctive structure. The orientation of these hearths was significant and may contain some keys to understanding the thinking of the people who built them.

It would appear from the careful structuring of space that these places were not for a single use, and that they had been carefully placed to make best use of the slope, maximising the daylight, and other elements: this was already carefully designed space (Figure 2.9). This suggests that Kakoinohara was

Figure 2.8 An Incipient Jomon boat-shaped hearth from Kakoinohara, Kagoshima Prefecture. Length 75 cms. A number of hearths and pits were discovered at Kakoinohara suggesting that people in the Incipient Jomon people were experimenting with new ways of cooking, including smoking and boiling.

already the focus of longer-term activity, which may be described as sedentary, in contrast to the temporary camp sites which were more common in the late Palaeolithic.[17]

The diversity of artefacts is one clue to this. As with us in the modern world, with all of our material possessions as baggage, moving is not such an easy matter. Bidding farewell to the Palaeolithic lifestyle which involved frequently moving, Kakoinohara is part of the story of the start of a new type of lifestyle strategy.

Although we know about many sites of a similar date from most parts of the archipelago, none of them have the relatively large quantities of pottery found at Kakoinohara. Indeed, there are so many pots represented in the assemblage from Kakoinohara that we might think that the people living there were doing little else than make pottery. Some of the pottery sherds had carbonised remains attached to them and showed signs of discoloration through secondary firing, suggesting that they were used in the cooking up of stews, perhaps similar to *nabe*, one of the mainstays of later traditional Japanese cuisine. If the people of Kakoinohara were indeed boiling foods, as this evidence indicates, it was as part of a new subsistence regime which included the use of new types of food, in particular plants which could not be eaten raw. The ability to process and eat plant foods was an important factor in the development of the increasingly sedentary lifestyles of Jomon Japan.

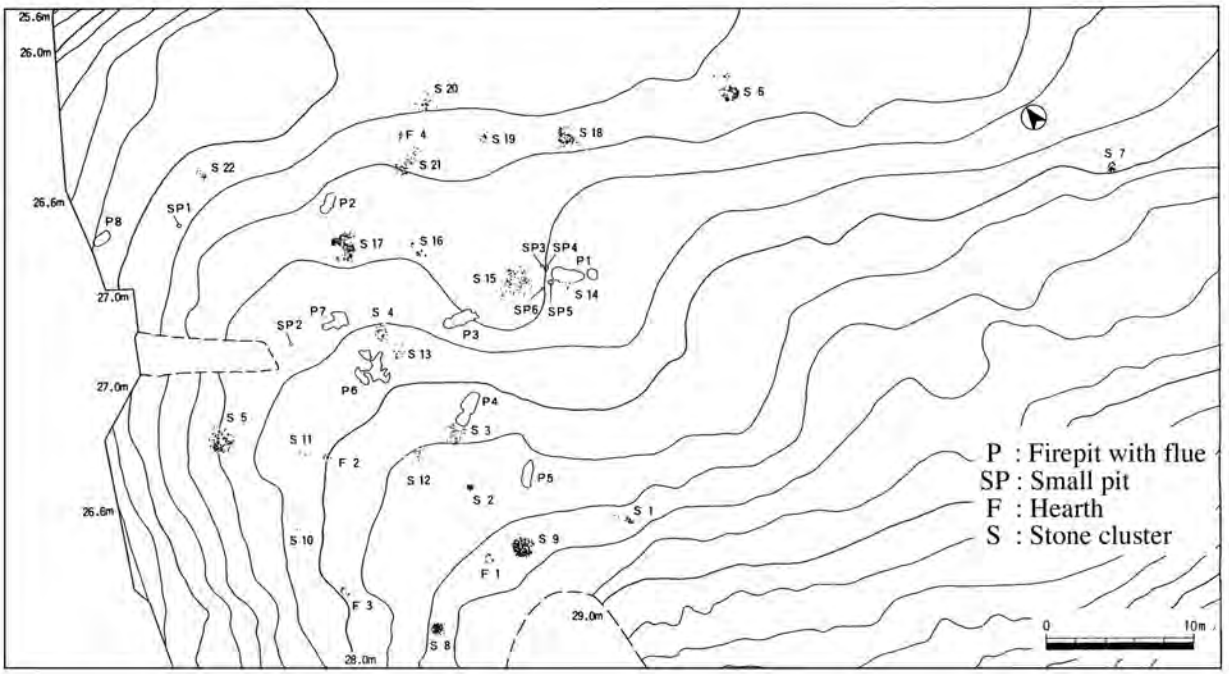


Figure 2.9 Plan of the Incipient Jomon settlement at Kakoinohara, Kagoshima Prefecture. One of a number of sites across southern Kyushu where people were able to support themselves in a single location for an extended period of time.

The group that lived at Kakoinohara did not live in isolation. A series of sites are now known from about the same time, including Sojiyama in Kagoshima City, indicating a band of sedentary occupation across southern Kyushu.[18] Specific characteristics are also visible in the decorative styles and vessel forms of the pots from these sites, indicating a strong degree of local cultural identity at this time.

These finds suggest that this part of southern Kyushu was at the forefront of the Jomon revolution, taking a lead in establishing the world of the Incipient Jomon. Discoveries at the Okunonita site on the island of Tanegashima in the Pacific off the south coast of Kyushu, demonstrate that these early Jomon people did not hesitate to cross the sea and spread their culture to new territories.[19]

Figure 3.1 Map showing sites mentioned in Chapter Three

Chapter Three
The appearance of pottery

According to radiocarbon dating, the pottery fragments from sites in the Japanese archipelago are the oldest dated pottery in the world.[1] Understanding the appearance and development of pottery is one of the major themes for Jomon archaeology, but there is still no real clear understanding of how pottery came to be such an important part of Jomon culture, and several key issues need to be addressed.

Firstly, was pottery actually invented in the Japanese archipelago? Scholars such as Kato Shinpei have suggested that the emergence of pottery should be seen in the context of the rich environments offered by Kyushu at that time, where the warm temperate forests produced abundant quantities of chestnuts, walnuts and acorns (Figure 3.2).[2] Recent discoveries of village sites early in the Jomon and the early radiocarbon dates from sites such as Fukui Cave in Nagasaki Prefecture seem to support this theory.[3]

The second possible scenario, however, is that pottery was invented somewhere else in continental East Asia and then spread to Japan through a process of diffusion. This was a view long held by the doyen of Jomon archaeology, Yamanouchi Sugao.[4] Sato Tatsuo, following Yamanouchi's methods, compared pottery from Kosegasawa Cave in Niigata Prefecture with punctuate (*kamon*) and stick-impressed (*heramon*) designs to pottery from sites in eastern Siberia and on the Korean peninsula, and concluded that these materials were indeed ancestral to Jomon pottery.[5] Sato's findings were followed up and seemingly confirmed by the work of Okamoto Tozo.[6] Recent research on the continent has demonstrated, however, that the pottery which Sato considered to be ancestral to the Jomon, is in fact later in date than Jomon pottery, indicating that the pottery from the Japanese archipelago is in fact older. This is instead probably a case of the independent but parallel evolution of similar technologies.

Figure 3.2 Blessings of the Jomon forest in spring. Part of a diorama showing some of the plant foods which became available at the beginning of the Jomon and which needed to be cooked in new ways using pottery.

A third possibility is that Jomon pottery has multiple origins, a thesis propounded by Serizawa Chosuke[7] and which is supported in this book.[8] Looking at the origins of pottery in the Neolithic Middle East, this option seems to be very viable. One further theory is that pottery appeared in a number of different locations across East Asia, one or several of which were located in the Japanese archipelago. [9]

From the outset, pottery in the Japanese archipelago was used for cooking. The pottery from Kakoinohara in Kagoshima Prefecture demonstrates this very well.[10] The clay was discoloured, made red and white by being heated up through cooking, after being fired in a bonfire, and the pots themselves contained the remains of some carbonised foodstuffs. This is very different from the earliest pottery from Western Asia, dating to some eight thousand years ago.[11] In this region deep pottery jars were used for storage and shallow dishes for serving. We will return to these differences below.

The conditions for the invention of pottery – the springboard principle

As we have already seen, the social and cultural contexts of the invention of pottery require that two conditions be met. The first is the presence of the technological basis for pottery manufacture, and the second is the perceived need to make pottery. These two conditions provide the necessary stepping stones leading to the invention of pottery, using what is here called the 'springboard principle', a term derived from the psychologist Wolfgang Kohler, who undertook some famous experiments in this area. [12]

Kohler undertook the following experiments with chimpanzees. A hungry chimpanzee was placed in a cage in which a banana was hung high up out of reach. A stick was also placed in the cage which eventually caught the attention of the peckish creature. The chimpanzee picked up the stick and used it to beat the inside of the cage. In the midst of this beating, the banana was knocked down. Once the chimpanzee had worked out that the stick could be used to dislodge the banana which was otherwise tantalisingly out of arm's reach, the banana was hung even higher, out of reach of the hapless primate even with the stick. This time, however, a box of a suitable height was placed in the cage. Clambering on to the box and using it as a springboard to leap into the air, the chimpanzee, still aided by the stick, was once again able to get hold of the banana.

This experiment with the stick and box is perhaps analogous to the process of discovery which led to the invention of pottery. The awareness of the potential uses of the stick and the box are perhaps comparable to awareness of some of the qualities of clay, water and fire, each of which were probably used independently in the Palaeolithic. Add the need for watertight containers in which foodstuffs could be

heated over an open fire and some enquiring and observant minds looking for solutions, and it is possible to envisage the opportunities offered by pottery being realised as all of these various elements are brought together, providing the springboard for the final leap to making earthenware vessels.

We can think of several variations on this theme. For example, Israeli scholar Ruth Amiran took the hint about the development of pottery manufacture in West Asia from bread making. Take some grains and mix with water, form, and lastly bake – this process of making bread is very similar to making a pot. And indeed pottery making started along with sedentary agricultural villages, dependent on food made from grains, such as Hassuna in Iraq and Jericho in Jordan. Another comparable scenario is suggested by Miyashita Kenji.[13] He thinks that the observations and actions involved in the processing of nuts may have provided the springboard to pottery making in the Japanese archipelago: grinding and preparing the nuts themselves, mixing the ground nuts with water, forming into nut cookies, and then baking ready to eat. This time it concerns the processing of nuts: first mix with water, then form and bake for eating – again very similar to pottery manufacture.[14]

In some of the houses of the West Asian Natufian culture, built by hunters and gatherers who, like the Jomon, were able to live in one place all year round due to the abundance of natural food resources, we find large storage pits dug into the house floors.[15] These Natufian people did not make pottery vessels. Some of the storage pits are lined with clay and clay rims protrude above the mouths of others. Many of these clay-lined pits are located close to ovens and it is quite likely that the clay became fire-hardened through their proximity to the heat the ovens gave out. Perhaps here we have a clue to the origins of pottery making in this region.

In the summer of 1978, while visiting the Canadian archaeologist Philip Smith who was at the time working in Iran, Kobayashi saw the artefacts from his site at Ganji Dareh. Accompanying the oldest pottery from this site was clay from the walls of a house which had burnt down. This had ended up in one of the storage pits and was just the same as the pottery.[16]

Returning to our main theme, we think that pottery was probably invented through a number of different processes in different parts of the world. What we do not yet have, as we do for the Americas and the Near East, is precise evidence for how this happened in East Asia. In the North American southwest the earliest pottery apparently derives from the clay linings of baskets, one more scenario for the appearance of pottery.[17]

Figure 3.3 Shell midden deposits at Natsushima, Kanagawa Prefecture. Dating to about 9000 years ago, this is one of the oldest shell middens from the archipelago. The radiocarbon dates from Natsushima were among the first from Japan and suggested that the Jomon lasted much longer than previously thought. Careful stratigraphic analysis of the shell deposits supported the stylistic analysis of the pottery sherds they contained, showing how pottery styles changed through time.

Why make pottery?

As we discussed in Chapter Two, the development of pottery represented a technological revolution.[18] In addition to this, however, the invention of pottery was also of great social, cultural and economic significance. Perhaps of greatest importance was the way that pottery enabled a dramatic increase in the range and quantity of food that could be prepared and consumed.

In the cooler temperate zones, plant foods make up approximately two-thirds of the diet of hunter-gatherers. However, the majority of plant foods have to be processed and cooked before they can be eaten, requiring special equipment as well as a knowledge of the transformative qualities of fire. This is especially the case when the use of plants as food increases. For example, mountain vegetables are especially sought after by Japanese gourmets at present. And yet in many of these plants, large quantities of toxins are present, and so they cannot be eaten raw. Another popular plant, a variety of vetch, can be eaten if

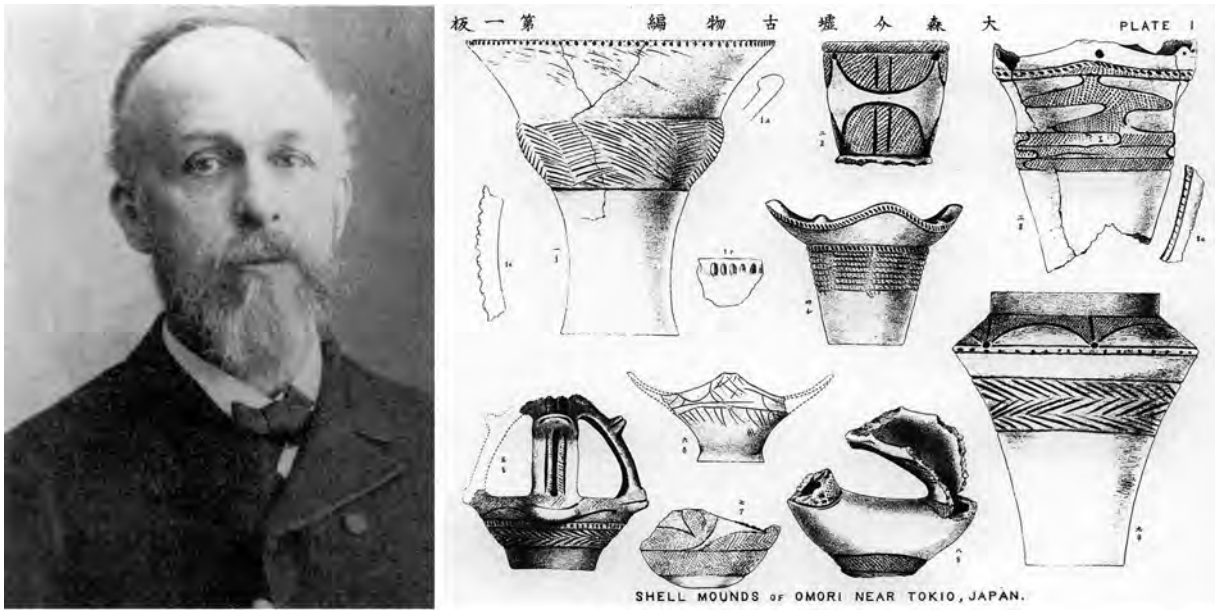


Figure 3.4 Edward Sylvester Morse and illustrations of the cord-marked pottery he discovered during his excavations at the Omori shell midden in 1877. His report was the first scientific account of archaeology in Japan.

cooked in oil, but cannot be consumed just in its natural state. Young green soy beans, which these days are a very popular snack and taste particularly good with a glass of cold beer, have to be boiled before they can be eaten. We know that Jomon people were very dependent on acorns, which again have to be boiled for an extended period to remove the poisonous tannins before they can be used in cooking.[19]

Starting with boiling, the use of pottery facilitated a rapid change in the range of foods people could eat. These new foodstuffs were not, however, restricted to plants. Although they probably started to be consumed a little after plants, shellfish also became a very important Jomon food. There is no evidence that shellfish such as clams were eaten until the end of the Palaeolithic. Shellfish only began to be consumed in large quantities by people in the Initial Jomon. By boiling up a soup in their pots, Jomon people were able to get the shellfish to open and so eat the meat inside. One of the oldest shell middens in Japan was discovered at Natsushima in Kanagawa Prefecture (Figure 3.3).[20] The site is now well known in Japanese archaeology as being where the first radiocarbon date from the archipelago was obtained. This date suggested that during the Initial Jomon early forms of cord-marked pottery (*yoriitomon*) were being made over nine thousand years ago, and its publication stimulated a major debate in Japanese archaeology about the credibility of this new dating method.[21]

The oldest layers at Natsushima contained eighteen species of shell including oysters, ribbed cockles, freshwater clams, rock shells and red-mouthed purpura.[22] Occupied at the time when the Tokyo Bay we know today was still forming, Natsushima is evidence that Jomon people were exploiting marine resources from very early on. The appearance of shell middens such as Natsushima is evidence for this major change in foodstuffs among Initial Jomon people. Prior to the development of marine foodstuffs, the people living at the Kosegasawa Cave in Niigata Prefecture during the Incipient Jomon were already collecting freshwater shells, such as freshwater pearlshells, the meat from which they consumed along with that of other freshwater fish.[23] Pottery also offered new ways of preparing animal meat. Boiling results in less flavour being lost than roasting over hot stones, the method used to cook meat in the Palaeolithic. In addition, it was possible to season meat cooked in pottery vessels, thus extending the repertoire of Jomon meat cuisine beyond the *yakiniku* or strips of meat available to their Ice Age forebears.

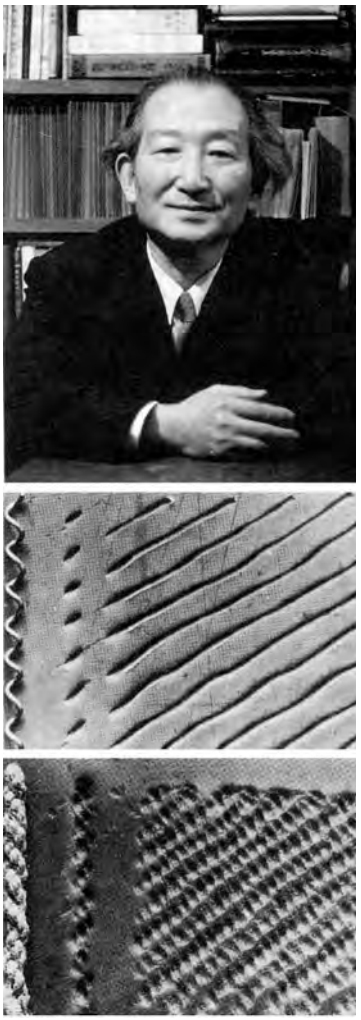


Figure 3.5 (Upper) Yamanouchi Sugao, the great pioneer of the systematic study of cord-markings on Jomon pottery. (Centre) Impressions in clay left by a spiral spring which helped Yamanouchi solve the mystery about how cord-marking was applied. (Lower) Cord-marked impressions in clay: modern experiments revealing the techniques used by Jomon potters.

The truth behind Jomon patterns

The first record of what we now know as Jomon pots dates back to the Edo period. In a historical document from 1623 called the *Eiroku Nikki* from the domain of the Lord of Tsugaru, it is stated that "…there is place known as Kamegaoka. From here were excavated peculiar ancient earthenwares…". This is the first known account of the site of Kamegaoka in Aomori Prefecture, typesite for the important Final Jomon Kamegaoka culture. Little did the authors of the *Eiroku Nikki* know that they were writing about a place whose significance was eventually to be recognised through designation, in 1944, as a site of national historic importance. There was, however, considerable early interest in these 'peculiar' vessels, and they were often displayed with pride at gatherings of like-minded enthusiasts in the capital at Edo

(modern Tokyo) and some were published in books of the period.[24]

These Edo period antiquarians, though, did not use the name Jomon for these pots. It was the American zoologist Edward Sylvester Morse, who came to Japan in the 1870s, who described the pottery sherds he excavated from the Omori shell midden in Tokyo as being decorated with 'cord-like patterns' (Figure 3.4).[25] Morse's excavations at Omori are often regarded as the first scientific archaeological investigation in the Japanese archipelago, and he carefully recorded all that he found in his excavation report, the first archaeological report published in Japan. His work focused attention on the cord-markings he found on the pots, markings which eventually came to be used to give the name Jomon (meaning cord pattern) to the period in which these pots were made and used.[26]

Cord-marking is not always present on all wares from the Jomon period, and indeed it is found on some vessels from the subsequent Yayoi period as well, attesting to a long-lived popularity throughout Japanese prehistory.[27] Just how these cord-marks were applied to the surface of Jomon pots, and the implements used in this process, remained something of a mystery for a long time after Morse's own investigations. It has long been believed that objects such as strings, mats, knitted and woven materials, along with basketry and cages were pressed against the clay. Attempts were made to recreate the tools used to make the various types of impressions, and people looked to traditional Japan and the ethnographic record to find these objects. Many scholars dedicated considerable time and effort to solve this mystery. Men like Sugiyama Sueo and Oyama Kashiwa who, although they pursued their research into the methods used to make and decorate Jomon pottery with great devotion, still were unable to unravel the mysteries of cord-marking.[28]

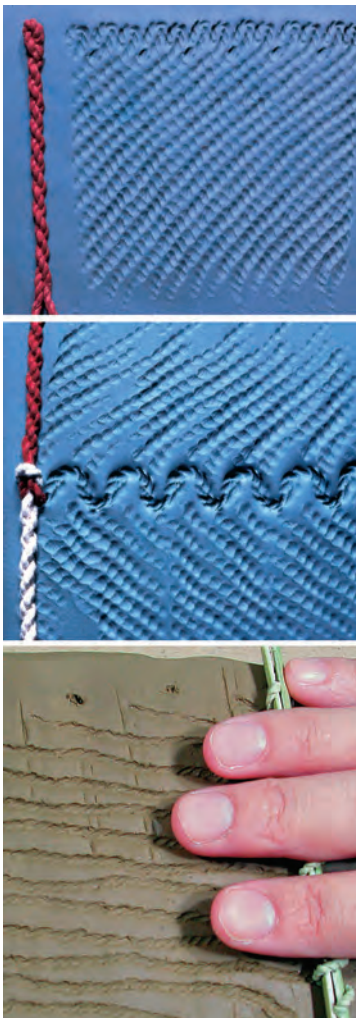


Figure 3.6 Different types of cord-marked impressions. (Upper) Simple cord-marking, one of the most popular of the techniques used in the Jomon. (Centre) Feather cord-marking, created with a string made from two cords twisted in opposite directions. (Lower) Impressions left by rolling a dowel around which cords have been wrapped into the surface of the clay (yoriitomon).

Starting in 1923, a young archaeologist by the name of Yamanouchi Sugao began to systematically collect and examine samples of the various types of cord-marking on Jomon pottery. By the 1930s he was able to distinguish almost all of the different types of cord-marked patterns and was completing a comprehensive system of classifying the great diversity of patterns used in the Jomon.[29] While most of his contemporaries were taken up with trying to recreate the tools used in the creation of cord impressions, Yamanouchi single-mindedly pursued his analysis of the relationships between the various types of cord-marked impressions themselves. Eventually his determination was rewarded and he was to become the foremost scholar of Jomon pottery of his generation (Figure 3.5).

Once he had established the foundations for his comprehensive typology of different types of cord-marks, Yamanouchi concluded in 1931 that cord-marks were made as "the result of rolling/rotating the cord and pressing it [onto the surface of the pot]". According to Kono Isamu, Yamanouchi stumbled across confirmation of his hypothesis by sheer accident.[30] Yamanouchi was working in his laboratory, taking imprints from samples of his collection of cord-marked pottery using modelling clay. He took a break and without thinking about what he was doing, picked up a small spring from his desk and rolled it across a flattened piece of modelling clay. Seeing the resulting series of parallel lines on the flattened clay surface, he suddenly realised the significance of what he had done. Freshly inspired, he took up a thin twisted cord and rolled it across the clay surface, applying just enough pressure to leave a clear mark in the clay. To his delight, the distinctive cord-impressions which he had long been researching appeared on the clay before his eyes. Yamanouchi had solved the mystery of how Jomon people used twisted cords to decorate their pots, by rolling them across the surface of the vessel.

Perhaps some of the greatest discoveries arise from accidental observations. Any child is capable of rolling strings or springs across clay surfaces, and scholars researching Jomon pottery often used clay in their work. And yet it required somebody who had detailed knowledge of the actual Jomon cord-impressions to make the critical connection between the impressions of these twisted strands and the prehistoric techniques of decorating pottery.

By his discovery, Yamanouchi Sugao, known as the great analyst of cord-marked impressions, was able to solve at one stroke the mystery surrounding how these cord-marks were applied to the surfaces of Jomon vessels. Unfortunately, Yamanouchi was never able to complete a comprehensive publication about his life's work, and his research was only made available to audiences beyond his university lectures and small classes through outline summaries of his method. He died in 1970, without being able to widely share the wealth of information he had collected over the years. Nine years after his death, his students submitted a doctorate thesis on his behalf to Kyoto University entitled *Nihon senshi doki no jomon [Cord-marking on*

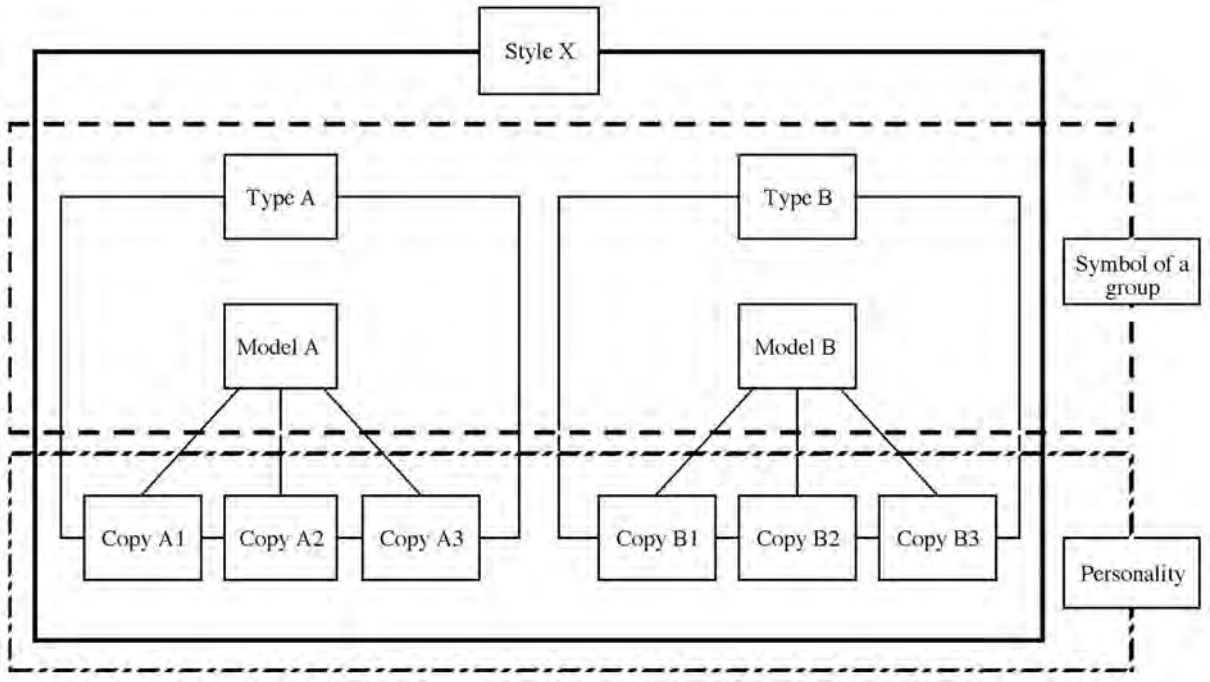


Figure 3.7 A model for different pottery styles. Determining what style different Jomon pots belong to is one of the major tasks for Jomon archaeologists.

Japanese Prehistoric Pottery], a work which is still considered one of the greatest gifts to Japanese archaeology (Figure 3.6).[31]

Understanding form and style in Jomon pottery

Each Jomon pot has certain characteristics which distinguish it from other pots. At the same time each pot also shares certain traits with other pots, in terms of both form and decoration, according to which they can be grouped together. These shared traits are what archaeologists use to establish the type of pottery to which each vessel belongs. These individualistic and shared features, along with careful recording of the archaeological contexts from which they are recovered, allow us to understand the relationships between different pots, in terms of who made them and who used them, and what these vessels meant to their owners.[32]

Many Jomon archaeologists think that pots were made by women.[33] We further think that the individual and shared features of these pots allow us to understand the relationship between these female potters and the communities of which they were a part. We can still appreciate today that each Jomon pot

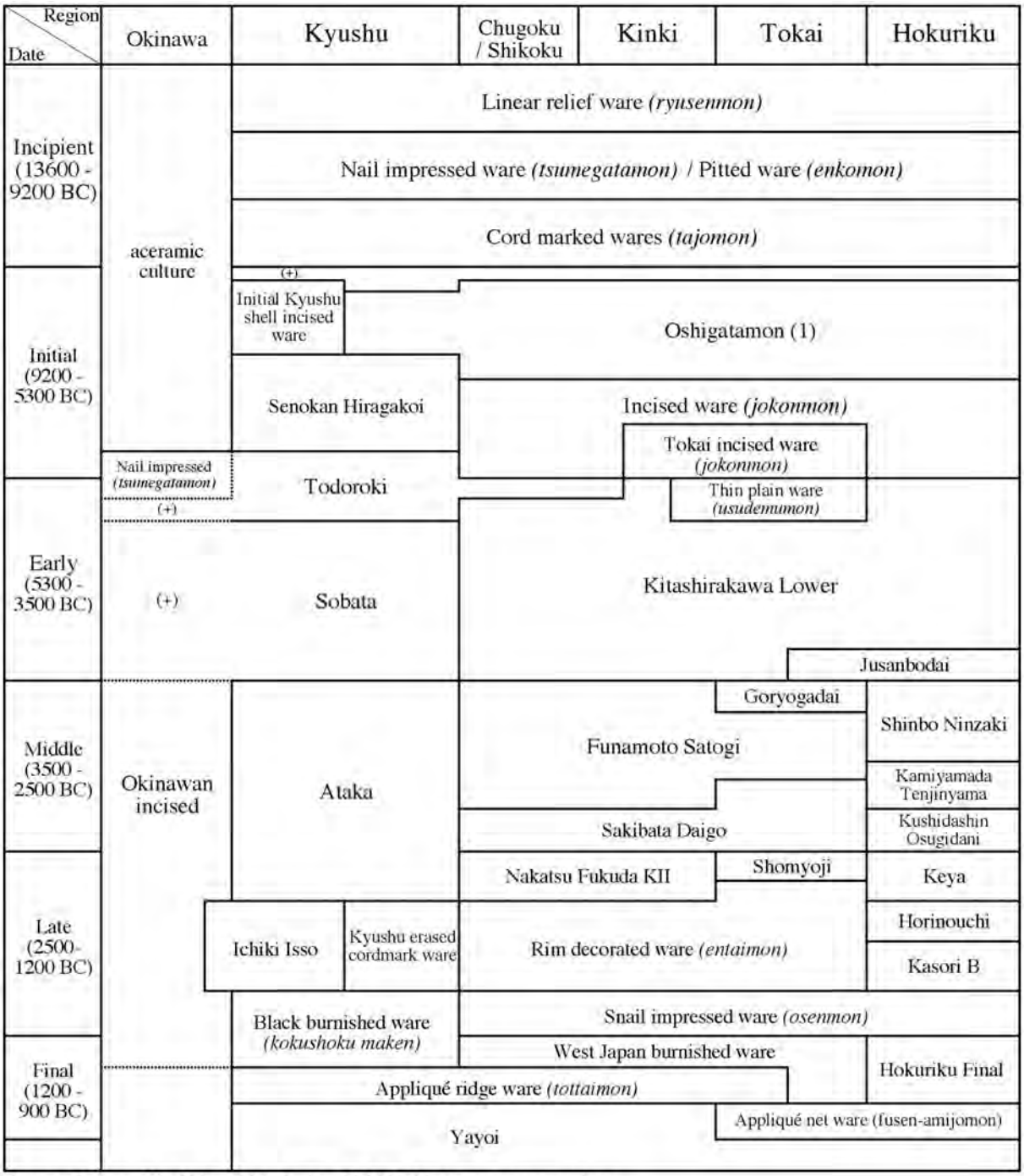
represents an achievement on the part of the individual potter, and that the particularity of each vessel results from a combination of the potter's skill and personal style of making pots. When we look at an assemblage of pots from a particular site or region, however, we can also begin to understand that pots do share certain features which may be expressions of an affiliation or ideology shared between the individual potters. The production of these pots results from a process which begins with the potter having an image of the pot she wants to create in her head. This image derives from an idea of what pots should look like, an idea shared by other people in her community. As she gives this image a physical shape, the potter is influenced, knowingly or unknowingly, by the tradition of pottery making which is influenced by the shared mentality of her social group. While there is some scope for individual expression within this tradition, this is within the bounds of a shared model form to which all the members of the community adhere (Figure 3.7).

The members of Jomon communities were probably in relatively constant communication with each other, sharing information and ideas between themselves, and most likely making their pots in full view of other people within their group. They shared a mental image of the model Jomon pot, and this gave the pots made within any particular community a common flavour. Archaeologists recognise this common flavour as a particular style of pot, and it is possible that these styles were also recognised by the Jomon potters themselves. We are able to trace the development of these styles through time and plot their spread through space. Furthermore, we can use our knowledge of these processes to begin to reconstruct the history of the Jomon in terms of the expansion and contraction of Jomon groups through the landscape, each identified by their own particular symbolic style of pottery, over which they would exercise exclusive rights.

Jomon archaeologists spend much of their training learning to identify these different pottery styles. The task is made more challenging by the probability that any one group would make use of several different model shapes and types. Each of these types is distinguished by slight differences, but they also share what Kobayashi thinks of as a similar atmosphere or mood (Figure 3.8). These similarities are of course in part due to the pots being made in accordance with a particular style. The people making the pots were able to experiment to an extent during the creation of the vessels, but this experimentation was constrained by the stylistic conventions prevailing in their community. It is these shared stylistic conventions which result in different forms of pots in any given assemblage having a recognisably similar ambience or atmosphere.[34]

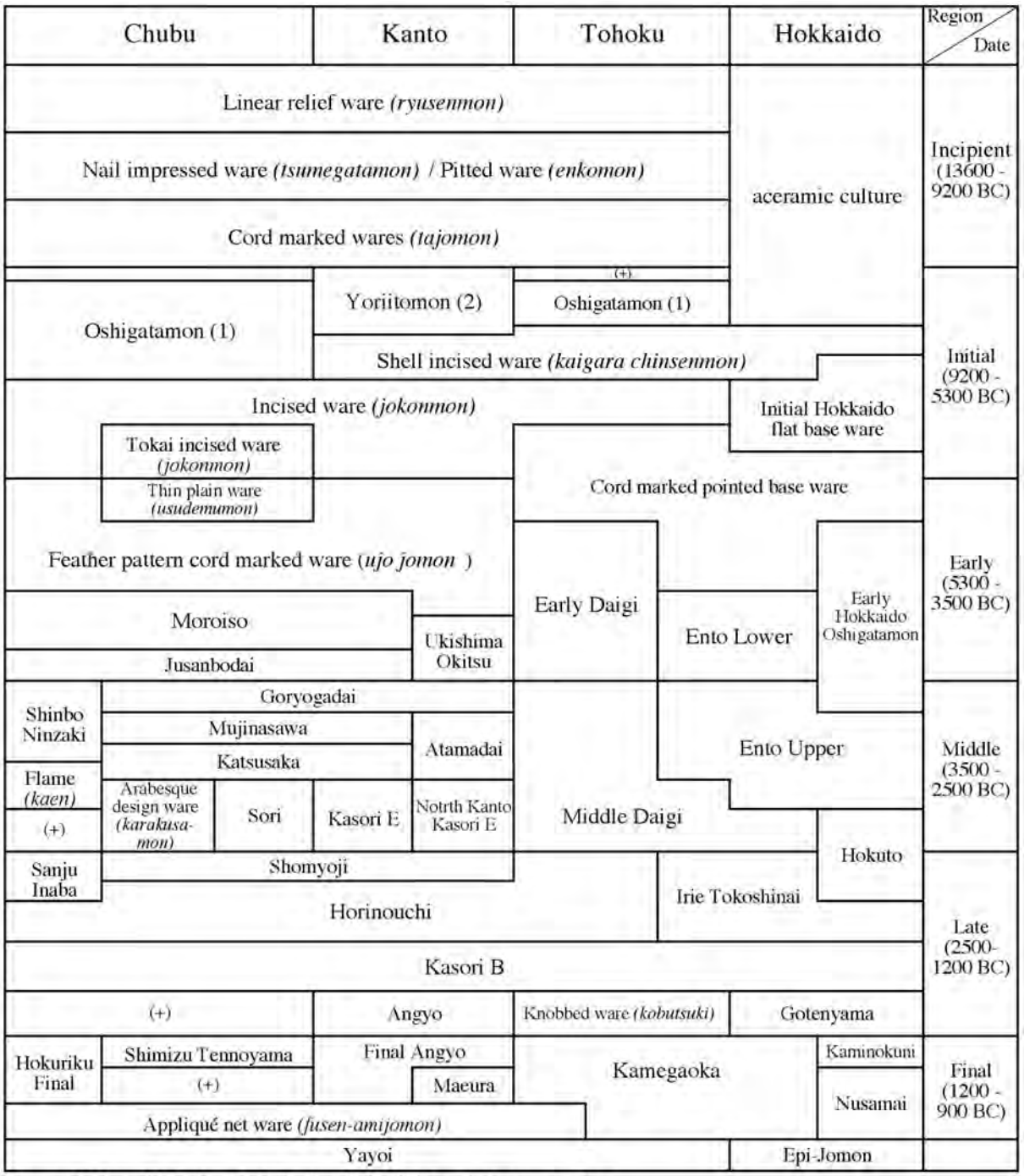
These conventions also relate to the physical aspects of making a pot. For example, they might constrain what materials were incorporated into the clay as a temper to help bind the clay together and strengthen

Figure 3.8 Two Jomon pottery assemblages, each with their distinct atmosphere and mood. (Upper) An Incipient Jomon pottery assemblage of cord-marked ware (tajomon) pots from Muroya Cave, Niigata Prefecture. Height of pot on left, 20 cms. (Lower) A Middle Jomon pottery assemblage of Katsusaka style pots from Mitakedo, Tokyo. Height of deep pot on left, 37 cms.



Source: Kobayashi 1989a, 1994, Taniguchi 2002. Note: (+) means unclear
(1) Pottery decorated with a dowel engraved with roller pattern, see figure 3.12
(2) Pottery decorated with impression of a string-wrapped dowel, see figure 3.12

Figure 3.9 The major styles of Jomon pottery.



Source: Kobayashi 1989a, 1994, Taniguchi 2002. Note: (+) means unclear
(1) Pottery decorated with a dowel engraved with roller pattern, see figure 3.12
(2) Pottery decorated with impression of a string-wrapped dowel, see figure 3.12

it for the firing process. Small fragments of talc and shiny specks of mica were often used for this purpose. The time the pot is left to dry after forming but prior to firing can also be varied, resulting in slightly different results. The consistency of the clay used to decorate the surface of the vessel can be changed as the clay itself is prepared, an important stage in the production of pots, and again affects the look of the finished object. The process of firing itself, even within the relatively simple bonfire technology used during the Jomon, can be controlled to considerable creative effect, for example to ensure a black finish for the vessel. All of these conventions which contribute to the production of pottery vessels with a shared ambience, cumulatively result in the creation a particular style or type of pot.[35]

These styles of pottery include a variety of types or forms of vessel shape, and are the physical expression of the shared mental model held in the heads of the Jomon potters as they practiced the art of pottery making. Through careful analysis of pottery assemblages from Jomon sites around the archipelago, Japanese archaeologists are able to understand that each style was maintained for a certain amount of time, and that some styles seem to spread beyond the place where they originally came into being. Some Jomon communities adopted aspects of other styles into their own mental models of ideal pottery forms, and this led to the development of new styles which share certain characteristics. It is possible to recognize the development of larger schools of pottery manufacture as a result of this process, which again share a certain ambience or atmosphere. These schools can perhaps be considered comparable to later traditional Japanese pottery from particular centres, for example Hagi ware, Karatsu ware and Bizen ware.[36] Archaeologists, basing their work on the foundations laid by Yamanouchi Sugao, are now able to assign any pots discovered from Jomon excavations to one of these particular schools of pottery manufacture, each of which is identified with a particular region.

These Jomon pottery styles are not static or unchanging, and through painstaking analysis we are able to reconstruct the developmental histories of each style. It seems that for most styles these developmental histories go through three stages: appearance, development, and extinction. In addition to these three stages, most styles go through at least three phases of development. Sometimes this is reflected in the name – for example Kasori E1, E2 and E3.[37] Some styles are longer or shorter lived than others. Short-lived styles include pottery decorated with punctured holes (*enkomon*) from the Incipient Jomon, the Shomyoji style from the Late Jomon in the Kanto region,[38] and the Late Jomon Sanju Inaba style from the Echigo region of central Japan, focused on Niigata Prefecture, one of the shortest lived of all the Jomon styles, and which becomes extinct shortly after appearing, missing out on the developmental stage altogether.[39] On the other hand, some styles are exceptionally long-lasting. Good examples of this include the Initial Jomon *yoriitomon* style in the Kanto region in the Initial Jomon and the Kamegaoka style of the

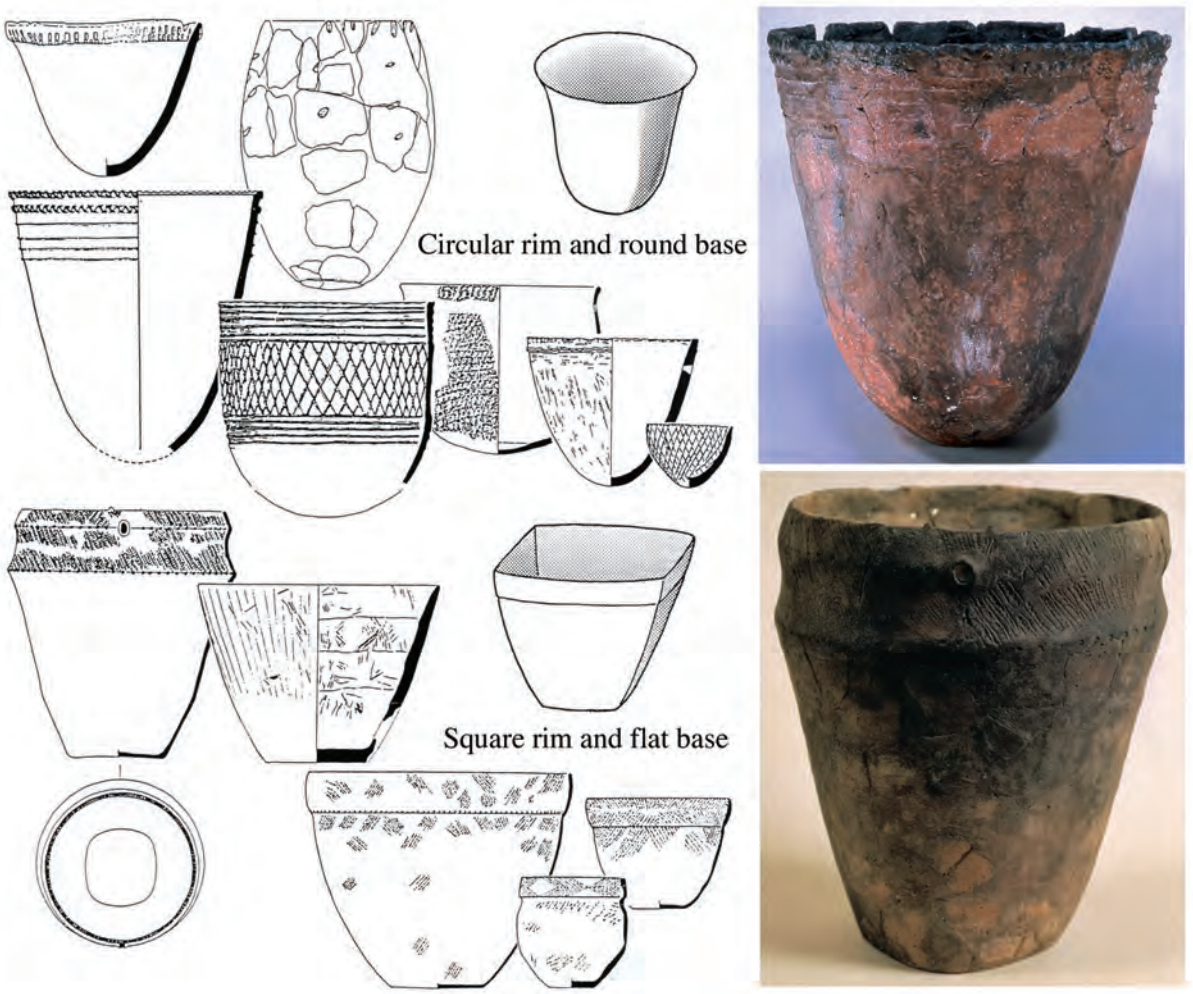


Figure 3.10 Two forms of Incipient Jomon pottery. (Upper right) Pot with linear relief style decoration (ryusenmon) from Ishigoya Cave, Nagano Prefecture. Height 24 cms. (Lower right) Cord marked vessel (tajomon) from Muroya Cave, Niigata Prefecture. Height 24 cms. (Left) Various other forms of Incipient Jomon pottery.

Final Jomon which originated in the Tohoku region, which went through at least five phases of stylistic development.[40]

Archaeologists now divide the ten millennia of the Jomon into six subperiods – Incipient, Initial, Early, Middle, Late and Final. We currently think, on the basis of the identification of stylistic progression, that these subperiods can be further divided into about ten shorter phases each, giving us a total of some sixty phases for the whole Jomon. Some of the Jomon pottery styles only occur in one phase, others last for several phases. Once pottery was being used throughout the archipelago, there were no regions where Jomon pottery was not made and used. Instead, we see a succession of pottery styles appearing, developing and disappearing, to be replaced by other, new styles, each of which go through a similar developmental process (Figure 3.9).

How long did each of these styles last? We know that the Jomon period spanned about ten thousand years, and so a very rough guide can be obtained by simply dividing the duration of the Jomon with the number of pottery phases (sixty), giving us an average timespan for each phase of 166 years.[41] If we estimate that each generation of people lasted some twenty to thirty years, then it appears that Jomon potters continued to maintain the shapes and patterns of a particular style for between six and eight generations. Comparable dates from the succeeding Yayoi period suggests that pottery styles among the early rice farmers of the archipelago lasted only some forty years, or two generations, while by the time the first rulers of a unified Japanese state were being buried in their great burial mounds from the fifth century AD, pottery styles within the Sue and Haji ware traditions were only lasting twenty years.[42] So it seems that the rate of stylistic change in pottery in the Japanese archipelago accelerated as time passed.

An outline history of the development of Jomon pottery

Stage One: images and mental templates – pots of the Incipient Jomon

While there is now no doubt that pottery was being made in the Japanese archipelago very early, we must continue to reserve judgment as to whether pottery was actually invented in the archipelago. It is quite likely that early pots still lie buried in the vast expanses of eastern Eurasia which hold the key to understanding the origins of pottery making in the archipelago. Wherever the ultimate origins of pottery making lie, however, we do know that the earliest potters in the archipelago derived considerable inspiration from other everyday items they had to hand, for example basketry, wooden objects and bags

made of animal skins. While these objects may not have helped much with the technological developments needed for pottery making, they provided convenient models for shape.

This can be seen very clearly in some of the pots made in the Incipient Jomon (Figure 3.10). Common shapes for vessels at this time included bullet-shaped deep pots with round bases and square pots with flat bases. Advice from practicing potters, as well as evidence from the results of experiments undertaken by archaeologists, suggests that it is actually very difficult to make square pots with flat bases that have good balance. And yet, as the examples from Jin and Muroya in Niigata Prefecture show, Incipient Jomon potters were creating vessels of this shape. For some reason, and despite their limited expertise in pottery making, it seems that these potters were not satisfied with the bullet-shaped forms with their conical bases which were relatively easy to make, but instead went to considerable trouble to make the more difficult flat-based rectangular forms.[43]

What was the reason for this? One theory is that these Incipient Jomon potters were attempting to recreate in clay the shapes of familiar objects, such as rectangular wooden trays and woven baskets. It is thought that the shape of the round-based pots is based on animal skin bags. The potters had images of these objects in their heads as they started to make pots, and for this reason the Incipient Jomon can be described as the 'image stage' in the history of the development of Jomon pottery.[44]

Once we understand that some pots were being modelled after woven baskets, some of the decorative devices start to make sense. For example, the bean-appliqué pattern (*toryumon*), created by sticking small bean-shaped nodules of clay on the surface of the pot, from Senpukuji Cave in Nagasaki Prefecture can be explained if we consider how baskets can be made of tree bark.[45] The rims of such objects are usually covered with animal skin to prevent the sides of the vessel from splitting, the skins being stitched

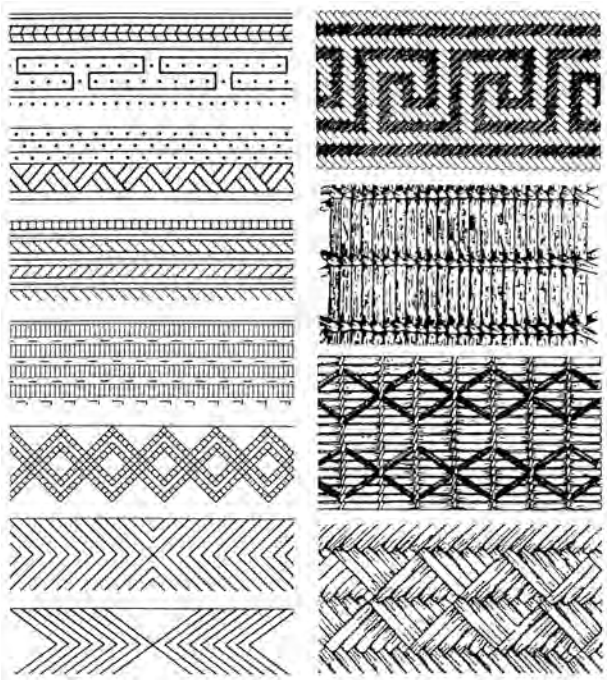


Figure 3.11 Patterns on woven baskets possibly provided the inspiration for Jomon designs.

Figure 3.12 Deep pots from the Initial Jomon. (Clockwise from upper left) Shell-incised style pottery (kaigara chinsenmon) from Nakano B, Hokkaido. Height 15 cms. Pottery decorated with the impressions of cords wrapped around a stick (yoriitomon) from Tama New Town Site 99, Tokyo. Height 34 cms. Kyushu shell-incised ware style from Kakuriyama, Kagoshima Prefecture. Height 19 cms. Pottery decorated with rouletted impressions (oshigatamon) from Unoki, Niigata Prefecture. Height 23 cms.

on to the basket. The bean-appliqué pattern probably represents an attempt to recreate these stitches in clay. Tiny holes adorn the rims of the pitted pottery (*enkomon*) from Jin, and this design possibly mimics the appearance of a tree-bark basket before its rim is covered with animal skin. With another decorative device used in the Incipient Jomon, the so-called nail impressed method (*tsumegatamon*), the whole surface of the vessel is covered with semicircular impressions, reminiscent of marks left by finger nails, but probably applied with the end of a split stick or bamboo. The overall effect is not dissimilar to the mesh of a woven basket (Figure 3.11). Moreover, the stamped patterns and zigzag lines seen on a number of other Incipient Jomon pots again conjure up the stitches often seen on baskets with animal skin coverings.

These examples suggest that many of the patterns we can see on pots from the Incipient Jomon derive from the mental images their makers had of other sorts of containers, many of which perhaps predated the use of pottery. Some of these patterns, established during this image stage, were used sporadically, rather than continuously, throughout the later stages of the Jomon. The original models for these patterns – skin bags and basketry – continued to be used throughout the Jomon, but we only come across them in archaeology when exceptional preservation conditions prevail.[46] It is probable that the original reasons for the designs became forgotten with time, but memories of the mental images which inspired the earliest potters remained part of the common Jomon decorative tradition.

In the later part of the Incipient Jomon, some particular design motifs began to appear on the cord-marked wares (*tajomon*). One of the most distinctive of these motifs is similar to the fretwork design (*raimon*) familiar to many contemporary Japanese as adorning the rims of bowls full of steaming Chinese noodles in soup known as *ramen*. Another is often described as looking like layers of hollyhock leaves. Similar designs can be seen on woven baskets in museums in the United States.[47] The Pueblo cultures of the American southwest had a long tradition of basket making which influenced the designs with which they decorated pottery, once ceramic technology developed in the region from the eighth century AD. These designs included triangles, zigzags and step-like motifs painted on to the surfaces of the pots. The pots from the Pueblos are inspirational when trying to understand the development of patterns on the Incipient Jomon pots of the 'image stage' in the history of Jomon ceramics.[48]

Stage Two: The establishment of the identity of the Jomon pottery tradition – the Initial Jomon

As we enter the Initial Jomon the rectangular flat-based pots of the Incipient Jomon disappear, leaving round-based deep pots as the predominant shape of pot (Figure 3.12). As we noted previously, these pots are simpler to make than the flat-based pots which required a higher degree of skill to construct and fire

Figure 3.13 Early Jomon vessels. (Clockwise from upper left) Early Daigi style deep pot, Uenoyama II, Akita Prefecture. Height 30 cms. Moroiso style bowl with perforated rim, Tenjin, Yamanashi Prefecture. Height 14 cms. Kitashirakawa Lower style, Torihama shell midden, Fukui Prefecture. Height 10 cms. Sobata style bowl, Shimomotoyama Cave, Nagasaki Prefecture. Height 23 cms. Moroiso style deep pot, Tenjin, Yamanashi Prefecture. Height 29 cms.

successfully and whose disappearance represents the abandonment of a less efficient form. The giving up of these flat-based pots, based as they were on a mental template derived from containers made of materials other than clay, also represents an increased conceptual distance between pots as a class of objects in their own right, and objects which may have had a similar function but were the products of other technologies, such as carpentry, basketry, bark and hide-working. The preference for the form which worked best in clay, namely the circular conical deep pots, indicates that at this time Jomon pottery was acquiring an identity of its own for the first time.[49]

Accompanying this development there is a change in the nature of the designs which decorate the surfaces of the pottery vessels. From the Initial Jomon onwards, pottery decoration no longer derives from representations of other materials, images borrowed from earlier forms of vessels, but instead takes new forms better suited to the medium of pottery itself.

The *yoriitomon* style pots made at the beginning of the Initial Jomon tended to have their entire surfaces decorated completely with cord-marks but the ornamental effect was minimal and rather unattractive when compared to the many different styles of pots made in the Incipient Jomon. For that reason, some researchers argue that the cord-marks impressed into the surfaces of the pots were not just for ornamental purposes, but for toughening the clay whilst making the pot. We disagree with this, as the required consistency of the clay is achieved when the clay is being kneaded in preparation for forming the vessel, and not when the cord-mark impressions are applied, which happens once the pot has been made but before it is fired. In other words, Jomon decoration only affected the surface of the pot and did not have any impact on the clay in the body of the pot.

Though the ornamentation of the Initial Jomon pots appears less flamboyant, it would be a mistake to regard this as evidence for a lack of interest in decoration. If the purpose of ornamentation is to beautify an object, extravagance and exaggeration are not the only methods available. Sometimes carefully executed plain surfaces can be equally beautiful. Cord-marks are applied to the surface of the vessel in a number of ways. Around the rim of the pot oblique cord impressions form a band of decoration, below which a series of vertical cord-marks like veins reach down the body of the pot to the base. This effect is achieved using a particular technique of cord-marking involving placing the twisted cords at an angle to the surface of the pot, twisting them across each other and then tightening them around the curved surface of the vessel so that they leave their impressions in the leather-hard clay. The combination of the vertical veins of cord-marking running down the sides of the pot and the oblique band of decoration around the rim results in a carefully designed effect which is certainly beautiful to our eyes (Figure 3.12).

Figure 3.14 New pottery forms in the later Jomon. (Clockwise from upper left) Final Angyo style pedestalled dish, Shimoppara, Kanagawa Prefecture. Height 18 cms. Knobbed (kobutsuki) style spouted pot, Aomori Prefecture. Height 10 cms. Kamegaoka style 'incense burner', Aomori Prefecture. Height 12 cms. Katsusaka style 'hanging' vessel, Nakappara, Nagano Prefecture. Height 13 cms. Kamegaoka style pot with a constricted neck, Aomori Prefecture. Height 25 cms.

Figure 3.15 Middle Jomon Arabesque design (karakusamon) style burial urn with a perforated base, Tama New Town Site 72, Tokyo. Height 53 cms. By the Middle Jomon pottery vessels were being used for more than the storage, cooking and serving of food. Jomon people often buried their dead in burial jars such as this, sometimes deliberately making a hole in the bottom of the pot before it was carefully placed in the ground upside down.

Perhaps the reason why the ornamental effect of these early Initial Jomon pots seems rather limited is that these pots, decorated with simple twisted cords, were made just as potters began to realise the decorative potential of pottery in its own right. This realisation was an important part of the establishment of a distinct identity for pottery objects which characterised this phase in the developmental history of Jomon pottery. These pots decorated with twisted cords were the modest forerunners of a new tradition of pottery decoration that was soon to include effects achieved by rolling sticks with patterns carved into them across the surface of the pots, and pressing shells into the clay before firing the vessels. These new techniques gave rise to increasingly complicated designs, compositions which were enhanced by the development of a wide variety of implements for impressing patterns into the surfaces of the pots. As the Initial Jomon progressed, individual styles of pots were developed, each of which had distinctive ornamental attributes.

Stage Three: The further development of Jomon pottery – the Early Jomon

From the outset, the early pots in the Japanese archipelago were intended to be used for cooking food. However, around the beginning of the Early Jomon, different vessel shapes began to appear, including shallow dishes for the serving of food and storage jars (Figure 3.13). These new forms seem to have developed in the Kanto and Chubu regions, but it was not long before they were being taken up in other areas as well. This increasing variation in pottery form was an important turning point in the developmental history of Jomon pottery, and resulted in pottery objects being used for a much wider range of purposes than cooking food.

This diversification in vessel form and function was accompanied by some new decorative devices. For the first time the overall design field of some vessels became divided into a number of zones, some of

which were decorated with some especially striking motifs, the presence of which had a dramatic effect on the overall visual impact of the pot. These zones of decoration were sometimes bands, sometimes panels, carefully situated within the design field of the vessel, sometimes next to each other, sometimes one above another, sometimes separated from other zones by a framing device. Other areas within the overall design field were left without any striking decorative motifs, and acted as a background to the more imposing zones of decoration. The structure of the overall design field of the pot was dependent on the relative placing of the zones with striking decorative motifs and these background zones. From this time on, we can talk of the composition of the design field of Jomon pots in terms of the combination of different ornamental motifs, which can be divided into the more elaborate and striking motifs and the background zones. Pottery styles are now recognised in terms of the composition of the design field and, as discussed above, both the shared atmosphere of a particular style and the individual character of a pot within any such style are expressed in terms of similarity and difference in composition.

Stage Four: The realisation of the full potential of Jomon pottery: from the Middle to the Final Jomon

By the Middle Jomon, although pots had evolved through a long developmental history from being just vessels for cooking to a range of forms with a variety of different purposes, including the storage and serving of food, pottery continued to function mainly as a medium for storage. Moreover, pottery was still largely associated with food. This continued to be the case even from the Middle Jomon, and a series of innovative new forms appeared including spouted vessels for pouring and attractive dishes for serving (Figure 3.14).

From the Middle Jomon, however, pottery also began to be associated with more than just food, important though that was to the Jomon people. In some areas pottery burial urns began to be used in funerary rituals (Figure 3.15), while pots sometimes became an integrated part of the household hearth, and pottery lamps began to bring light to Jomon buildings after dark and in winter. More elaborate pottery forms were made in the Late Jomon including, to our eyes, strange-shaped vessels somewhat reminiscent of certain types of incense burners with which we are familiar from later Japanese history, and pots with irregular shaped bodies perched on pottery feet. In addition to cooking, eating and everyday mundane activities, some of these forms suggest a more ritual or ceremonial use, although of course in the world of the Jomon it is possible that the line between sacred and profane activities was not so clearly drawn as it is in the modern world.[50]

We call this stage in the developmental history of Jomon pottery the 'application stage', representing the realisation of the full potential of Jomon ceramics and the application of that potential to a greater range

Figure 3.16 Middle Jomon 'S' shape motifs. (Left) Kasori E style deep pot with large handles from the Kanto region. Height 58 cms. (Right) Kasori E style deep pot, Nishi Kochi, Kanagawa Prefecture. Height 25 cms.

Figure 3.17 Middle Jomon deep pot with 'dagger' motifs, Tsunagi, Iwate Prefecture. Middle Daigi style. Height 50 cms.

of pottery forms.[51] Part of this process was the breaking of the direct and inevitable link between pottery, either as utensil or container, and food. These changes were the last major transition in the developmental history of Jomon pottery, and while new pottery styles continued to appear, flourish and disappear, the principles by which this happened had been established by this stage, providing the underlying stability for the remaining history of Jomon pottery culture until the end of the Final Jomon.

The appearance of new forms and the breaking of the link between pottery and food were accompanied by the development of new decorative devices, patterns which have what are considered to have a markedly narrative quality. We will return to some specific examples of this in Chapter Four, and here we just wish to draw attention to the probability that these narrative patterns expressed specific meanings in a way that had not happened previously. In addition, the special motifs that we encountered above in the third stage of the development of Jomon pottery became increasingly standardised within individual pottery styles. Some of these motifs became so standardised, in fact, that some archaeologists think that an appropriate analogy would be printed images.[52] The standardisation of the motifs suggests that some of them were perhaps even named. Furthermore, it is quite likely that these motifs were widely recognised by many members of the communities in which these designs occurred.

The recognition of these standardized motifs suggests that a further important development was underway, whereby particular motifs began to take on specific meanings in their own right. And associated with this development we find that the form of the motif is dependent on those meanings and the cumulative meanings of the narratives embodied within the whole design field of the pot. It was through this process that the full potential of the Jomon design system came to be realized and applied by Jomon potters from the Middle Jomon in this fourth stage in the developmental history of Jomon pottery.

The establishment of these narrative patterns indicates that Jomon potters had moved from just holding mental images of the object they wanted to create in their heads, to having particular concepts in mind, which they wanted to express through combinations of symbols, which carried meanings that would have been understood by other people within their community. In other words, by this stage, meaningful concepts existed prior to the designs used to express them, and these concepts were given a reality in the Jomon world through appearing on Jomon pots. The visual impact of the design motif began to lose some of its significance as the motif itself became increasingly standardised and stylised, while the symbolic meaning of the motif as an expression of a particular concept gained in importance.

In the course of this process, the relatively simple geometrical and symmetrical design motifs which had been favoured until the application stage gave way to motifs which appear rather abbreviated, only partly

Figure 3.18 Middle Jomon motifs. (Left) Katsusaka style deep pot with 'dancers', Jurobara, Yamanashi Prefecture. Height 55 cms. (Right) Arabesque style (karakusamon) deep pot, Yamagata Village, Nagano Prefecture. Height 38 cms.

Figure 3.19 Middle Jomon design fields. Same pots as Figure 3.18. (Upper) Alternating motifs (X+Y). (Lower) Repetition of modified motifs (A+A′+A″+A‴).

formed or asymmetrical. At the same time, special motifs including curvy 'S' shapes (Figure 3.16), 'daggers' (Figure 3.17) and forms reminiscent of the bulging eyes of dragonflies appear, perhaps symbolising some particular concepts, and often becoming the focus of the whole design field of the pot, around which other motifs and zones were structured.[53]

Lacking the figurative stability of the earlier more geometric forms, these and other motifs which seem to be full of vitality and gusto, while they are rooted within the surface of the pottery vessels, seem to refer to some specific Jomon concepts rather than the pots themselves. The development of these motifs indicates a shift from motif as just an ornamental form to motif as implicated in the appearance of a sophisticated system of symbolism, presumably related to the Jomon world view, even though we are unable to decipher the precise meanings these motifs expressed (Figure 3.18).

Another characteristic of the narrative patterns is that the individual motifs are no longer simply repeated across the whole design field. In addition, particular zones within the overall design field are no longer occupied by the same motif, but instead we find that different motifs are intentionally combined together to create patterns which can be described as the <X+Y> formation, where X and Y represent the different motifs and < > represent the boundaries of the design field or a particular decorative zone. Moreover, in some examples, it at first appears as if the same motif is being repeated across the design field, but closer scrutiny shows that each individual representation of the motif is different from the others, so that variants on an original motif are being used. This can be described as <A+ A′+ A″+ A′″> or <B+ B′+ B″> formations (Figure 3.19).

Some pots are decorated with motifs which occupy the entire design field of the pot. These wrap-around designs represent a new departure from the normal practice of dividing the design field into a series of discrete units or zones, or repeating a particular motif around the pot. These pots create an interesting challenge in terms of viewing the motif, as only part of the pattern is visible from any one angle. Perhaps these pots were designed to be turned in the hand while being looked at. Whatever their mode of use, it is not always easy to appreciate how the overall design works. A good example would be the Middle Jomon Katsusaka style pots from the Kanto region which have six wavy protrusions extending up from the rim. When viewed from any one angle, some of the peaks of these protrusions are hidden behind the others, and it is difficult to see where the wave motif begins and ends.

Not only is it difficult for us to comprehend the overall design when the motif wraps around the whole body of the pot, but it is also a problem for the modern viewer to visualise the complete composition of the design field when it is divided up into a sequence of zones each with differing motifs, the <X+Y>

formation we came across above, or containing a series of variants on a single theme, <A+A′+A″+A‴>. Jomon people, however, would have been able to visualise the entire composition even if they could only see a part of the design from where they were viewing the pot, and that they would have understood the specific meanings of these intriguing and evocative patterns.

If this was the case, then a Jomon person familiar with the conventions used in the patterns which adorn the pots would firstly understand the meaning of these patterns, and secondly they would be able to recreate the complete composition in their mind's eye. This is perhaps the greatest significance of the narrative patterns. It is perhaps equivalent to a shipbuilder who examines the blueprint on a large drawing board and though the plans are drawn from a single perspective (two dimensional), he is able to visualise the three-dimensional ship for which the plans are intended.

The content of the narrative patterns would have been explained in any number of settings – sitting around the fire in the centre of the house, or perhaps during a community festival with ample opportunity for people from the different households in the village to get together and tell stories, perhaps prompted by the patterns flowing around the body of the pot. Everyone involved would to some extent have understood the meanings embodied in the designs. As did the Walpiri clans of central Australia, perhaps the meanings were spoken aloud as the motifs were drawn. Such public creation of motifs and designs would ensure that all of the members of the group understood the meanings they represented.[54]

It is also quite likely that the meanings imbued in the motifs and patterns on the pots were remembered and reinforced during ceremonies and rituals. The narration of the stories told in the designs might have been accompanied by appropriate music and singing. We will return to this in Chapter Eight. In this way, the pottery-making societies of the Jomon should take their place in the cultures of the world which create lyrical narratives expressed in their motifs, set to appropriate rhythmic accompaniments.

Figure 4.1 Map showing sites mentioned in Chapter Four.

Chapter Four
The lands of Jomon Japan

The spread and establishment of regional pottery styles

Each Jomon pottery style went through its own process of development, lasted for a certain amount of time and was found throughout a particular area. The precise lifespan and distribution varied from style to style. For example the Final Jomon Maeura style had a relatively limited range, from the Tone River to the Kasumigaura coast, while the contemporary Kamegaoka style extended across most of the Tohoku region and much of southern Hokkaido.[1]

Archaeologists now think that some seventy major styles developed in the various regions of the archipelago in the course of the Jomon. While each style had its own independent existence, there was considerable contact between the different style zones. The borders between these style zones remained relatively stable, with a succession of different styles developing within the boundaries of the already established zones. Sometimes it is possible to see that the succession of styles on either side of one of these boundaries maintained relationships with each other, if the pace of stylistic change varied from zone to zone. A series of fixed regional zones, extending from Hokkaido to southern Kyushu, were established by the Initial Jomon, and were home to a succession of pottery styles. Even in Chubu and Hokuriku, where the cycle of stylistic development was sometimes more rapid than elsewhere, the integrity of the regional style zones remained stable over a very long period of time.

It is helpful to use these various style zones to divide the Japanese archipelago into three categories of region.[2] Large regions are indicated on Figure 4.2 as Roman numerals I-V. Region I covers much of the northern and eastern parts of the island of Hokkaido. Region II comprises the Oshima Peninsula in the southern part of Hokkaido and the whole of eastern Honshu, the modern regions of Hokuriku, Kanto, Chubu and Tokai. Region III includes western Honshu and the modern regions of Kinki and Chugoku, as well as the islands of Shikoku and Kyushu. Since the time of Yamanouchi Sugao, the border between regions II and III has always been widely accepted as marking an important boundary, dividing the eastern and western halves of the Jomon world. Anthropologist Sasaki Komei has noted that this division is an extension of a much wider ecological distinction which reaches across much of East Asia, recognised by the presence of evergreen and deciduous oak forest respectively, which are considered by some to be associated with very different human cultures.[3] Region IV includes most of the Ryukyu islands. The boundary between regions IV and V lies between the islands of Okinawa and Sakishima. This boundary in fact marks the end of the Jomon world, as there is as yet no pottery on the island of Sakishima.

It is possible to subdivide these five large regional pottery zones into a series of subregions, which we can call a, b, c and d. These can be further subdivided into nuclear zones, numbered 1, 2 and 3 and so on.

Figure 4.2 Jomon regions and pottery style zones.

These divisions continue throughout the whole of the Jomon period. Even though the borders between these pottery zones cannot always be very easily seen, for example in the case of the Middle Jomon Flame pottery style zone and the Late Jomon Sanju Inaba style zone in the Echigo region around modern Niigata Prefecture, where a very different style develops in the same zone, there is a degree of continuity if we look very close up.

The map of Jomon regions and pottery style zones in Figure 4.2 summarises current knowledge about the distribution of pottery types. The task of constructing a detailed typological framework for all of the Jomon pottery styles across the archipelago continues, and each new excavation brings the possibility of redefining existing zones. Although archaeologists have identified many of these nuclear zones in regions II and subregion b of region III, they are not often so clear in the other large regions. It is very likely, for example, that further work will further define the nuclear zones in western Japan, in particular in region III.

Is there a relationship between these regions and pottery style zones and environmental differences across the archipelago? Ecologists have long recognised a series of distinct forest types in the archipelago, defined in terms of the presence of particular tree species. Each of these forest types support a particular range of animals and vegetation, and produce differing quantities and combinations of foodstuffs for the Jomon foragers. Our pottery regions I and IIa, in the northeastern part of the archipelago, coincide with the distribution of what is known as evergreen coniferous forest and deciduous broad-leaf forest.[4] Region II is occupied by both deciduous broad-leaf and lucidiphyllous, or broad-leaf evergreen, forest. Nishida Masaki from Tsukuba University, who has written extensively on the ecology of the Jomon, has suggested

that the deciduous broad-leaf forests are characterised by the ready availability of deer, salmon and trout, while the broad-leaf evergreen forest, overlapping with subregions b, c and d of region II, is characterised more by the availability of acorns, salmon and trout.[5] The predominant forest type in region III comprises broad-leaf evergreen trees, and although salmon and trout can both be obtained in subregion a, especially along the coast of the Japan Sea, they are fewer in number than in regions I and II. In region III acorns seem to have been especially important foodstuffs, and many examples of nuts are found in storage pits.[6] Contact was restricted between region III and the more southerly regions IV and V by the maritime environment by which they were surrounded.

Jomon 'lands'

The great achievement of Japanese archaeologists in identifying so many different pottery styles (*yoshiki)* allows us to begin to address the social geography of Jomon Japan. The key to understanding the way in which Japanese archaeologists have done this is an appreciation of how these styles are recognised. Although this is widely acknowledged to be a rather subjective process, some central concepts are helpful in considering the study of Jomon pottery styles. Archaeologists often talk of the differences between pottery styles in terms of atmosphere (*funiki*) or personality, which derives from the actual appearance of pots of that style, and the style system (*ryugi)*, which comprises a constellation of design elements including motifs, pattern and form, on which Jomon potters drew in the production of pots of a particular style. These concepts help us describe the ways in which different pottery styles were developed and maintained over time, and also how we can start to interpret the social significance of these styles in regard to the landscapes over which they were distributed.[7]

The production of a particular style of pottery requires that the group of potters making pots in that particular style are in agreement as to what constitutes that style. These potters will be familiar with the various attributes that go to make up a style, and they will have worked with these elements over a period of time, creating what is recognised as a tradition of pottery making. The potters working in any particular tradition will probably be aware of pots which are made outside their own tradition, and will decide among themselves what, if any, attributes of other traditions they will incorporate into their own works, and which elements they will not include. The way in which these various elements are incorporated is here termed the style system. Any particular group of potters could create styles or types of pottery which they could all recognise as observing the conventions of the style system and tradition within which they were working. In this way, particular pottery styles can be associated with the group of potters who made pottery vessels in this way, and the broader communities which the potters served who used those vessels and accepted the conventions according to which they were made.

From this we might expect that particular pottery styles became associated with specific geographical areas which had fixed boundaries. Such geographical areas, within which particular pottery styles were

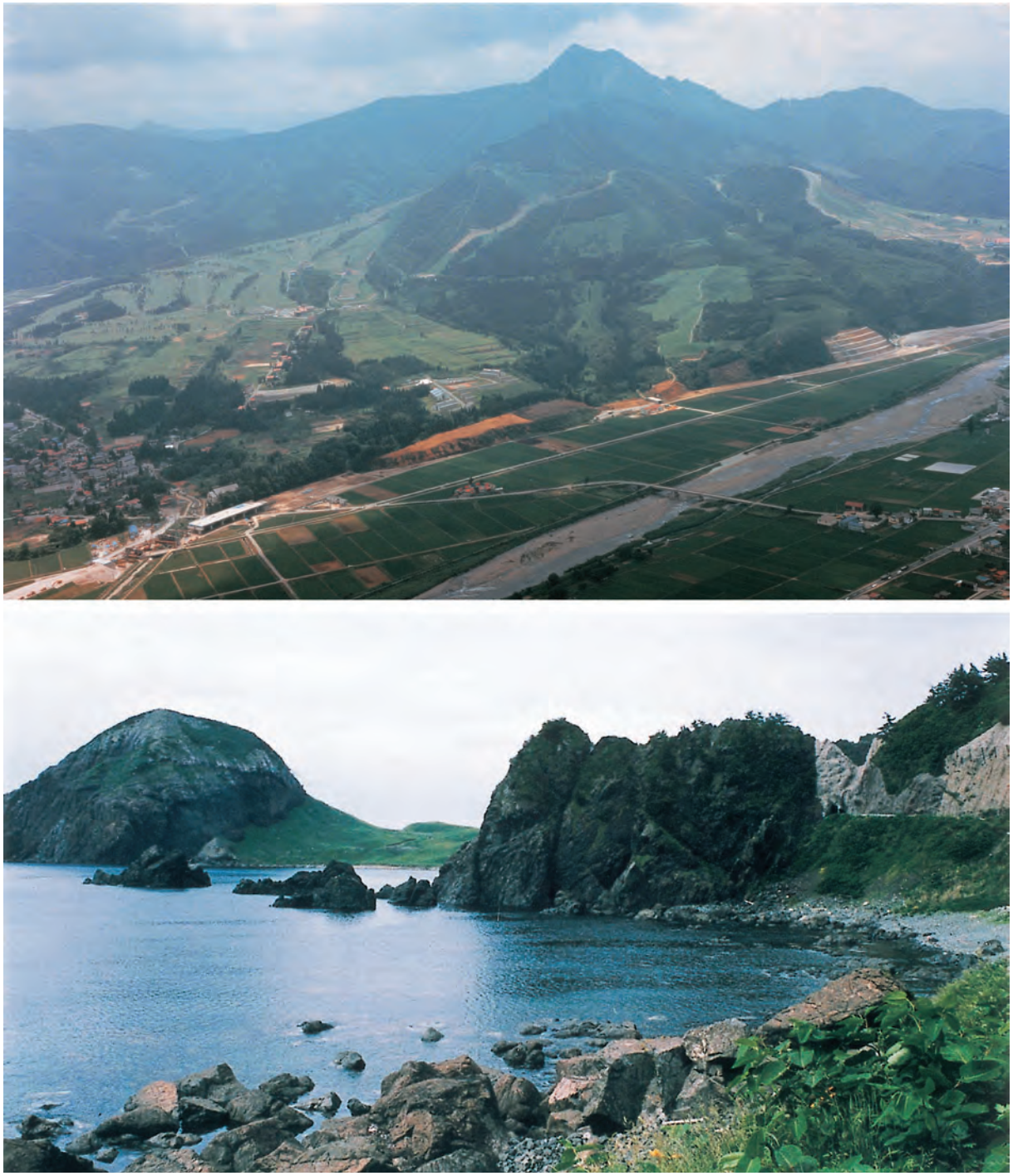


Figure 4.3 Jomon people exploited the many different ecological zones of the archipelago. (Upper) Inland mountainous zone near Gochobu, Niigata Prefecture. (Lower) Coastal zone, Sado Island, Niigata Prefecture.

distributed, can be termed style zones. Thus, for example, the extensive areas of the northern archipelago where the Kamegaoka pottery style was distributed in the Final Jomon can be called the Kamegaoka style zone. Inasmuch as it is possible to distinguish between one style zone and another, it is also possible that these style zones correspond to the territories of different groups of Jomon people, each identifying themselves through different pottery styles. Archaeologists have, however, for many years been cautious of identifying different peoples simply in terms of different pottery styles.[8] In Jomon Japan it is not always a straight-forward matter to determine the boundaries between different pottery style zones, and indeed there is great debate about how to define and recognise the many different pottery styles themselves. Although there is now broad agreement, different archaeologists use different criteria to define different particular styles, and of course new excavations can always produce pottery vessels which do not fit the established scheme. The framework of pottery types and styles presented in this book derives in great part from the pioneering work of Yamanouchi Sugao, whom we encountered in Chapter Three, and has been enhanced and developed during the career of Kobayashi Tatsuo. Even though this framework will doubtless be further refined in the future, and accepting the problems with identifying pottery style zones with the territories of different groups of Jomon people, the approach set out in this chapter does provide a convenient way of using the available archaeological evidence to consider the social geography of the archipelago during the Jomon.

One of the big questions of Jomon archaeology concerns the relationship between pottery styles and different groups of Jomon people, and this is a theme which demands careful consideration. A useful starting point is the decorative patterning which can be seen on Jomon pots. These patterns are often made up of a number of motifs, and it is possible to trace the development of these patterns and motifs through time. The selection and development of motifs and patterns by potters working in any particular style system result in the specific character of the style of pottery vessels they make. The creation and maintenance of a particular style through time represents the conscious engagement by the potters with patterns and motifs drawn from a style system. The specific significance of the various motifs and patterns employed may change through time, or even from potter to potter, and so it is important to be careful about assigning social significance to any individual motif or pattern and, in the absence of further corroborating evidence, to avoid accepting that the same motif is indicative of a shared social identity.

There are two significant categories of Jomon pottery patterns. The first category includes patterns which are probably purely decorative and which can be called ornamental patterns. Patterns in the second category express a particular concept or ideology and are termed narrative patterns. While the ornamental patterns are dependent on the style system from which the particular pottery type derives its personality, narrative patterns require us to consider a different dimension of non-verbal communication, one that exceeds the constraints of any particular style system. Thus while any one pottery style includes both narrative and ornamental patterns, it is important to distinguish between these two types of pattern.

Narrative patterns express a particular concept or set of concepts, and their presence suggests a relationship between the contents of the narrative and the form of the pattern. The existence of narrative patterns in Jomon pottery is very significant as it indicates that any particular group of Jomon people were able to express shared but specific symbolic meanings through material representations, presumably as part of a common ideological system. An appropriate analogy might be the representations of the Dreamtime depicted by Australian Aboriginal peoples in their rock art.[9]

What we have, then, is a series of groups of people, stretching across the Japanese archipelago, each producing pots in a particular style, the elements of which are drawn from a style system comprising a variety of patterns, motifs and forms. These styles changed and developed through time, still drawing on the particular style system available to the potters, resulting in series of local traditions of making pots which shared certain attributes. At the same time, some of the patterns and motifs employed expressed specific concepts, through which Jomon groups were able to express their experience and view of the world, and which could be 'read' by people who had a common understanding of these various design elements. These pottery styles were sometimes taken up by potters on the peripheries of the style zones where they first developed. As the style zones expanded and contracted, so we can postulate the spread and decline of a variety of concepts, cosmologies and ideologies. In this way, investigating the history of Jomon pottery style zones provides an insight into the Jomon mind, even if we are left guessing at the actual contents of the stories the pots were used to tell.[10]

Jomon pottery style zones varied in extent and archaeologists have identified both smaller, localised zones and larger, more widespread zones. The smaller, localised zones probably correspond with the nuclear style zones we discussed above. A cluster of neighbouring nuclear zones often comprise one of the larger zones, which can be related to the subregions. On occasion, some pottery styles, such as the Initial Jomon Oshigatamon and Final Jomon Kamegaoka styles, were taken up across an even more extensive area.[11]

How do these various scales of style zone relate to what archaeologists recognise as the territories exploited by people living in particular Jomon communities? In common with many other small-scale societies around the world, left to their own devices most Jomon people carried out the majority of their everyday activities within a relatively circumscribed territory, perhaps making use of different parts of it at different times of the year.[12] We can think of these territories as a kind of stage which provided the background against which Jomon people lived out their lives. Jomon people quite likely came to associate themselves with the territories which they inhabited, and in their view of the world their identity perhaps gradually became fused with their concept of the area around their village. We will return to this theme when we discuss the development of Jomon landscapes in Chapter Eight. For now it is sufficient to note that Jomon territories, and the pottery style zones to which they relate, probably took on a concrete reality for Jomon people, a reality that was reaffirmed with the passing of time. This allows us to start to regard these territories as Jomon 'lands', in which the inhabitants took pride and perhaps spoke

distinct dialects. The inhabitants of these lands would have placed the interests of the other inhabitants of the same land over the interests of other lands. This concept is analogous to the traditional Japanese term *kuni*, which since ancient times has been used to identify the many small political units which comprised Japan prior to the advent of, or below the level of, the Japanese state.[13]

Who occupied the nuclear pottery style zones?

The recognition of different scales of pottery style zone, large, medium, and small, identified through careful study of the distributions of the different Jomon pottery styles, is indicative of the complexity of territorial organisation in the Jomon. There is no question that we need more research and analysis on this matter and that further work will lead us to revise our current understanding of the situation. The overarching model of three different scales of style zone outlined here, however, is useful in helping us to understand the relationships between the different pottery styles, and the people who created them.[14]

The small pottery style zone is perhaps the most important of the three scales of style zone as it is the most concrete representation of the territory occupied by a particular group of Jomon people. Let us consider some examples. The nuclear zone II-d-1 spans the Japan Sea coast and the island of Sado and comprises a total of around twelve thousand square kilometres. If we take the area of this nuclear territory as a standard for measuring the size of individual style zones, we find that other nuclear territories, such as III-a-1 and III-a-2, are more than twice this size, suggesting that they were actually divided into smaller zones, but that they shared pottery styles, thus masking any boundaries that existed. This adds to the feeling that there is more work to be done to understand the nature of the style zones, especially the larger ones, and that style zones are not necessarily the same as the territories occupied by individual Jomon social groups.

Even though it still remains to identify all of the individual Jomon nuclear zones, the concept provides us with a basic unit for approaching the reconstruction of Jomon territorial behaviour. Most of the activities which Jomon people carried out on a daily basis, conducting their everyday affairs, collecting foodstuffs and the other materials they needed for their everyday lives, all probably took place within the bounds of one of these nuclear zones. Although there were doubtless exceptions, Jomon people did not usually need to have much to do with people living in other nuclear zones. Even larger scale activities which involved the whole group and sometimes members of other groups within the same nuclear zone, for example cooperative hunting and fishing, did not need to involve people from beyond the borders of their own nuclear zone.[15] Where situations arose which did require drawing on relationships with people outside the nuclear zone, bringing people into contact with their counterparts in the subregions or beyond, they were dealt with not as part of the everyday or mundane world (*ke*), but instead as part of the special, sacred realm (*hare)*.[16]

The areas of these nuclear zones may also have varied according to the local population density. In more densely occupied regions, for instance parts of Chubu in the Middle Jomon, nuclear zones were probably smaller than in the more typical, slightly less densely occupied regions, for example in Hokkaido, where nuclear zones often covered broader areas of land. In addition to population density, local topographic and environmental conditions also affected the size of nuclear zones. Indeed, most nuclear zones encompassed a variety of geographical forms, including sea coasts, riverbanks and terraces, hillsides, valleys and mountains, providing a diverse territory for their Jomon occupants to exploit. We should be careful not to assume that particular topographic zones with which we are now familiar, for example specific ranges of hills and mountains or sections of coast, were necessarily occupied by discrete Jomon groups (Figure 4.3).

The ecological diversity present within each nuclear zone was sufficient to guarantee a predictable and sustainable food supply for the Jomon communities which lived there. As the specific mix of foodstuffs varied from zone to zone, so did the technological expertise of the people dependent on those particular combinations of available resources, resulting in toolkits which were adapted to local circumstances. These local adaptations enabled Jomon groups to secure enough food for themselves and to maintain a relatively self-sufficient existence, without having to depend on people from other nuclear zones.

We do need to consider how Jomon people managed so resolutely to maintain their nuclear zones over such long periods of time. The effective exploitation of the various ecological niches within each nuclear zone demanded the development of specific technological abilities. For example, the tools and implements needed to efficiently utilise marine resources cannot be readily transferred to the exploitation of a forested environment. While Jomon people were very adaptable themselves and made use of the wide range of resources available to them, as we will see in the next chapter, part of their success lay in their ability and willingness to develop specialised skills, adapting to the particular circumstances in which they found themselves. The emergence of these specialised skills, in forestry, fishing and hunting, as well as the manipulation of other materials in the environment, including pottery, stone and lacquer, was based on the accumulation of detailed and accurate knowledge of the potential of their surroundings, knowledge which was brought to bear on the development of the specialised technologies needed to realise that potential to the full.[17]

Jomon people thus developed specific adaptations to the situations prevailing in their own nuclear zone, and the communities living within any particular nuclear zone used their knowledge to develop the specialised skills necessary to most effectively make use of the local ecological circumstances. The development of these specific adaptations, while allowing Jomon people to secure and maintain adequate food supplies, also resulted in the increasing fixity of territorial boundaries. This all contributed to the ability of Jomon groups to sustain their self-sufficient nuclear zones over extended periods of time, leading to the increasing permanence of these zones as relatively autonomous geographical entities.

All of the individual everyday activities undertaken by any particular group living within one of these nuclear zones formed part of an organic whole which tied the people involved into a series of mutually beneficial relationships, creating a unified cultural, social and ecological structure in which they lived. Through participation in these everyday activities, the members of the groups who lived in any particular nuclear zone came to recognise and reproduce a set of shared habits, traditions and beliefs, from which they derived a common world view and cosmology, as we have already seen. This common world view and cosmology was expressed by the shared pottery styles which developed within the nuclear zones, and in particular through the narrative style design fields on certain pots. The inhabitants of each nuclear zone had their own distinctive world view and used the designs on their pots to pass on information about their customs and traditions in a rational and meaningful way, perhaps in the context of talking and telling stories around the domestic hearth, or during more public ceremonial festivals. On such occasions the significance of the narrative designs was made apparent, and the continuation of the identity of the group was secured.

Let us now examine the relationships between these nuclear zones and the wider territories of which they were a part – the subregions and regions, and indeed the whole of the Jomon world. As we have already indicated, it is still not possible to offer a comprehensive reconstruction of what this relationship comprised throughout the whole archipelago, but we can find some clues in examples of pots which seem to belong to a specific style and which are found beyond the boundaries of that style. The discoveries of both Ento Upper and Kamegaoka style pots well outside the nuclear zones in which these two styles originally developed provide clear instances of this phenomenon, whereby pots of a particular type had an impact on style zones at a larger scale. In certain cases, pots transcended not only the borders of their native nuclear zones, but also the boundaries of the subregions and regions.[18]

This observation needs to be set in the context of the widespread exchange networks which existed in Jomon Japan and beyond. A variety of different commodities were moved around in the Jomon, often being transported long distances from their original sources.[19] For example, asphalt which Jomon people used to attach their stone arrowheads to wooden shafts and to repair broken pots occurs naturally along the coastal regions of the Sea of Japan in Akita, Yamagata and Niigata Prefectures, and was transported to the other side of the archipelago, turning up in the Kanto region (Figure 4.4). Obsidian from the Shirataki source in Hokkaido is found in the Maritime Province of the Russian Far East, while obsidian from the Wada Pass in Nagano Prefecture is often found on sites in the Kanto Plain, which has little good quality local stone. Jadeite from the Itoigawa area in Niigata Prefecture is found widely distributed across the eastern half of the archipelago.

It is important to bear in mind that these three scales of style zone are devised by archaeologists and the extent to which they had any reality in the Jomon is always questionable. It is likely that there was a high degree of shared identity between the inhabitants in any nuclear zone, and while they may have felt some

affinity with their neighbours in the subregion, this relationship was not as strong as with members of their nuclear zone. Beyond occasional contacts engendered through the exchange networks mentioned above, there was probably very little recognition of shared identity across the large scale regions, and indeed this scale of social geography most likely did not even register with the majority of people in Jomon Japan, at least in their daily lives.

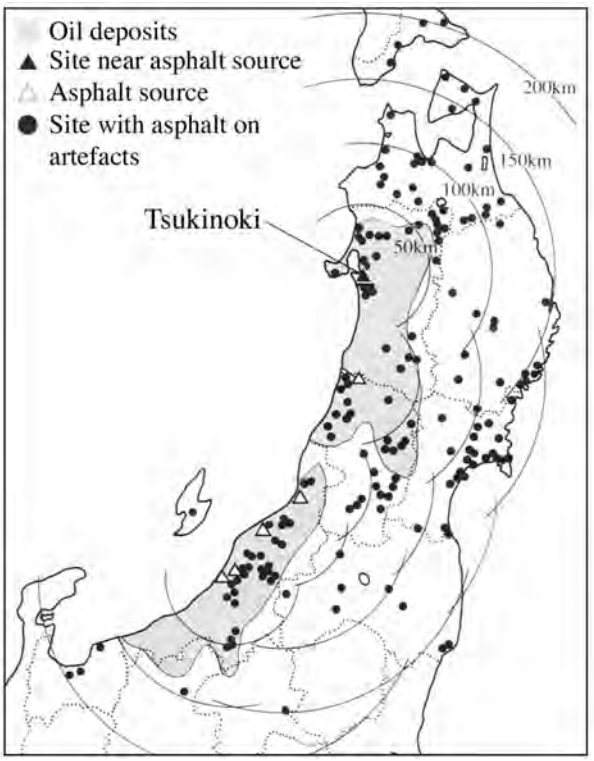


Figure 4.4 Asphalt was used by Jomon people to repair pottery vessels and in hafting their stone tools. People living at sites such as Tsukinoki, close to the sources of important natural commodities, possibly controlled the exploitation and distribution of valued materials, several of which were transported around the archipelago by Jomon exchange networks.

The land of the Flame pots

As we mentioned above, approximately seventy major pottery styles flourished at different times during the Jomon period. In some cases these styles developed very strong local characteristics and are easily identifiable as being from a particular area. This is what happened in the Echigo area, the old name for the region centred on Niigata Prefecture. The Echigo Jomon people created some of the most flamboyant and remarkable of all of the Jomon pottery styles, in particular the Flame (*kaen*) style in the Middle Jomon and the Sanju Inaba style in the early part of the Late Jomon. The Sanju Inaba style proved very popular even beyond the borders of the nuclear zone where it first appeared, and was eagerly taken up in neighbouring areas. These distinctive styles were expressions of an especially strong sense of identity among these Echigo Jomon people in the Middle and Late Jomon, perhaps akin to the sense of local pride found among certain rural communities in traditional Japan and more recently. We can think of them discussing their very striking pottery style in their own distinctive dialect. There is no doubt that the Flame pots in particular have a special elegant quality, a sparkle which makes them stand out among the numerous other pottery styles of the Jomon (Figure 4.5). And yet the Flame pottery style was one of the shorter lived of all the Jomon styles. Through the following examination of the intense but short lifespan of the Flame pottery style, we hope to elucidate a better understanding of what we might call the 'way' of Jomon pottery.[20]

Flame pottery is found across an extensive area along the Japan Sea coast (Figure 4.6). The southwestern corner of the distribution of Flame pots is where the dark cliffs of the Oyashirazu coast reach down to the

Figure 4.5 Middle Jomon Flame style deep pot from Umadaka, Niigata Prefecture. Height 33 cms. These spectacular vessels, although not bearing any cord-marked decorations, are considered among the greatest achievements of any Jomon potters.

sea, making the land journey between the modern prefectures of Toyama and Niigata a dizzying combination of cliff-hugging roads and tunnels, travelling along which we are forcibly reminded of what a feat this journey must have been in the Jomon, and yet it was not a complete barrier to the influence of Flame pots. Vessels of the same style are found as far north as Nezugaseki and the mountain fastnesses of the Dewa region of Yamagata Prefecture. The style penetrated deep inland to the borders of the Shinano region on the edges of Nagano Prefecture, where it was halted by the impenetrable mountain ranges of the central Japan Alps. The mighty Shinano River forms part of the longest drainage in the archipelago and waters the great Niigata Plain. Far upriver the waters flow through the broad Iiyama Valley, which marks the beginning of the next nuclear zone and a new Jomon land. North of the Shinano, the Agano River flows out of the Aizu Valley in Fukushima Prefecture. The middle drainage of the Agano River, and area which today spans parts of Niigata and Fukushima Prefectures, was an important centre for both the Flame and the Sanju Inaba styles.[21]

With the advent of the Middle Jomon, population levels increased and Jomon cultures across the archipelago flourished. We can estimate relative changes in population from what we know about the numbers of sites occupied at different times. There are nearly four times as many Middle Jomon sites as sites from the preceding Early Jomon. Koyama Shuzo, an anthropological archaeologist from the National Museum of Ethnology, estimated that the population of the archipelago, excluding Hokkaido, was somewhere between 106,000 and 162,500. Koyama's estimates need to be treated with caution, and it is now accepted that we cannot make a direct connection between the number of known sites and the actual population. Nevertheless the great increase in site numbers does seem to suggest a rapid increase in population in the Middle Jomon.[22]

These high population levels were not restricted to a limited area, but were found across the entire eastern half of the archipelago in the Middle Jomon. It is true that in certain regions within eastern Japan, notably northern Tohoku and around the Kanto Plain, the number of sites was already high in the Early Jomon, and in these regions the rate of population increase in the Middle Jomon was not so great. Centred on modern day Niigata Prefecture, the Echigo area, in particular along the banks and terraces of the Shinano and Agano Rivers and their smaller tributaries, a rapid increase in site numbers and probably population levels did occur from the beginning of the Middle Jomon period. Many of these sites are the remains of circular villages comprising pit dwellings arranged around a central open space, a form of settlement to which we will return in Chapter Six.

These changes in population are associated with changes in pottery styles. During the later part of the Early Jomon, potters in the Echigo area had made pots in what archaeologists now call the Moroiso and Jusanbodai styles.[23] The Moroiso style in particular was long-lived, and the design of these pots had become increasingly detailed and intricate. The succeeding style, Jusanbodai, continued the Moroiso decorative tradition, but Jusanbodai potters were unable to introduce further refinements and their pots

had a rather stagnant feel. It seems that they had reached a creative dead-end and they were not able to overcome their apparent potters' 'block'. Far away from the centre of the stagnating Jusanbodai style, potters in the Echigo region found themselves without a vibrant style to refer to in their own pots. In the absence of inspiration from the Morioso inheritance, they had to redefine what they were doing, starting from scratch. It was under these conditions that one of the most distinctive of all Jomon pottery styles was born.

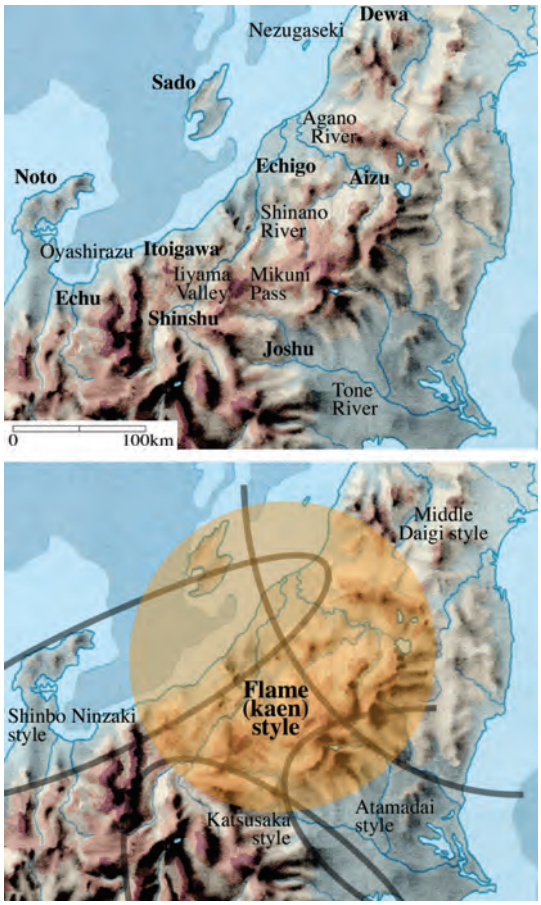


Figure 4.6 The Flame pottery style zone and its neighbours.

These Jomon potters of the Echigo area were of course familiar with the basic decorative techniques employed throughout Jomon Japan. They began with the fundamental Jomon method of covering the surface of the pot with impressed cord marks. They also drew on the many other techniques which were available to them, ornamentation deriving from which distinguished particular pottery styles. One such technique was the use of split bamboo, which involved vertically splitting a length of bamboo, pressing the concave side into the surface of the clay pot, and dragging the stick towards the base of the vessel to draw out the design. The result was a series of convex ridges running down the body of the pot. While the body of the vessel was decorated in this way, other patterns were created around the rim and neck of the pot, using a number of different motifs. Just as considerable variety of design could be introduced by varying the form of cord twist, so these bamboo-impressed designs also depended on the form of the tool used. Split bamboo had been used to decorate pots throughout the Early Jomon, and towards the end of the Early Jomon thinner pieces of bamboo were favoured resulting in finer ridges on the pots. In the Middle Jomon, however, the bamboo-impressed ridges once again became wider. These trends in bamboo decoration are found widely across the Hokuriku region, with a number of local variations, from Fukui to Niigata Prefectures, and are characteristic of the Shinbo Ninzaki style of pottery.[24]

Tracing the sources of patterns and design motifs is only part of the story of understanding the development of a new pottery style. Another important factor is the form of the pottery vessels. The Shinbo Ninzaki potters focused on the production of deep jars and it is in this form of vessel that the

Figure 4.7 Middle Jomon pots from style zones neighbouring the land of the Flame pots. (Clockwise from upper left) Ento Upper style pedestalled dish, Sannai Maruyama, Aomori Prefecture. Height 15 cms. Shinbo Ninzaki style footed pot, Urayama Terazo, Toyama Prefecture. Height 27 cms. Atamadai style deep pot, Bogaido, Gunma Prefecture. Height 60 cms. Katsusaka style deep pot, Tama New Town Site 3, Tokyo. Height 33 cms.

flavour of the Shinbo Ninzaki style is most clearly expressed. They also made shallow dishes, a form that was popular in the Middle Jomon, but these strongly resembled the shallow dishes made in the Middle Daigi style which had its centre to the northeast of the Shinbo Ninzaki style zone, in the Dewa region around Yamagata Prefecture.[25] Why the Shinbo Ninzaki potters did not choose to emphasise their own stylistic identity through the shallow dishes remains an intriguing and yet unanswered question. What this shows, however, is that the development of a new pottery style was not a simple process, and that many decisions needed to be taken with different outcomes affecting the various forms of pot within any stylistic assemblage.

So we can see that the structure of the pottery style preceding the Flame pottery was quite complicated, in terms of understanding the influences on both design and form. In addition, it seems that the influences on the potters who were developing what we now recognise as the Flame pot style included models from further afield, beyond the immediately neighbouring Middle Daigi style zone of the Dewa area around Yamagata Prefecture and the Aizu region around Fukushima Prefecture. For example, a number of cylindrical pottery vessels very similar to those made in the Ento Upper style zone, which had its centre in north Tohoku, have been found in Hokuriku, on the island of Sado and on the Noto Peninsula as well as in the Echigo region (Figure 4.6). Design elements derived from these pots can be seen in the Flame style. Indeed, aspects of Ento design occur in the earlier stages of the Shinbo Ninzaki style, the precursor of the Flame pots, including distinctive types of cord-twist, a form which resembles wood grain (*mokume yoriitomon*). What all this suggests is that there was an active exchange of ideas and actual pots between the potters of Echigo and those from the more distant northerly parts of Honshu, as well as with their closer neighbours.

These influences were not all one way. For instance, a pot from the Kayakarizawa shell midden in Hachiryu Town, Akita Prefecture belonged without doubt to the Shinbo Ninzaki style. The Kayakarizawa shell midden is deep in the Ento style zone and the presence of the Shinbo Ninzaki style pot is strongly suggestive of the presence of a wide exchange network at this time. In the Echigo area pots have been found which belong to the Atamadai style, normally found beyond the Mikuni Pass, along the Tone River from the Joshu area around Gunma Prefecture. In addition, in the southwestern parts of Echigo, we find vessels from the earlier stages of the Katsusaka style, usually distributed from the Shinshu area of Nagano Prefecture. All of the discoveries indicate that the Jomon potters of the Echigo area, who were to produce the Flame pottery style, were aware of pots in the neighbouring Middle Daigi, Atamadai and Katsusaka styles.[26] Rather than directly copying these styles and adopting them wholesale, however, the Echigo Jomon potters took in what these styles had to offer, and drew on selected aspects of these styles as they created their own distinctive style (Figure 4.7).

Archaeologists now recognise three stages in the development of the Shinbo Ninzaki style which, while incorporating certain aspects of neighbouring styles, still maintained a stylistic integrity of its own. At the

Figure 4.8 Middle Jomon 'dragonfly eyes' motif. (Left) Katsusaka style, Mitakedo, Tokyo. (Right) Flame style, Umadaka, Nigata Prefecture. This motif was one of several which became a regular feature on these vessels, perhaps embodying a concept which was shared across the land of the Flame pots.

end of the third stage the Jomon potters of Echigo began to produce the magnificent vessels of the Flame style which drew heavily on the preceding indigenous Shinbo Ninzaki style but also adopted elements from the neighbouring Ento Upper, Goryogadai, Middle Daigi, Atamadai and Katsusaka styles.[27] Close study of the appearance of this new style demonstrates how Jomon potters of any particular style zone managed to retain the focus of their own local styles while also making use of their knowledge of how pots were looking in other style zones.

Investigating narrative patterns

One of the most striking differences between the Shinbo Ninzaki pots and the Flame pots which succeeded them was the replacement of the elaborate cord-marked patterns so distinctive on the Shinbo Ninzaki pots with incised and impressed lines created using split bamboos or other similar tools. In making this break with the preceding Shinbo Ninzaki vessels, the potters who made Flame style pots were probably inspired by the neighbouring Atamadai and Katsusaka styles.[28]

It seems that Jomon potters followed a number of rules or principles when they were applying the decorative motifs to their Flame pots. They appear to have divided the design field of the pot into a number of zones. The decoration around the top of the pot, from the rim upwards, was organised in a horizontal fashion, decorative motifs flowing around the rim of the vessel. Below this uppermost zone, the body of the vessel was divided into four panels in which decorations were organised in a vertical fashion. The decorations in these panels comprised a series of vertical incised straight lines. At certain key points on the surface of the vessel the adjacent lines merge. Around the neck, the major motif is the shape of the letter 'S' lying on its side, and the lines are curved rather than straight as on the main body of the pot. In certain cases lines are applied so that they stand out in sharper relief from the body of the pot. Just below the neck are a series of 'S' shaped stamps, in some of which half of the 'S' is obscured leaving a design resembling a fishing hook. In some cases the 'S' motifs are vertical and seem to hang from the incised lines which divide the neck, mouth and body of the pot.

The most distinctive attributes of the Flame pots are the large projections around the mouth which resemble vigorously burning flames. There are usually four such projections, although there are occasional variations to this rule. Flame pots from the Aizu region around Fukushima Prefecture are rather different in that they normally have three projections. Each projection rises from one of the vertical incised lines that divides the body of the vessel into four panels. Directly beneath the protrusion, on these dividing lines, can be found

Figure 4.9 Two types of Flame style pottery. (Left) 'Cockscomb' type with 'S' motifs on rear of protrusions, Iwanohara, Niigata Prefecture. Height 34 cms. (Right) 'Crown' type, Umadaka, Niigata Prefecture. Height 29 cms.

one of the other characteristic features of in Flame pottery design, two symmetrical interconnected circles, rather like a three-dimensional figure of eight, which archaeologists call the dragon-fly eyes motif (Figure 4.8).

The distinctive protrusions which flare up from the mouths of the vessels are not symmetrical and indeed this asymmetry seems to be a careful and deliberately planned aspect of pots of the Flame style. Two types of protrusion are recognised (Figure 4.9). The first type is called the 'cockscomb' because of its resemblance to the top of a rooster's head. The rim of the pot between these protrusions is further decorated with a series of saw-like teeth on one side and on the other side by small protrusions which resemble the tail feathers of a bird. The Flame pottery style went through three developmental stages and as time went by the projecting protrusions became taller. The protrusions also change direction over time: in earlier examples the cockscombs face either left or right while in later examples the cockscomb protrusions normally face left while the tails point right. These changes can be explained in terms of changing influences from neighbouring pottery styles.

Tracing the development of the cockscomb provides a good example of how motifs on Jomon pottery vessels change through time. The cockscomb motif itself probably derives from horizontal 'S' shape motifs on the rims of Daigi 8a pots from the extensive Middle Daigi style zone which lies to the north of the

Echigo region, home to the Flame pots. These Middle Daigi 'S' shape motifs gradually became elaborated to the extent that they seemed to protrude from the rim of the vessel, and this probably represents the birth of the cockscomb protrusions. The right curve of the horizontal 'S' became the 'head' with saw-tooth shaped teeth, while the left curve became increasingly drawn out to eventually become the 'tail'. The Flame potters further elaborated the cockscomb itself, extending the protrusions so that they came to resemble the eponymous flames curling and licking around the rim. In this process of elaboration the Flame potters transformed the Daigi 'S' into the distinctive 'flames'.

Once this had occurred, the Flame potters set out to clearly recreate the 'cockscomb' on their pots, with the 'head' on the left and the 'tail' on the right, something of a change in directionality. Jomon people did not have chickens and so it is very unlikely that these motifs were indeed representations of cockscombs. The apparent change in direction may be related to the way that most right-handed people will draw a face in profile, with the face looking left. This would suggest that even if they were not attempting to represent chickens as such, the Flame potters were giving the motif, which began as a simple 'S' in the Daigi style zone, a more representational significance as the head and tail of an animal or bird of some sort. As they moved further from the original influence of the 'S' design, the Flame potters freed their cockscombs from the restraints of the 'S' shape, giving their pots their own identity, part of which was reflected in the left-facing heads.[29]

The second type of Flame style pots do not have the hollow projections seen in the cockscomb protrusions, nor do they have the saw-tooth shaped frills around the rim. The projections instead were straight-sided and resembled castellations and are called 'crown' type projections. At first glance these 'crown' type pots seem simpler in design than those with cockscomb protrusions, but the crown type pots do present a rather subtle asymmetry of their own. Although these protrusions affected the utility of these vessels the pots still had a practical function. On the left hand side of each protrusion we find a small hollow which may have been of great significance. Looking at these hollows, they begin to resemble the eyes or mouth of some creature, perhaps suggesting the more apparent left-looking faces of the cockscomb pots (Figure 4.10).

These thoughts on the asymmetry of cockscombs and crowns suggest that the protrusions on Flame pots are not just mere structural elements in the design of the entire vessel, but may well have their own hidden meanings. Modern viewers tend to focus on the decorative splendour of these remarkable vessels, privileging the emotional effect which the pots and their protrusions evoke rather than the meanings they held for their creators. While appreciating these pieces we must not lose sight of the fact that they are the material representations of mental images and symbols shared by the inhabitants of the Jomon Echigo style zone who made and used the pots. Even though we are unable to have access to the precise meanings these pots and their designs were intended to convey, we can say that they demonstrate that the

Figure 4.10 Flame pots close-up. (Upper left) Detail of a 'crown' type pot showing a remnant 'facial feature' on the left. (Lower left) Detail of the body of a 'cockscomb' type pot showing the merging of adjacent lines. (Right) Fragment of a 'cockscomb' type pot in situ at Umadaka, Niigata Prefecture.

people in the land of the Flame pots did share a set of mutually comprehensible concepts given physical form in their pottery vessels.

The two different forms of protrusion, the cockscomb and the crown, are expressions of different mental images and probably embody different concepts and meanings. Both types of Flame pot incorporate the 'S' and dragon-fly eyes motifs, which open up a further dimension of complex meanings. It seems likely that the two types of Flame pot each have their own specific tale to tell, and that bones of these narratives are the various repeated motifs we have discussed above, each of which represent particular concepts.

The short life of Flame pottery

As mentioned above, the Flame pots of the Aizu region developed in tandem with the Flame pots of the Echigo region, but maintained a degree of stylistic independence. The cockscomb protrusions, which were to become such an important feature of the Echigo Flame pots, were particularly developed in the Aizu region. Once the Flame pots reached their fully developed stage, however, the Aizu potters began to follow an increasingly independent path.

The land of the Flame pots did not, of course, exist in complete isolation. The 'S' shape and the 'dragonfly eyes' that were structurally important in Flame pots also played an important role in the pottery of neighbouring style zones, notably to the west in the Echu region around Toyama Prefecture and beyond. The dragonfly eyes motif first appeared in the Katsusaka style zone in the Kanto region and was taken up across the Central Mountain region and introduced into Echigo and Hokuriku. The use of this motif to express concepts was therefore shared across a broad swathe of Jomon Japan, even if the precise concepts and meanings which these motifs expressed probably varied from region to region. These motifs which were found across large parts of the Jomon are often found as auxiliary motifs, forming just part of a design repertoire in any particular style zone, whose inhabitants had a shared understanding of the narratives on their pots. These auxiliary motifs appeared in cameo-like roles in these larger narratives and connected the individual style zones to the wider Jomon world.

The lifespan of the Flame pottery style was, however, short. The Flame pots, as if predicting their own destiny, blazed brightly like flames that burn ferociously before being extinguished, and then died without a fight, fizzling out after just three stages of development. The seeds of this demise were perhaps sown with the creation of forms which, while recognised by many Jomon archaeologists as the apogee of the Jomon ceramic tradition, in their perfection did not allow any further modification or improvement, denying the possibility of further development or a smooth succession to the next stage. The question of why the Echigo potters, relatively suddenly and with no apparent regret, decided to abandon the Flame style remains largely unanswered, provoking ongoing debate among archaeologists keen to understand the transformation which occurred at the end of the Flame pottery style.

One aspect of this transformation to which great significance has been attached is the marked decline in the number of Jomon sites in the later part of the Middle Jomon in the Echigo region associated with the end of the Flame pottery style. This phenomenon has been long recognised across central Honshu and is considered to represent a dramatic fall in population at this time. Elsewhere, however, there is no such reduction in site numbers. In Tohoku, for example, in the Middle Daigi style zone, there was no corresponding decrease in the number of sites as the long-lived Middle Daigi style entered its ninth and tenth stages of development. Meanwhile in Echigo, no clear local successor to the Flame pot style appeared, and potters instead made vessels which were derivative of the increasingly flourishing Middle Daigi style to the northeast.[30]

By the beginning of the Late Jomon, the number of sites in Echigo again began to increase. At the same time a fresh new style of pottery appeared, the Sanju Inaba style, representing a new burst of creativity replacing the atmosphere of stagnation that had persisted since the demise of the Flame pot style (Figure 4.11). The Echigo region once again became a centre for innovative design, having lagged behind the Aizu region in this regard since the last stages of the Flame style. The Sanju Inaba style is distinguished by a new method of decoration which involved covering much of the surface of the vessel with shallow

Figure 4.11 Late Jomon Sanju Inaba style pot and lid from Iwanohara, Niigata Prefecture. Height of pot 25 cms, height of lid 10 cms. This style replaced the Flame pots and represents a remarkable degree of stylistic change between the Middle and Late Jomon.

punctates made by jabbing a spatula into the clay . The Sanju Inaba style was taken up across Echigo and Aizu, and spread down towards the Kanto into the Iwaki region, the coast of Fukushima Prefecture, and north along the Pacific coast in the region of the modern city of Sendai in Miyagi Prefecture. Typical Sanju Inaba vessels have a rounded, bulging, or globular form and have wide mouths fitted with specially made lids. Like the Flame pottery style, however, the Sanju Inaba style went through only three developmental stages, and died out after only a relatively short period. Once again, the number of sites decreased with the demise of the Sanju Inaba style, and it was not until the end of the Final Jomon that the Echigo potters enjoyed another burst of feverish activity.

It is of course impossible to understand everything that happened during the Jomon in the land of the Flame pots from pottery alone. A more contextual approach is needed which includes information on the form of settlements, the composition of tool kits, and the nature of ritual activities using secondary objects such as clay figurines. The Echigo region formed part of a broad exchange network which involved the movement of commodities such as jadeite. The control of the jadeite routes is an important theme in understanding relationships between different Jomon communities and regions. Middle Jomon communities in the Echigo region exercised considerable influence over the exchange of jadeite which was found in the Itoigawa area, and many of the spectacular large jade beads which are found across a wide part of the eastern archipelago originated in the land of the Flame pots. Much more work is required to understand all of the processes involved in the formation and history of the land of the Flame pots, but it is already clear that what was happening in the Echigo region at this time was of great significance for developments elsewhere in the world of the Middle Jomon.

Figure 5.1 Map showing sites mentioned in Chapter Five.

Chapter Five

Nurturing the Jomon: food, drink and the blessings of nature

The use of diverse food resources

For over one hundred thousand years, prior to the advent of farming, *Homo sapiens sapiens* lived off wild food resources. The inhabitants of the Japanese archipelago during the Jomon were part of this long tradition of fishing, gathering and hunting. Knowledge of their subsistence economy, what people ate and how they obtained their food, is essential to any understanding of Jomon livelihoods, culture and society.

In the Jomon, people adopted a more systematic approach to securing their food which included preparing some foods for storage (Figure 5.2). This was a very significant change which moved people away from a simple hand to mouth existence. It also saw the procuring of large quantities of food at one time which was dependent upon food resources such as nuts and fish which were abundant at particular times. As some of this food, notably fish or meat, would quickly spoil, storage facilities such as pits were employed and preservation methods, such as smoking and salting were used.[1]

These planned, systematic and predictable food-procuring strategies enabled Jomon peoples to live in large, relatively permanent settlements. As we have seen in Chapter Four, pottery played a central role in developing the lifestyles these circumstances supported.

Figure 5.2 A reconstructed Jomon meal from Kamitakatsu shell midden, Ibaraki Prefecture. Meat, fish, nuts and a variety of plant foods formed the basis of Jomon diets. Pottery was essential to the preparation and serving of Jomon food. Many foodstuffs were gathered during times of abundance and then processed and stored for use in leaner seasons.

Figure 5.3 An Initial to Middle Jomon waterlogged site from the bottom of Lake Biwa. Awazu shell midden, Shiga Prefecture. The waterlogged shell layers preserved a wide range of food Jomon remains and other organic materials.

A number of types of archaeological site preserve the remains of ancient foodstuffs, in particular shell middens, caves and waterlogged or wetland sites (Figure 5.3). It is now known that the remains of a wide variety of flora and fauna are present on Jomon sites, including over sixty species of mammals, more than 350 species of shellfish, over seventy species of fish, thirty-five species of bird and fifty-five kinds of plants (Figure 5.4). Therefore, although plant foods are very perishable and do not survive well in most archaeological contexts, we can assume that Jomon people ate a wide variety of plants and vegetables.[2]

Despite the relatively small chance of survival for such remains, pollen of yam, spider lily and heartleaf lily dating to the Middle Jomon were recovered at Osawa in Niigata Prefecture.[3] Shirai Mitsutaro in his comprehensive survey of wild plants in Japan, entitled *Plants for Survival,* discussed how to prepare and cook over five hundred species of plants – including sixty-five species of mushrooms.[4] He detailed how to eat the bud, young leaf, leaf, stem, root and young plant. Much more work, however, is needed to understand how this great diversity of plant food resources was utilised by Jomon people.

This diversity of subsistence resources had two important implications for Jomon foragers.[5] Firstly, it ensured that there was a stable food supply. Jomon people were able to enjoy the natural blessings brought by each season because they did not restrict themselves to a small selection of foodstuffs. Even though most plants were only available in certain seasons, Jomon people made the most of those plants which were around. And even if they had to wait a short while, they knew that a new crop of plant foods would soon appear.

The second significant implication of eating a wide range of foodstuffs rather than concentrating on a narrow spectrum of what was available, was that there was a close relationship between the ecological conditions which permitted Jomon people to maintain a stable livelihood, and Jomon people themselves. The list of animals consumed by Jomon foragers demonstrates that they really were making the most of what was available to them: raccoon dogs, wolves, wildcats, flying squirrels, ermine, marten, rats and hares. Even monkey bones are found in Jomon shell middens, indicating that unlike many other hunter-gatherers, Jomon people developed quite a taste for primates. When Kobayashi is asked whether Jomon people would have found the hunting and consumption of monkeys rather unsavoury, he often responds by saying how much he enjoys Jomon-style experiences, especially those of a culinary variety. He recalls with fondness on one occasion being served raccoon dog which he tucked into – although he confesses that it was difficult to set about this dish with real gusto, the flavour being somewhat disappointing as the meat had been boiled for so long to render it edible that even the addition of chopped burdock did not make it more palatable.

Figure 5.4 Remains from processing Jomon foods. (Upper) A Middle Jomon red sea bream thought to come from a fish originally one metre long, Sannai Maruyama, Aomori Prefecture. (Lower) Late Jomon deer antlers, Kamitakatsu shell midden, Ibaraki Prefecture.

Taste is a matter of cultural distinction and we cannot be sure if what Jomon people enjoyed would match our own tastes. Among the sixty or so mammals exploited by Jomon people, there must have been some that Jomon people found did not suit their palates. There is little question, however, that these Jomon people did eat just about everything in their environment. Even to modern tastes, the meat of what are now regarded as game animals – notably deer and wild boar – is considered delicious. Just one animal would have provided enough for a good meal with plenty left over to put by for later. There were of course geographical variations in what sort of game was available. In mountainous areas, for example, bear or serow were common, while in Hokkaido it would be the Ezo deer rather than wild boar which would have been readily available. Jomon hunters who were determined to catch their prey would often find, however, that they could not be found in close proximity to their settlement as these larger animals would soon learn to avoid areas of human habitation. Hunters had to increase the extent of their hunting grounds and forage further afield, so that eventually it became difficult to return home with a catch within one day. One option was to return to the mobile lifestyle of their Palaeolithic forebears, moving around the landscape, their actions determined by the movements of the animals they hunted. Another option, which was taken up by the Jomon, was to broaden the range of animals eaten rather than concentrating on just deer or wild boar, no matter how desirable the flesh of these larger animals may have seemed. Jomon people came to control what they ate through a careful system of what can be termed ranching without a fence.

Figure 5.5 A Middle Jomon bowl made from a whale vertebra, Okura Minami shell midden, Chiba Prefecture.

Ingredients from air and water: fish, birds, seaweed and insects on the Jomon menu

While making use of a wide range of plant and animal resources, Jomon people also exploited over 70 different species of fish and other sea creatures. An important group of marine mammals for the Jomon were the delphinids. The site of Mawaki in Ishikawa Prefecture is located on a small inlet on the north coast of the Noto Peninsula which protrudes into the Sea of Japan. When the site was investigated, the excavators were surprised to discover the bones of many delphinids.[6]

Whales, which appear off the coasts around the Japanese islands from April to November, also fell prey to Jomon fisherfolk. Whale bones are known from a number of Jomon sites around the archipelago. These huge creatures would clearly have presented something of a challenge for the hunting technologies available to Jomon people, and it is probable that whale bones from Jomon contexts are more likely to be the result of Jomon people taking advantage of whales which found themselves in difficult circumstances, perhaps stranded in tidal inlets. This occasional and opportunistic exploitation of whales is known by the term *yorikuja*. The carefully planned and deliberate exploitation of whales by Jomon people should not, however, be simply ruled out. Mori Koichi has argued this point persuasively, quoting the example of the Ainu of Hokkaido who were known to proactively and enthusiastically hunt whales using harpoons.[7] A variety of objects made from whalebone are known from Jomon sites, including bowls made from hollowed-out whale vertebrae from the Okura Minami shell midden in Chiba Prefecture,[8] and more complete whale vertebrae from Middle and Late Jomon settlements which appear to have been used as simple turntables for forming pottery vessels, precursors to the potter's wheel which did not arrive in Japan until the Yayoi period (Figure 5.5).

In addition to this, bones from a variety of sea mammals including different sorts of seals are found in shell middens along the Pacific coast of Hokkaido and eastern Honshu. More infrequently, bones of dugong, which normally inhabited warmer waters, are found in a number of shell midden sites, including Hobi in Aichi Prefecture, Iha and Sakihikawa, both in Okinawa Prefecture.[9]

The presence of the bones of off-shore fish in shell middens indicates that Jomon people were prepared to row out into the offing in their dugout canoes, fishing using hooks and harpoons, and that they were effective in catching large fish such as bonito and tuna (Figure 5.6). They also seem to have worked out

Figure 5.6 Many Jomon dugout canoes have been discovered from coastal sites. These canoes were used for transport and fishing, including for offshore species such as tuna and bonito. Canoes were used to cross between islands in the archipelago and the East Asian mainland. Early Jomon, Torihama shell midden, Fukui Prefecture. Length 6m.

how to eat the blower fish, parts of which are highly poisonous. Jomon people, like their modern Japanese descendants, were prepared to put up with the danger in order to enjoy the subtle flavour of the blower fish. We find large quantities of blower fish bones in shell middens at the rear of Tokyo Bay, reinforcing the notion that Jomon people did indeed relish this particular kind of fish (Figure 5.7).[10]

Matsui Akira of the Nara National Research Institute for Cultural Properties argues that Jomon people in eastern Japan often ate salmon, while people in western Japan often ate salmon and a particular form of sweet river fish, the *ayu*. The extensive use of salmon in eastern Japan was proposed some time ago by Yamanouchi Sugao, and the importance of salmon in the Jomon diet is now widely accepted.[11]

Although there is no definitive proof, there is some suggestion that Jomon people ate seaweed, a popular and abundant part of the later traditional Japanese diet. Our first direct hint about the use of seaweed in antiquity comes from an encyclopedia from the tenth century AD, the W*amyorui Jusho*, which lists nineteen types of edible seaweed. Reports of archaeological discoveries unfortunately remain anecdotal or circumstantial, for example a note in the records from the important Final Jomon site at Kamegaoka in Aomori Prefecture which describes something thought to be akin to *wakame* found inside a pottery vessel, but this information is not very reliable. In the shell middens of the Kanto region, we often come across soil deposits as black as lacquer, which may also be related to the use of seaweed.

Naora Nobuo, one of the pioneers of reconstructing Jomon diet, long ago noted that shell middens often contained very small shells whose presence in archaeological deposits indicates the exploitation of

Figure 5.7 Jomon fishing. (Left) Later Jomon fishing gear including harpoons made of bone and antler, from Satohama and Tagara shell middens, Miyagi Prefecture. (Right) Aquatic food resources from Toyosawa shell midden, Tokyo. (Fish clockwise from upper left): scorpion fish, black porgy, red sea bream, rock bream, sea bass, horse mackerel, bartailed flathead, eel, Arabian pike-eel, Japanese flounder, pufferfish, greenling, carp, mackerel, yellowtail.

seaweed which provided a home for these small shellfish, rather than Jomon people using them as food.[12] These small shells perhaps arrived on Jomon sites entangled in a harvest of seaweed, and were subsequently thrown away with the other waste, only to be preserved for posterity in the midden layers. Kano Tetsuya has followed up this research and it now seems likely that a number of types of seaweeds such as eelgrass might have been used during the summer months when terrestrial foodstuffs were a little hard to come by, and that they were thus an important seasonal resource.

The bird bones found in the shell middens, even though they are not present in very large quantities, show that Jomon people also made use of birds. The most common bird bones include those of pheasant, goose, and duck, all of which were probably eaten by Jomon people. Other species which contributed to the broad spectrum diet of the Jomon included swan, eagle, albatross, shearwater, hawk, kite, owl, sparrow, shrike, thrush, various tits and meadow bunting. Jomon people used the fine cyclindrical bird bones to make bone pins, needles and beads. One slight mystery is why so few bones of cranes are found, the crane being such a distinctive members of the Japanese avian community. Perhaps these bones were especially highly valued for making tools and other objects, or perhaps cranes had a special significance for Jomon people which meant that they were not eaten.[13]

Figure 5.8 Later Jomon plain pottery used for making salt from sea water, Kamitakatsu shell midden, Ibaraki Prefecture. Height 25 cms.

Although, as with seaweed, there is not much direct evidence surviving on archaeological sites, we must not overlook the possibility that Jomon people ate certain varieties of insect and larvae. The remains of certain insects have been discovered during recent excavations of a number of Jomon sites, but we cannot be sure which of these would actually have been eaten. Even in modern Japan certain insects are regarded as a delicacy, and so we should not be surprised if Jomon people incorporated some of them into their diet, as they made use of the widest range of food resources available to them in the natural environment. There are many types of insects, especially aquatic insects, which are particularly delicious, and many terrestrial insects have flavours which vary from delicious to unpleasant. A degree of caution is required in selecting insect ingredients, however, as we do occasionally come across varieties which are poisonous.[14]

In 1919, the Research Division of the Ministry of Agriculture undertook a survey across the country to find out how insects were being used, and produced a list of 55 species. The prefecture with the greatest diversity was unsurprisingly Nagano, where some 17 varieties were used, followed by Yamaguchi and Yamanashi Prefectures. Of all the various types of insects, locusts seem to have been popular everywhere in the country, followed by bee larvae. Bee larvae are jolly good if eaten while still alive, but they are today enjoyed preserved in soy sauce. Other than these favourites, gribbles and other insects are also still eaten. In Aomori Prefecture there is still a deep-rooted popularity for Japanese diving beetles. An unusual speciality dish of the Ina Valley in Nagano Prefecture comprises certain types of fly larvae, which are considered to have a particularly appealing flavour. These larvae live in on the beds of slow-flowing rivers, and include the larvae of mayflies, dragonflies and dobsonflies.

The use of honey from bees doubtless has a long history, and it was probably used all over the world from Palaeolithic times. We can expect that our Jomon foragers also made use of this important resource, even though there is no direct evidence from archaeological sites. After all, the sweetness of honey has attracted people regardless of where or when in the world they lived. Even if gathering honey is a little fraught with danger, people have found it difficult to resist once its taste is known.

Salt extraction

Salt or sodium is one of the essential parts of the diet. Although the Arctic Inuit are known for not having salt *per se*, they were able to derive sufficient sodium from animal meat and blood.[15] Something similar may well have been happening in the Jomon. In addition to animal meat and blood, the intensive exploitation of marine food resources provided sodium for these prehistoric foragers.

Figure 5.9 Nuts: a Jomon staple. (Clockwise from upper left) Sweet chestnut; horse chestnuts; remains of a Middle Jomon chestnut from Sannai Maruyama, Aomori Prefecture; acorns.

At the end of the Late Jomon, around three thousand years ago, it appears that techniques were developed for extracting salt from sea water. A specific type of thin plain pottery has been recognised in a number of Late Jomon sites around the Kasumigaura area of the Kanto Plain and Sendai Bay on the Pacific coast of northern Honshu (Figure 5.8). Kondo Yoshiro identified this type of pottery as being used for salt making.[16] At about the same period as this pottery appeared, the number of shell middens along the coasts of Tokyo Bay was in decline. This suggests that during the Late Jomon, the previously intensive production of dried shellfish was replaced by intensive salt production. In addition, since these salt-making vessels have been recovered from both inland and coastal sites, it is likely that salt was exported inland from its point of production. For some reason, however, this method of producing salt from evaporated salt water appears to have been abandoned during the latter half of the Final Jomon, in the centuries immediately preceding the appearance of wet rice agriculture in the first millennium BC. Given that salt must have been precious, future research needs to consider why salt production using these techniques ceased.

In addition to extracting salt from seawater, it is possible that salt was derived from the soil. Some animals such as elephants, deer and wild boar are known to take in salt by licking salt-rich soil. At the Early Jomon settlement of Ondashi in Yamagata Prefecture, carbonised remains of food containing salt were recovered.[17] Since the site is located in an area of salt-rich soil, this discovery may indicate that Jomon people were extracting salt from the soil. Soil-eating habits are ethnographically observed world wide, among a variety of peoples including the Ainu and North American Indians.[18]

Figure 5.10 Nut processing facilities. (Left) Late Jomon storage pit from Kazahari, Aomori Prefecture containing horse chestnuts. (Right) Middle Jomon wooden water processing facility for leaching tannic acid from acorns, Takaseyama, Yamagata Prefecture. Length 6 m. Features such as this indicate the careful planning and scheduling of subsistence activities in the Jomon.

Nuts as a major food resource

Sweet chestnuts, walnuts, horse chestnuts and acorns are frequently recovered from Jomon sites (Figure 5.9). The earliest example is from the Incipient Jomon site of Higashi Kurotsuchida in Kagoshima Prefecture where a large number of acorns were found in a storage pit.[19] The Initial Jomon layers at Motono in Shizuoka Prefecture, also contained the remains of sweet chestnuts.[20] These examples show that nuts were stored in underground pits from the beginning of the Jomon.

Storage pits represent long-term scheduling of subsistence activities. A very early example of a typical storage pit, with a wide base to allow a large capacity, has been identified at the Incipient Jomon site of Unoki Minami, Niigata Prefecture.[21] In addition, storage pits in low-lying wetland locations seem to have served to remove the tannins from nuts which would otherwise be inedible, for example at Final Jomon Minamikata Maeike in Okayama Prefecture.[22]

Although nuts are organic and are not often well-preserved within archaeological contexts, the hard shell component can sometimes be preserved in comparatively good condition. Therefore, careful sampling using water-separation methods will recover nut remains from most Jomon sites. Indeed, the examples given above indicate that nuts were not only the most intensively exploited plant food, but also a staple food for Jomon people.

Figure 5.11 Cooking with acorns. (Clockwise from top) Reconstructed quernstone and grinding stone with acorns. Late Jomon quern and carbonised Jomon cookies, Iwanohara, Niigata Prefecture. Length 12 cms. Middle Jomon composite stone hearth, Sasayama, Niigata Prefecture.

Figure 5.12 Early Jomon 'cookies' from Ondashi, Yamagata Prefecture. Diameter of largest example, 7 cms. These cookies often contained nuts and other ingredients which can be identified by microsopic analysis. Preserved since the Jomon through being burnt and carbonised, they provide a direct insight into Jomon cuisine.

Figure 5.13 Remains of a later Jomon sweet chestnut tree, Kagomine, Niigata Prefecture. The chestnut was of great importance to the Jomon. There are some suggestions that Jomon people were very selective about the chestnuts they used, and that they actively encouraged them to grow near their settlements.

The socialisation of nature

Certain types of nuts are not edible without removing tannic acid. While sweet chestnuts, beech and other nuts such as pasania do not require acid removal, other acorns must be processed to remove the acid before they can be consumed (Figure 5.10). Furthermore, horse chestnuts and some varieties of acorns need a particularly complex acid-removal procedure including soaking and boiling. Oil is also useful for acid removal and the Ainu used animal and fish fatty oils for this purpose. [23]

The removal of tannic acids is a labour-intensive task. The procedure for removing acids from horse chestnuts, for example, takes as long as one month. These elaborate procedures to utilise natural resources formed part of the 'socialisation of nature'. [24] Evidently, the introduction of acid removal techniques enabled the exploitation of various species of nuts, markedly enriching Jomon subsistence. This must have been one basis for the formation of complex societies in the Jomon, despite apparent constraints of the hunting and gathering economy. [25]

In Middle Jomon sites across southern Tohoku and Niigata Prefecture, large and complex stone-paved hearths located within pit houses have been identified (Figure 5.11). These hearths are much larger than earlier types of hearth, and in addition typically have a deep ceramic pot set into the structure of the hearth. Watanabe Makoto of Nagoya University has interpreted this type of hearth as an ash-making facility used during the procedure for removing tannins from nuts. [26] The acid can be removed from horse chestnuts particularly effectively by boiling the nuts with ash. Interestingly, the natural distribution of horse

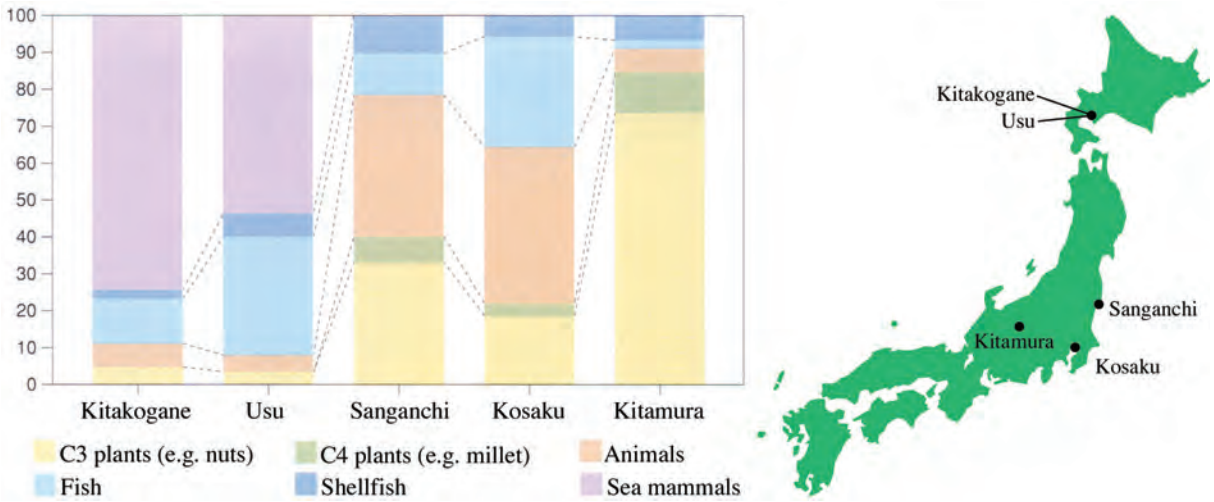


Figure 5.14 Reconstructing Jomon diet from the analysis of isotopes in human bone collagen. Samples from the five Jomon cemeteries shown indicate that different Jomon communities depended on differing proportions of various types of food, each of which leave distinctive traces in bone collagen which can be measured through scientific analysis.

chestnut trees in the archipelago and this special type of hearth almost exactly coincides. In addition, the deep pots in these hearths tend to be buried at a slightly skewed angle, which is explicable in terms of convenience of scraping the ash out. Furthermore, another feature related to acid removal, a kind of wood-lined pool, wooden water pooling features have been identified at a number of sites including Yaze in Gunma Prefecture,[27] Terano Higashi in Tochigi Prefecture,[28] Akayama Jinya in Saitama Prefecture[29] and Kuribayashi in Nagano Prefecture.[30]

Nuts were probably ground using stone querns and grinding slabs and made into dumplings (Figure 5.11). These dumplings may have been boiled in soup or baked (Figure 5.12). Such dumplings are occasionally carbonised, perhaps as a result of being dropped in the fire, and survive in archaeological contexts. So far, five types of dumplings have been recognised: (1) an oval shape, approximately fifteen centimetres long from Sori[31] and Tomonohara in Nagano Prefecture[32] and Mineichigo in Gifu Prefecture;[33] (2) a round ball some five centimetres in diameter from Bozutoge, Iwate Prefecture;[34] (3) a small flat disc, three centimetres in diameter from Okinohara, Niigata Prefecture;[35] (4) a thin stick shape about three centimetres long from Tsukuehara, Nagano Prefecture;[36] and (5) a twisted stick shape about five centimeters long from Sori, Nagano Prefecture. On one example recovered from the Ondashi in Yamagata Prefecture,[37] a pattern was imprinted on the dumpling. Microscopic analysis of these dumplings shows that they were made of a number of ingredients in addition to the ground-up nuts, including perilla.[38]

Sweet chestnuts, which do not require acid removal and have a sweet taste, are thought to have been intensively exploited by Jomon people. Moreover, the possibility that chestnut trees were domesticated during the Jomon has been raised by scholars such as Sakazume Nakao.[39] Indeed, sweet chestnut remains

Figure 5.15 A Middle Jomon dog burial from Fujiwara Kannondo shell midden, Chiba Prefecture and a possible reconstruction. The dog was the first animal to be domesticated by human beings. There is no evidence that Jomon people ate dogs. Dogs were sometimes given careful burials in recognition of their special status.

have commonly been found in Jomon sites from the Initial Jomon onwards and the majority of Jomon timber remains are of chestnut, for example the wooden trackway at the Juno site in Saitama Prefecture.[40]

At Yoneizumi in Ishikawa Prefecture[41] and Kagomine in Niigata Prefecture[42] the remains of the bases of chestnut tree trunks were discovered surrounding the settlement, indicating that a veritable grove of chestnut trees had been growing near these sites (Figure 5.13). This suggests that Jomon people intentionally selected chestnut trees to grow near their villages, cutting down other less useful trees. Yamada Goro went further than this to propose that during the middle part of the Early Jomon, some six thousand years ago, sweet chestnut trees were transplanted to Hokkaido, where the trees did not naturally grow.[43] Moreover, some chestnuts found in Jomon contexts are conspicuously larger than wild chestnuts. One of the largest discovered to date is from Kyobara in Yamanashi Prefecture, and was over two centimeters long.[44] This may also have been the result of chestnut domestication. The analysis of DNA of nuts by Sato Yoichiro of Shizuoka University is helping to develop our understanding of nut cultivation.[45]

Evidence of diet from teeth and bones

The analysis of bone collagen from Jomon skeletons by Minagawa Masao supports the hypothesis that plants, particularly nuts, were the most important source of food for Jomon people, at least on Honshu (Figure 5.14).[46] More evidence comes from the state of Jomon peoples' teeth. Tooth decay is caused by the dissolving of carbohydrate materials which become stuck to the surface of the tooth. Typical hunter-gatherers, who mainly eat meat and fibre-rich plant foods which contain only small quantities of

Figure 5.16 Jomon wild boar. An Initial Jomon boar skull from Shimotakabora, Tokyo and a Late Jomon clay figurine from Tokoshinai, Aomori Prefecture. Height of figurine, 9 cms. It is possible that Jomon people developed a close relationship with wild boar, introducing them to parts of the archipelago where they were not native.

carbohydrates, rarely suffer from tooth decay. The major food for Jomon people, on the other hand, was carbohydrate-rich nuts, and thus we should expect tooth decay to have been a common problem. Indeed, according to the analysis of a sample of Initial to Final Jomon sites undertaken by Fujita Hisashi, then of St. Marianna Medical University, decayed teeth were recognised in 8.2% of the Jomon material studied. The percentage is remarkably high when compared with the world-wide average of 0.3% of the population for hunter-gatherers, and is in fact much closer to the average for farming peoples.[47]

The domestication of animals

The domestication of animals is another aspect of the Jomon 'socialisation of nature'. Dogs are thought to have been the first domesticated animal in the world (Figure 5.15). In the Jomon it appears that dogs were domesticated as hunting assistants. Dogs were not eaten during the Jomon period, although they were eaten in the Japanese archipelago from the Yayoi onwards. Moreover, Jomon dogs were typically buried in an elaborate manner. The earliest find of such a buried dog dates from the beginning of the Initial Jomon, at the Natsushima shell midden in Kanagawa Prefecture.[48] At the Kamikuroiwa rockshelter in Ehime Prefecture, dating to the middle of the Initial Jomon, and at Fujiwara Kannondo shell midden in Chiba Prefecture dogs were carefully buried in pits.[49] At the Kaitori shell midden in Iwate Prefecture, the burial of a dog was discovered which appeared to have received particular care during its life, despite being disabled by leg bone fracture.[50]

Wild boars were probably also domesticated by Jomon people (Figure 5.16). At Shimotakabora, on an island off the coast of Shizuoka Prefecture, a number of wild boar bones dating to the earlier part of the Initial Jomon some 9000 years ago were recovered, although no wild boars originally lived on the island.[51] Since Jomon people were accomplished seafarers, infant wild boars were probably transported over the

sea. It seems that Jomon people were in the habit of taking wild boar with them when they travelled, as seen at the end of the Early Jomon, when wild boars were taken as far as Hachijo Island in the Pacific off the coast of Tokyo, as bones from the Kurawa site show.[52] During the Late and Final Jomon, wild boar also appear in Hokkaido, not only as bones but also as clay figurines, for example at the Hinohama site where they are indicative of the close relationship between Jomon people and these creatures.[53] Among the animals which formed part of the Jomon world, only wild boar are represented as clay figurines, suggesting that they were more important to Jomon people than deer, which were just as significant in terms of Jomon game as wild boar.[54] This is further evidence of the special significance wild boar had for Jomon people. Furthermore, wild boar bones have occasionally been recovered after being as elaborately buried as dogs, rather than being simply discarded as butchery debris. A good example of this is seen in the Tagara shell midden, where a baby boar was found buried in such a manner.[55]

The domestication of plants and Jomon cultivation

Jomon society has been recognised as being highly complex, with rich artefacts and sedentary villages.[56] Accordingly, many scholars have raised the question of whether they practised any cultivation, thinking that societies as complex as those in the Jomon were unlikely to have been supported by an economy based only on hunting, gathering and fishing. These scholars are influenced by an evolutionary approach to subsistence systems, and consider a farming economy to be more progressive than a hunting, gathering and fishing economy. As the above discussion has shown, however, Jomon people developed a highly-tuned ability to exploit the natural resources available to them, to the extent that the possibility that they engaged in some form of incipient cultivation does not appear unreasonable.

Some remains of cultivated plant species have indeed been recovered from Jomon sites, for example perilla, bottle gourd, green gram, buckwheat, barnyard millet and elderberry.[57] Based on this evidence, the cultural anthropologist Sasaki Komei is the latest strong proponent of the possibility of Jomon agriculture.[58] However, the idea of 'Jomon agriculture' does not fit our interpretation of Jomon culture very well. It is probably more appropriate to consider these cultivated species as part of the Jomon broad spectrum subsistence strategy, rather than as individual components in a mainly cultivated range of plants. Ethnographic examples of typical hunter-gatherers from the northwest coast of North America show that they also practiced some cultivation, but had no intention of changing their economy wholesale to one based on farming. Such a type of cultivation should therefore rather be considered as a developed type of gathering, that is another aspect of the Jomon domestication of the nature, rather than agriculture.[59]

Jomon subsistence strategies appear to have been based on the exploitation of various types of resources, with extensive ecological knowledge of plants which had particular medicinal or poisonous applications. This is quite different to strategies employed in a farming economy, which concentrates on the intensive cultivation of a restricted range of plant foods. Thus if cultivation was practiced during the Jomon period, it is likely to have been a part of broader Jomon strategies, rather than representing a farming economy.

While a farming economy is vulnerable to natural disasters, the Jomon subsistence strategies made the most of the productivity of the natural environment, and potentially enabled the formation of highly complex societies supported by wild food resources.

Figure 5.17 Ingredients for Jomon alcohol. Early Jomon elderberry seeds from Sannai Maruyama, Aomori Prefecture and some modern examples.

Historical records show that, along the northwest coast of North America, hunting, gathering and fishing peoples established complex societies with social stratification.[60] Many archaeologists think that comparable conditions existed in the Jomon. In addition, Jomon people developed advanced culinary techniques, including making Jomon cookies, the brewing of wine and the use of lacquer. It is possible that some of these cookies were fermented using yeast. Fermentation is a process at the heart of brewing alcoholic beverages. The find of a large number of elderberry seeds at Sannai Maruyama in Aomori Prefecture suggests that wine was being made at that site (Figure 5.17). Elderberries, as well as wild grapes and other fruits would have been easy to ferment and are very suitable for wine making.[61]

The discovery of lacquer

Lacquered artefacts have sometimes been recovered from Jomon sites (Figure 5.18). For example, from the Ondashi site dating to the middle Early Jomon, six lacquered pottery vessels were found. These vessels were covered in a layer of red lacquer, on top of which were drawn patterns in black lacquer. A lacquered wooden artefact, some thirty centimetres in diameter, was also found at this site.[62] At the Early Jomon shell midden at Torihama in Fukui Prefecture, lacquered pottery and combs were discovered.[63] The oldest examples yet known are the lacquered artefacts from the Ikenai site, Akita Prefecture, dated the first half of the Early Jomon period, just over six thousand years ago.[64]

We used to think that lacquer had its origins in China, the technique only being introduced to the Japanese archipelago during the Final Jomon. However, these finds of lacquered artefacts from much earlier than previously thought, and the highly developed technique that they represent, raise the possibility that lacquering was actually discovered by Jomon people. The lacquering technique includes the use of black and red colouring and lacquer sap. The use of red pigments was already happening during the Palaeolithic and Incipient Jomon in the Japanese archipelago. It is therefore highly probable that Jomon people started using lacquer as a way of applying a coloured slip to a variety of objects, similar to ethnographic examples observed among the Indians of the American southwest.[65]

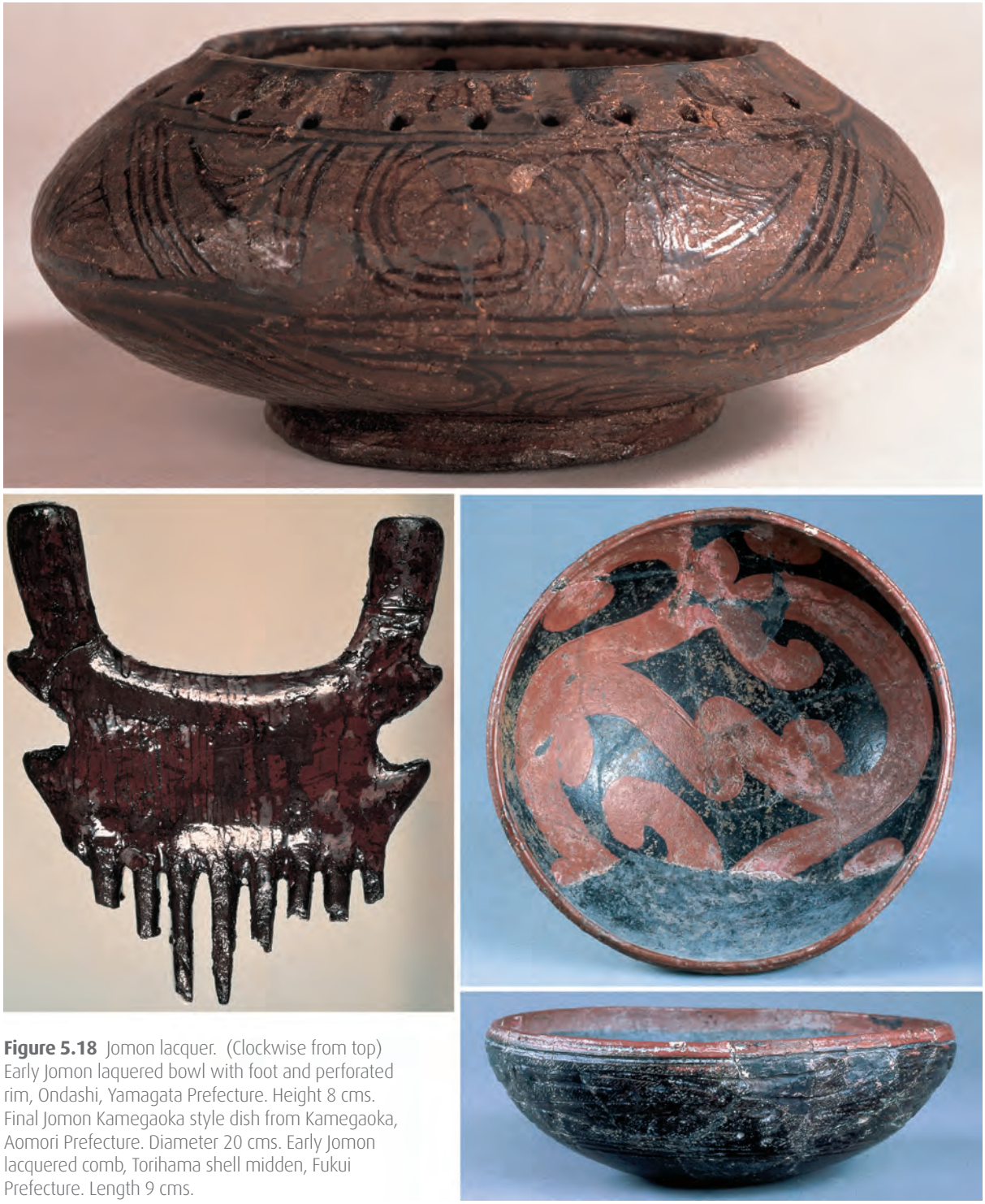


Figure 5.18 Jomon lacquer. (Clockwise from top) Early Jomon laquered bowl with foot and perforated rim, Ondashi, Yamagata Prefecture. Height 8 cms. Final Jomon Kamegaoka style dish from Kamegaoka, Aomori Prefecture. Diameter 20 cms. Early Jomon lacquered comb, Torihama shell midden, Fukui Prefecture. Length 9 cms.

Figure 5.19 Remains from large scale food processing. (Clockwise from top) Aerial view of the Early Jomon circular shell midden at Mizuko, Saitama Prefecture, the white patches representing shell deposits. Diameter 160m. Middle Jomon shell deposits and plant remains at Awazu 3 shell midden, Shiga Prefecture. 4m deep deposit of Middle Jomon shells at Nakazato shell midden, Tokyo.

Figure 5.20 A deposit of Middle Jomon horse chestnuts and a woven container from House 51 at Nakamichi, Niigata Prefecture. The nuts were probably being stored out of harms way, suspended from the ceiling in their container, when the house was abandoned, perhaps after a fire.

The storage and preservation of food

Food preservation techniques were a fundamental part of Jomon subsistence strategies. In eastern Japan, salmon and trout were processed to preserve them for an extended period of time, and these preserved resources which could be easily stored probably formed the basis for the development of complex Jomon societies. The technique of preserving fish by smoking was introduced as early as the Incipient Jomon. At Maedakochi in Tokyo, more than five thousand fragments of fire-whitened salmon bones were recovered, suggesting that the fish had been intensively smoked and dried in order to preserve them for later consumption.[66]

Shell middens appeared during the Initial Jomon and from the Middle Jomon onwards the scale of shell middens increased markedly, culminating in sites with a diameter of between one and two hundred metres, with distinctive ring or horse-shoe shapes (Figure 5.19). According to studies of the annual growth lines on shells by Koike Hiroko, approximately seventy percent of shells from the shell middens studied were harvested during a limited season from spring to summer. This fact indicates that the large scale of

some of these shell middens was the result of intensive seasonal harvesting and processing of shellfish for preservation and export, rather than regular gathering for local consumption throughout the year.[67]

Nuts, which have a limited collection season in autumn, are another food resource suitable for long-term preservation. The oldest example of evidence for the large scale storage of nuts, rather than the individual deposits as found, for example, at Higashi Kurotsuchida in Kyushu, is a thick deposit of acorns, suggesting intensive nut storage, and horse chestnut shells identified at Sannai Maruyama in Aomori Prefecture and dating to the latter half of the Early Jomon period. Horse chestnut shell deposits have also been found in the Awazu lakebed site in Shiga Prefecture, and at the Akayama Jinya site, Saitama Prefecture.[68] At Korekawa Nakai in Aomori Prefecture, a deposit consisting of walnut shells was recovered, demonstrating that Jomon tastes were not restricted to chestnuts.[69]

Techniques used by Jomon people to preserve food are thought to have included drying, smoking, salting and fermenting. The careful selection of an appropriate storage place was a vital part of the preservation process. At the Early Jomon Ondashi site in Yamagata Prefecture and the Middle Jomon sites of Okinohara and Nakamichi in Niigata, a large number of chestnuts were found concentrated in clusters in pit buildings (Figure 5.20).[70] These examples may show that these nuts were stored on a shelf hanging over the hearth, which may have collapsed when the house was abandoned, entering an archaeological context and surviving in the ground until they were unearthed by archaeologists several thousand years later. Another typical Jomon storage facility is the subterranean pit, as discussed earlier. It is likely that the combination of the seasonal abundance of particular foodstuffs and the ability to preserve certain foods for lean seasons provided a stable basis underpinning Jomon subsistence practices.

Broad ecological knowledge

Jomon subsistence strategies appear to have been based on a broad knowledge of nature. For example, Jomon faunal remains show that Jomon people exploited more than seventy species of fish such as gilthead and tuna, and that they were familiar with the seasonal habits of these creatures. Sea urchin shells are frequently recovered from Jomon shell middens, and their exploitation requires knowledge of when they produce edible spawn. In an ethnohistoric study from the Karatsu area of Kyushu, Watanabe Makoto showed that people used the flowering of the lily as an indicator of the sea urchin spawning season.[71] Takahashi Ichirobei also collected ethnohistoric examples from Sado Island in the Sea of Japan off the coast of Niigata, demonstrating that the flowering of another flower, the *no-kanzo,* was recognised as an indicator of the best season for catching sea bream, known in Japanese as *tai*, for which reason the flower is known *tai-bana*, or sea bream flower. This kind of knowledge was probably exploited by Jomon people as well.[72]

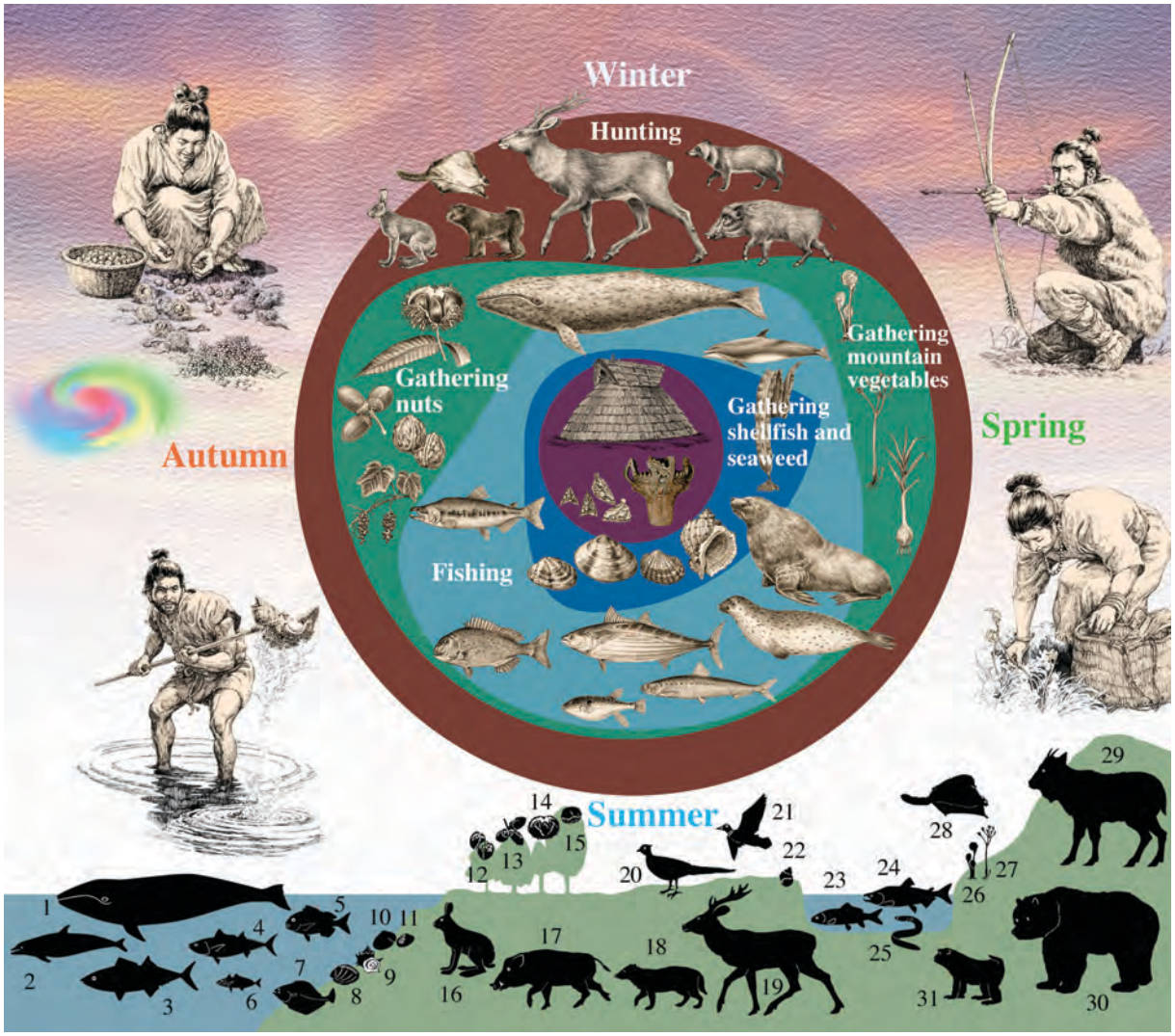


Figure 5.21 The Jomon seasonal calendar. Many activities undertaken by Jomon people took place in particular seasons and coordinating these activities required a high degree of planning and scheduling. There were of course variations in this calendar at different times of the Jomon and in different parts of the archipelago, but everywhere the various activities depicted had their place in the annual round.

Some commonly exploited Jomon food resources. 1. Whale 2. Dolphin 3. Tuna 4. Skipjack 5. Black porgy 6. Horse mackerel 7. Japanese flounder 8. Abalone 9. Horned turban 10. Clam 11. Short-necked clam 12. Walnut 13. Acorn 14. Sweet chesnut 15. Horse chestnut 16. Japanese hare 17. Japanese wild boar 18. Raccoon dog 19. Shika deer 20. Pheasant 21. Duck 22. River snail 23. Carp 24. Chum salmon 25. Eel 26. Fern 27. Bracken 28. White-cheeked flying squirrel 29. Japanese serow 30. Bear 31. Japanese macaque.

Figure 5.22 Hunting using pit traps. (Left) Initial and Early Jomon pit traps at Tama New Town Site 901. (Right) Reconstruction of hunting with pit traps at Nomisaku G, Niigata Prefecture and stone arrowheads hafted onto bamboo shafts.

The Jomon calendar

As shown above, the Jomon exploitation of various types of subsistence resources was probably based on a well-organised seasonal schedule (Figure 5.21). Akazawa Takeru, formerly at Tokyo University Museum, analysed the collecting seasons for over two hundred species of food plants.[73] The results of his analysis showed that while roots are available throughout most of the year, fruits and leafstems show a conspicuous seasonality. The fruit collection season is generally limited to between September and November, with the most intensive collection being possible in October. Leaf stems, on the other hand, depending on the species, can be collected either all year round or from April to June.

Akimichi Tomoya also undertook research into the spawning seasons of thirty-nine species of fish.[74] Ushizawa Yuriko analysed the growth lines of black porgy scales from the Isarago shell midden in Tokyo and suggested that the fishing season finished in October, when the water temperature became low.[75] These analyses of fish availability are further indicators of the significance of seasonally abundant foodstuffs in the Jomon.

In addition, the hunting of terrestrial animals also seems to have taken place on a seasonal basis. Hayashi Kensaku observed that deer bones recovered from the Asabe shell midden in Miyagi Prefecture included

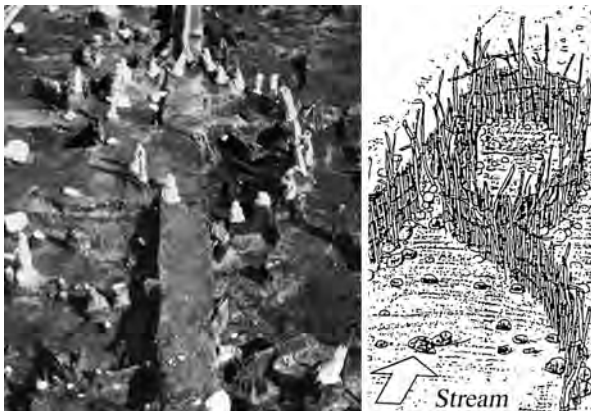


Figure 5.23 A Late Jomon fish trap from Shidanai, Iwate Prefecture. Length 6m.

Figure 5.24 Evidence for Final Jomon hunting ceremonies. A cluster of burnt wild boar bones from Kinsei, Yamanashi Prefecture.

brachiated antlers.[76] Since this type of antler only grows from autumn to winter, Hayashi suggested that the Jomon deer hunting season was mainly restricted to winter. Animals normally take in nutrition intensively in autumn to survive winter, and thus winter animals provide the richest meat. Jomon people probably knew about this habit and accordingly selected winter as the best hunting season.

Overall, Jomon subsistence strategies followed the seasonality of each food resource, and people organised their food procuring activities through a carefully organised annual schedule. This scheduling can be represented as a kind of idealised Jomon calendar (Figure 5.21).[77] Nishida Masaki and Okamura Michio also attempted to recreate the annual cycle of subsistence activities based on the very substantial amounts of data we have from Jomon shell middens, in particular drawing on information from the shell middens at Torihama in Fukui Prefecture and Satohama in Miyagi Prefecture.[78] In addition to subsistence strategies, it is probable that pottery making was included in the Jomon calendar, and that there was a fixed pottery making season. The fact that pottery sherds recovered in Jomon sites appear to have been discarded at specific times of the year supports this assumption.

Pit traps and other traps

Typical Jomon hunting facilities comprise bows, arrows and pit traps. Stone arrowheads embedded in the bones of deer and boar, among other animals, have been found on a number of Jomon sites (Figure 5.22). Jomon arrows were very effective and sometimes, as at Ikawazu shell midden in Aichi Prefecture, are even found lodged in human bones.[79] The use of pit traps probably started during the Incipient Jomon and became common from the Initial Jomon. The shape of pit traps varied and included circular, square, and narrow rectangular forms, more like ditches than pits. In addition, vertical sharpened posts were erected

at the base of some pit traps for effectively killing the hapless animals that fell in. Pit traps were generally constructed along animal tracks, as can be seen at Yamada Mizunomi in Chiba Prefecture[80] and at the Kirigaoka site in Kanagawa Prefecture.[81] There are also examples of concentrations of pit traps constructed in places where animals were likely to gather and near settlements. Animals were probably chased into the area where pit traps had been prepared. The S153 site in Hokkaido contains an example of the former case.[82] Recent extensive excavations of Jomon landscapes have revealed large numbers of pit traps, which suggests that they were commonly used in hunting. Other types of traps are also thought to have been used for hunting, although the remains of such features have yet to be recovered in Jomon contexts. However, the wooden remains of a type of fish trap were identified at Shidanai in Iwate Prefecture (Figure 5.23) [83] and it is possible that a similar sort of trap was also used for terrestrial animals. Hunting using pits and other traps is less dangerous than hunting using bows and arrows, and this may have been the reason for the frequent use of these facilities. On the other hand, the disadvantage of pit traps or trap hunting is that the hunter is unable to select individual animals to kill.

Hunting ceremonies

Ceremonies to pray for success in hunting were probably a very significant aspect of Jomon hunting. Various types of ceremonies, for example using the claws of bears and eagles as ritual objects, have been observed in world-wide ethnographic studies of hunters, including the *matagi* hunters who still live in parts of eastern Japan.[84] Finds on Jomon sites of worked animal bones, including the bones of dogs, wolves, bears, monkeys, otters, dolphins, turtles and wild cats, are thus likely to have been ritual objects rather than decorative accessories. In addition, it appears that deer bones in particular were used for making hunting tools, which may suggest that deer bones had some special ritual significance or meaning. At the Early Jomon shell midden at Higashi Kushiro in Hokkaido, dolphin bones were arranged in a radial pattern, perhaps as part of a hunting ceremony.[85] In the case of the Late and Final Jomon site at Kinsei in Yamanashi Prefecture, 130 burnt jaw bones of wild boars were found in a small pit (Figure 5.24).[86] Most of those bones were of juveniles around eight months old. In addition some of the skulls of adult boars found on Jomon sites have had their canines removed. Remains such as these probably represent complex ceremonial activities. In addition, there are the examples of a buried bear skull at Saibana in Aomori Prefecture,[87] and a wild boar skull, which was carefully placed on a stone at Takaragamine in Miyagi Prefecture. These examples may represent animal reincarnation ceremonies, which are recorded in the ethnographies of Ainu and Siberian hunters.

Figure 6.1 Map of sites mentioned in Chapter Six

Chapter Six
Settlement and society

From caves to open sites

The beginning of the Jomon marked major changes in the ways people living in the Japanese archipelago inhabited their landscapes and structured their dwelling space. These changes were associated with the development of the first settled villages, whose inhabitants lived in the same place all year around, leading to what archaeologists call a sedentary or relatively sedentary lifestyle.[1]

This was very different from how people living during the Palaeolithic led their lives. Rather than staying in one place for a long period, these people frequently moved from one temporary camp-site to another, in what is termed a mobile lifestyle. They constructed simple shelters, bivouacs and tents to protect themselves from the elements for just a few days at a time, moving with the wild herds. Making use of whatever food resources were to hand, they would then shortly move on to the next place, being careful not to waste any of their spare time in building unnecessarily elaborate or substantial structures. As their shelters were so ephemeral, they did not leave many archaeological traces, and so the discovery of part of a Palaeolithic house at Hasamiyama in Osaka was particularly notable.[2]

The house at Hasamiyama reflects how little time and labour was dedicated to building it.[3] Its construction simply comprised shallow post holes scooped out of the ground, to support a slight frame. Indeed Hasamiyama seems to represent a little more time investment than was usual during the Palaeolithic, and was perhaps the location of a slightly longer occupation, or may have been a base camp to which people returned over a longer period of time. This may also have been the case at sites where we find fireplaces constructed out of comparatively large stones. Normal Palaeolithic dwellings, however, were simple shelters.

In the Jomon period, the circumstances affecting modes of dwelling were very different from those in the Palaeolithic. It seems that caves, which until the Jomon were not used very much, became favoured dwelling places (Figure 6.2).[3] Yamanouchi Sugao thought that this was an adaptation to colder climatic conditions.[4] But if this was indeed the case, why were caves not used more extensively during the much colder conditions of the Palaeolithic? Eighteen thousand years ago average temperatures were seven degrees colder than today. Around Tokyo the climate was similar to Sapporo today and in Hokkaido tundra conditions prevailed. In the high mountain ranges of the Central Japanese Alps of Honshu, glaciers formed. Despite all this, cave use by Palaeolithic people was very unusual. Apart from Fukui Cave in Nagasaki, Palaeolithic cave occupation in Japan is very rare.[5] Therefore a different reason is needed to explain why people used caves in the Jomon.

Figure 6.2 An Incipient Jomon cave dwelling: the entrance to Muroya Cave, Niigata Prefecture. Nakamura Kozaburo, excavator of Muroya Cave and the nearby Kosegasawa Cave is holding the ranging pole.

Natural caves are formed through special geological or topographical conditions. Caves are fixed, people cannot move them, choose where to locate them, or pick them up and carry them away when they want to move, in fact people can have very little influence as such on caves at all. We need to take this into consideration when thinking about why caves did not really meet the requirements of the dwelling lifestyles of Palaeolithic people. After all, Palaeolithic people were used to packing up their few possessions and carrying them around, taking everything they needed as and when they moved.

Jomon people, on the other hand, tended to stay in one place for much longer than their Palaeolithic forbears, reflecting the new circumstances within which they lived, and this surely is an important key to understanding why they took to living in caves.

Among the most significant of these new conditions were, as discussed in Chapter Five, stable and predictable sources of food. The use of pottery enabled Jomon people to develop some new culinary skills, including boiling, which in turn opened up many new possibilities for the Jomon menu, especially in regard to plant foods. A whole new set of culinary habits meant that people could stay in one place for much longer, no longer needing to move frequently to find food. These include processing technologies which allowed food to be stored, for example fish, notably salmon and trout in eastern Japan, smoked and dried shellfish, and nuts, especially acorns. People could now start to use caves for longer term occupation.

Without too much effort caves could be turned into warm dwelling spaces, and so became rather desirable residences. However, once on the track to a more sedentary lifestyle, the numbers of children in the household at any one time increased. As this happened, so the limited space within the cave became increasingly cramped, and as it was not possible to shift the solid rock walls to make a larger dwelling area, the cave which had once seemed the perfect home became constraining and unsuitable.

Once again, Jomon people moved back into the open air and returned to the river terraces favoured by their Palaeolithic predecessors. With abundant sources of food and drinking water readily available, Jomon people chose the best spots to settle. With time they cleared some of the forest using fire, creating central spaces, open plazas which were to take on special significance, around which they built their houses.

The construction of pit buildings

House construction in the Jomon began with the selection of a good location, and the creation of a level, sunken floor by digging out the soil to a depth of around fifty or sixty centimetres. Walls were built and a roof raised up supported on posts. This so-called pit house style of building, a form of dwelling which continued even when the early Japanese state was being ruled by Emperors based in the Kinai region, makes its first appearance in the Jomon (Figure 6.3).

These pit houses had only one entrance and, for Jomon people who had no large earthmoving tools or heavy machinery, building these structures was a major project. Selecting a good place, without any survey plans, they dug out the correct area for the floor and, with no metal shovels, they dug out the heavy soil with their own hands or using digging sticks and stone hoes, dumping it into baskets to transport to another place. In modern terms, these buildings covered an area similar to between six or eight straw *tatami* mats, perhaps the size of a living room in a modest Japanese apartment block. Jomon buildings were not, on the whole, large by the standards of modern family houses, although we will encounter some much larger examples later on. But the construction of these pit buildings did involve a considerable investment of labour, on a scale which had not been seen before in the archipelago.

Once the digging was finished, the floor was laid out into which post holes were set to hold the posts needed to support the roof and upper structure. There were no saws with which to cut down the trees, and posts had to be prepared using just stone axes. Once the posts had been set up, beams and rafters were laid between them and the roofs were thatched. These thatching materials too had to be cut using stone axes. The great labour invested in these houses suggests that they had a particular significance for Jomon people. Their construction required the sort of cooperative activities which went beyond simple individual hunting and fishing. With the appearance of these sturdy houses in the Jomon landscape, we can think about an increasing distinction beginning to be made between inside and outside. These are important concepts which helped to structure the world view not only of Jomon people, but of succeeding inhabitants of the Japanese archipelago, eventually being expressed in the traditional Japanese concepts of *soto* and *uchi*, familiar to Japanese anthropologists. We will return to these ideas in Chapter Eight.[6]

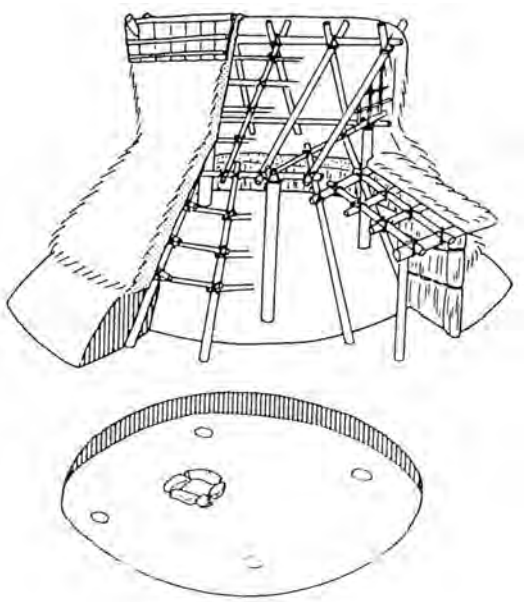


Figure 6.3 The structure of a typical Jomon pit dwelling

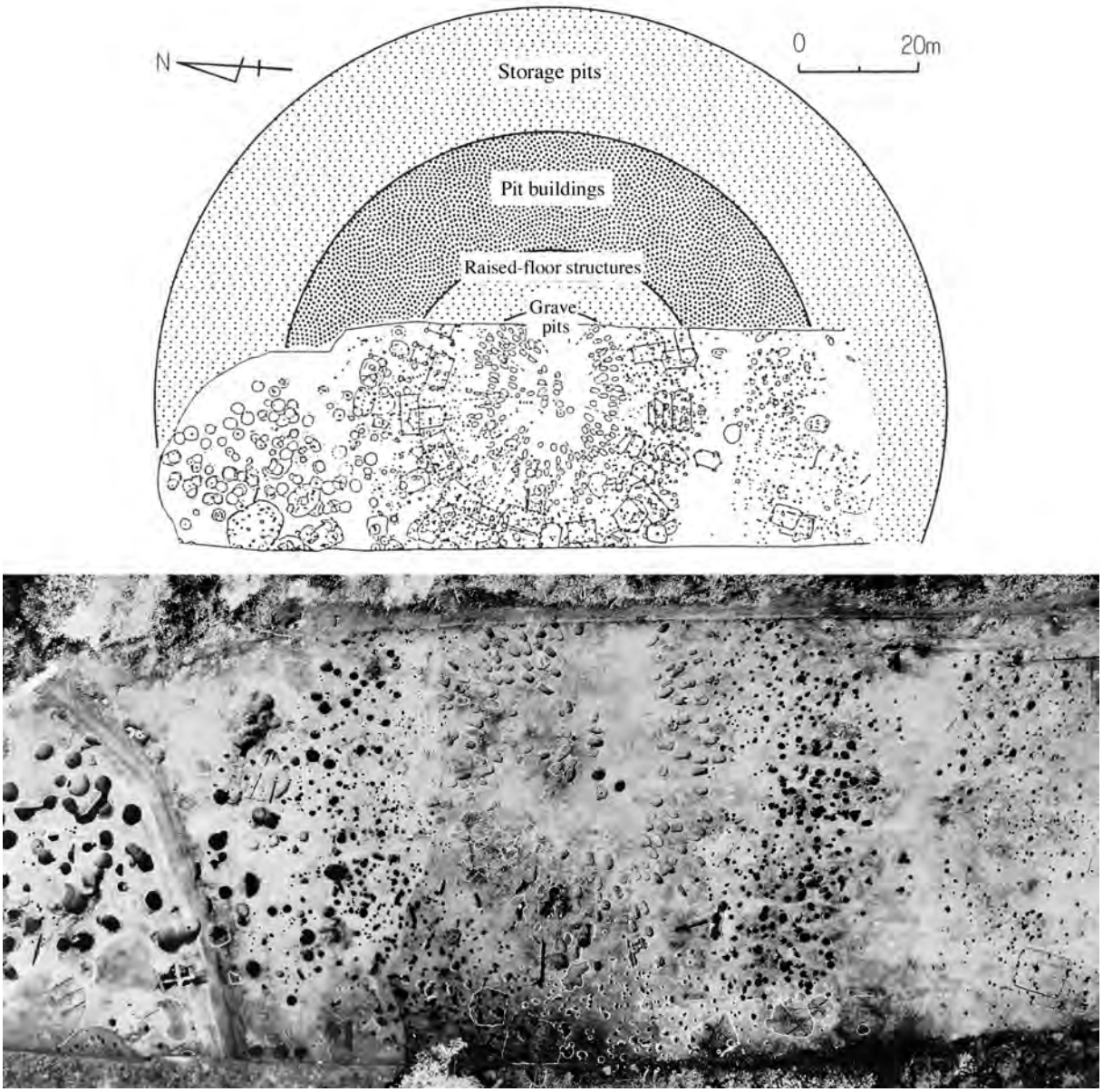


Figure 6.4 Nishida, Iwate Prefecture: a Middle Jomon 'model village'. A central plaza containing grave pits was surrounded by concentric circles of raised-floor structures, pit buildings and storage pits.The zoning of space within settlements is a feature commonly found in the excavated plans of Jomon villages and indicates a degree of settlement planning.The apparent circular structure of the village enhanced the face-to-face communication which underlay much of Jomon social organisation and is found repeated at many settlements across Jomon Japan. Although these circular settlement plans represent a composite picture resulting from all of the phases of occupation of the site, the concentric principle was apparently deliberately maintained over extended periods of time during the Jomon.

These first Jomon houses were often built in clusters of three or so. Early in the Jomon it is very likely that up to three family groups lived together in caves, and this scale of residential group continued in many cases later in the Jomon. Once these family groups left the caves and started to build houses for themselves, the resulting household groups took on a slightly more independent existence, each living in its own pit house on the increasingly popular river terraces and slopes. This change in the structure of social groups represented a revolutionary development in the constitution of Jomon society.

These houses, which took such an effort to build, were no longer just shelters from the rain, but also took on a new social function. By understanding the relationships between the area, form and structure of the house, we begin to have a better insight into the social structure of Jomon settlements and how they operated as social units. Most archaeologists think that these houses were occupied by individual family units, which identified themselves with ancestral spirits who needed to be paid attention to through the use of a variety of ritual features, including burials in the entrance, elaborate stone-lined hearths and domestic altars on which lay stone bars.[7]

The scene of the Jomon model village

If you came across a Jomon settlement around five thousand years ago, what would you see? Excavations suggest that in the average Jomon village at any one time, several houses were occupied, each lived in by a relatively independent family group. These houses were often carefully located around a central plaza, an open space at the centre of the settlement which had a more public feel. This spatial structure of the village was maintained, apparently deliberately, sometimes over a considerable period of time, suggesting that some kind of social principles which affected the spatial layout of the village were being adhered to during the occupation of the settlement. One of the most famous of the Jomon settlements is Nishida in Iwate Prefecture, excavated when the tracks for the Tohoku bullet train, or *shinkansen*, were constructed in the 1970s to create a high speed rail link between Tokyo and the north of Honshu (Figure 6.4).[8]

Although only the line of the tracks, including a strip on either side, was investigated, as these were the parts of the site that were to be destroyed by the construction, it was possible to reconstruct the plan of this now classic example of a Middle Jomon settlement. In and around the central plaza were some two hundred grave pits, surrounded by clusters of raised-floor structures, and beyond these were a number of pit buildings and storage pits. The space in the settlement at Nishida therefore was arranged in a series of concentric zones.

This form of Jomon village is thought to represent one of the basic units of Jomon society. Each pit house was occupied by a Jomon family which, while enjoying a high degree of autonomy, does appear to have

Figure 6.5 Face-to-face communication while making Jomon pots. There were probably few secrets in Jomon villages. Part of a diorama at the Niigata Prefectural Museum of History.

been constrained in terms of where they could build their house. In addition they conformed to the strong social principles which resulted in the maintenance of the apparently circular structure of the settlement.

This circular form of both buildings and settlements, it is suggested here, was an expression of a Jomon ideal and these circular settlements can be called 'Jomon model villages'.[9] The people who lived in these villages maintained what we call face-to-face relationships with their family members and with other members of the community, perhaps through activities and communication centred on the plaza, the focus of public activity in the village (Figure 6.5). There can be little doubt that the occupants of these villages were fairly familiar with everyone else's business.

In order to understand the function of the central plazas in these Jomon model villages, we need to appreciate the significance of the face-to-face relationships which lay at the heart of Jomon social activity. Everyone could see or know what everyone else was doing. This open nature of the community changed with the advent of the rice-farming Yayoi period, which brought new forms of village organisation. By the first century AD larger settlements, with defensive features such as ditches, banks and palisades appeared. Yoshinogari in Saga Prefecture, in the far west of Kyushu is one such Yayoi settlement.[10] The space within the settlement at Yoshinogari was structured in a very different way to the Jomon settlement at Nishida. Internal enclosures containing large buildings speak of a new political order based on more distant inter-personal relationships, control and exclusion, very different to the principles underlying the structure of Jomon model villages.

Various Jomon social principles

If we are to consider the principles underlying Jomon society, we must understand that they were not fleeting or transitory, but that they were played out over a longer period of time. This process is well-illustrated by looking at the histories of pit houses within settlements.[11]

We saw above that many Jomon villages comprised several dwellings which were occupied at any one time. We also know that these villages were occupied sometimes for very long periods, longer than the lifetime of a single building. The archaeological traces of pit houses are, conveniently for archaeologists,

usually quite easy to see in the ground – the soil which gradually fills the pit where the floor once stood is often a different colour, texture and consistency to the undisturbed earth around the house pit. We often find that these house pits, the remains of the pit buildings, overlap in clusters of two, three or more. This is an interesting phenomenon in terms of the social principles which structure Jomon settlements. This is because we would expect that Jomon people, when choosing where to build their new pit dwelling, would select a location where the earth was undisturbed, so as to provide the most stable grounding for the walls and floor. The earth around old pit buildings had already been disturbed, as the original soil was already dug out to make the earlier floor, and it was difficult to establish firm footings for the new walls and floor. So why do we so often find that pit houses are rebuilt in locations where several previous buildings have been constructed, disturbing the ground? As if the Jomon builders were aware of the problems this caused, they adjusted the position of the new building so that maximum advantage could be taken of any surviving areas of undisturbed soil adjacent to the remains of the earlier buildings, slightly shifting the location or orientation of the new building. Indeed, these builders seem to have gone to considerable trouble to make the most of these disturbed patches of ground instead of, as would have been simpler, just moving to a location within the settlement where there were no previous buildings. There must have been some factor, of which we are unaware, in the social principles affecting Jomon building practices, which resigned the Jomon builders to these rather awkward building conditions, or a preference for re-using ancestral locations (Figure 6.6).

What we appear to be dealing with is a situation in which the location of each pit house was fixed relative to other buildings in the settlement and perhaps in relation to the central plaza, and the social principles embodied in these spatial relations did not change much as time went by. Of course, over long periods the spatial configurations of the settlements did gradually shift. We know, for example, that eventually even the most persistent of house locations were given up. We also know that sometimes the abandonment of houses was marked by some particular practices relating to the deposition of pottery and other materials. We can begin to understand, from careful analysis of the contents of abandoned buildings, how these objects got there. Sometimes, for example, it seems that broken pots and other items gradually build up in the remains of pit buildings in a casual and accidental fashion, mixed in with the soil which

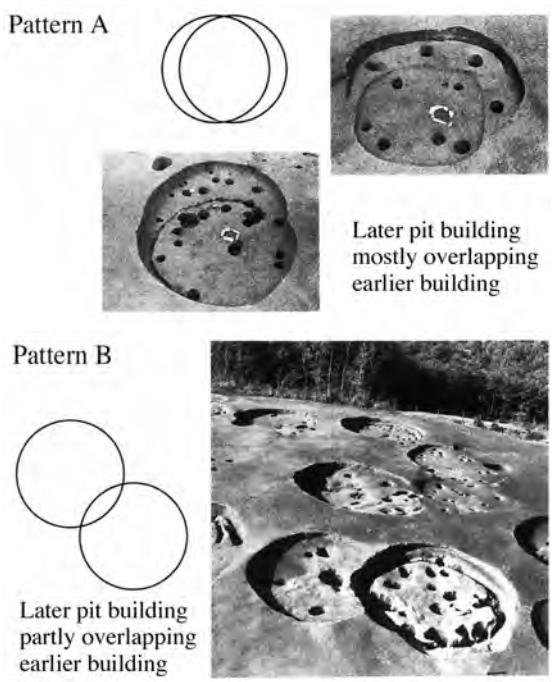


Figure 6.6 Two modes of rebuilding dwellings in the Middle Jomon at Namesaka, Tokyo, indicating different constraints on where new houses could be built in Jomon settlements.

Figure 6.7 The deposition of pots. At the Middle Jomon shell midden at Fukiage, many pots were deposited in abandoned pit dwellings. Jomon people usually took their possessions with them when they left their old houses. Pots and other objects found during excavations were often placed in old pit dwellings after they were abandoned.

also over time crept back into the house pit through erosion and other processes. In other cases, however, quantities of material seem to be deliberately dumped into the old house pit, perhaps close to the time when the building was first abandoned. In such cases the relationship between the dumped material and the surrounding soil is quite different. Several patterns can be defined in regard to this kind of observation, in particular the Fukiage pattern (Figure 6.7).[12] Essential to understanding what kind of pattern, or depositional behaviour we are dealing with, is an understanding of the nature of the deposits themselves. Are they primary deposits, the undisturbed remains of activities which took place at or around the time of abandonment of the house? Or are they secondary deposits, derived from materials which have been moved from the location where the activities which produced them took place?

Understanding these patterns of deposition requires us to understand what happened when people left the pit houses which they had carefully built, and which had been their home over a period of time. Once the occupants moved out and took up their abode elsewhere, the abandoned building gradually became buried. Archaeologists, through careful excavation and analysis of the remains of these pit buildings, are able to distinguish between artefacts which were left in the house at the time it was abandoned, and artefacts which were brought into the abandoned house through erosion and other natural processes after

the people who lived in it had moved out. In addition, sometimes we also find that the sites of these old buildings are subsequently used as dump areas by later occupants of the same settlement. All of this means that we have to be cautious in thinking that all of the artefacts discovered by archaeologists in any particular house pit actually date to the time of the occupation of that house, and that in fact the pot sherds, food debris, stone flakes and so forth may well have entered the house after it was abandoned.

One of the major reasons for Jomon people to move on was probably the gradual depletion over time of resources from the area around the settlement. Among north American Indians the supply of firewood, so important for a variety of everyday activities, often became exhausted first, even before the food resources in the surrounding area.[13] Whatever the reason, Jomon people on occasion changed the location of their settlements and, wanting to construct their villages where the best conditions for occupation prevailed, would carefully choose a new site to settle. It is likely that they did not just forget about their previous settlements and, once the nearby resources had renewed themselves, the Jomon people often returned to earlier village sites. The evidence we have for the frequent rebuilding of houses adds to the picture archaeologists build up of how the Jomon settlement of any particular landscape developed over time. Returning to once-abandoned settlements, Jomon people would see the old abandoned houses as dish-shaped depressions in the soil, and the placing of the remains of these earlier dwellings would remind the returnees of the social principles which underlay the structure of their community. As long as these social principles continued to be observed, the new generation of occupants of the village would continue to be bound by their power and authority, which continued to constrain exactly where in the settlement particular households could live and build or rebuild their homes.[14]

So why did Jomon people need to build and rebuild their houses in these fixed locations? We have already seen that rebuilding a pit house over the remains of an earlier one is likely to compromise the stability of the new building. Yet there does appear to be a certain rationality to the overlapping that we see in the plans of the excavated settlements. In practical terms, the amount of labour required to rebuild a house is reduced as there is less soil to be shifted if the house floor has already been dug out. In addition, as we saw above, attempts were made to ensure that the rebuilt house was as sturdy as possible, even given the constraints imposed by the social principles which dictated where they could be built. As a result, the rebuilt houses often only partly overlapped with their predecessors and their builders made use of any undisturbed ground in the immediate vicinity.

The use of this ground between buildings, and the rights over these intervening spaces, are important issues which need to be addressed while we are considering the phenomenon of overlapping house remains. Rebuilding was often not just a straightforward matter of rebuilding a house in exactly the same form, and indeed later houses were often larger than earlier ones, perhaps indicating the gradual increase in household membership as more children were born. Such increase in floor area meant encroaching on the space in between houses. This was not a problem where there was plenty of space in a settlement,

but in cases where there was not a large amount of surplus space, and where it was not possible to find another place to build a larger dwelling, there may well have arisen a tension between the desire on the part of an individual household to have more space, and the social principles which structured the multi-household community of which they were a part. Among the Indian communities along the northwest coast of North America, certain individuals held rights over the use of spaces between buildings, and continued to hold those rights even when the houses themselves had been abandoned. Although further research is required, we can suggest that similar rights over various spaces may have existed in Jomon settlements.[15]

House space and its sacredisation

So, should we regard the pit dwellings which make up the Jomon model village only as spaces for daily living by single family units? We perhaps need to look at these buildings in a little more detail.

There are many examples in museums of reconstructions of the lifestyle that went on in the pit buildings. Very often, Mother is involved in preparing food while fish are being grilled on skewers near the fire and starch is being produced from acorns. Children are perhaps helping out, or depending on how old they are, they are innocently playing. Father, with a sturdy beard, is making stone tools, or is just returning home with a wild animal from the hunt on his shoulder. We can imagine the scene that is about to unfold, laughter and talking around the fire, the family group discussing the day's events over a warming meal. These reconstructions probably concur with most modern museum visitors' notions of what life was like in the Jomon. The floors are spread with bear and deer skins, pots are scattered around the fireplace, some pots are lined up along the back wall, and other small tools are to be seen around the place, speaking of diligent hard work. But to what extent is this an accurate representation?

When excavating a pit house, there are cases where we find several complete pottery vessels. However, we know that not all of these pots are found on the actual floor of the pit house, in what we previously saw was the Fukiage pattern, directly above the upper surface of the primary fills, and there is an intervening layer of soil with no artefacts separating these pots from the actual floor, as though they have somehow floated to the surface.[16]

Therefore even though we know that these pots are discovered in pit dwellings, they do not seem to have been left behind by the people who used the house in their everyday life, and in fact they were probably deposited in the houses once they were abandoned by people who had not actually lived there.

There is a strong possibility that when people moved out of their house, they took their pottery vessels and accompanying stone tools with them, leaving nothing on the floor of the house. Unless the house actually

burnt down, it is in fact quite unlikely that the artefacts we find in the houses were used as everyday utensils by the people who inhabited the house.

So it is quite unusual to find pottery vessels standing directly the floors of Jomon houses when they are excavated. Those examples which are known tend to be vessels with a rather special character, such as pots with two mouths, vessels standing on pedestals, sometimes found in twin sets as at Hirobakama in Tokyo (Figure 6.8) or distinctive shallow dishes, rather than ordinary cooking pots.

In the same way, very little debitage from stone working is found on house floors, even though pit houses are very carefully excavated. All of this suggests that there was in fact very little everyday productive activity undertaken in houses at all. This is very different from what we find in later Yayoi houses, which have a lot of pottery on the actual house floor, and which have evidence for weaving, bead making and other activities, suggesting that they have a very different character to the Jomon houses.

Figure 6.8 A pair of Late Jomon Kasori B style ritual vessels from the floor of a pit dwelling at Hirobakama, Tokyo. Height of vessel on left, 21 cms. Pottery vessels left on the floors of buildings often had a rather special character, as do this pair, while cooking pots and other everyday objects are usually conspicuous by their absence.

Figure 6.9 A Middle Jomon domestic 'altar' from a pit dwelling at Matsubari, Nagano Prefecture. Such features comprised a setting of stones, sometimes including a small standing stone, evidence for Jomon household rituals, indicating that Jomon buildings often meant much more to their inhabitants than simply providing shelter.

Moreover, the presence of stone altars in Jomon houses, often associated with small standing stones and stone bars, suggests that Jomon houses are not simply mundane dwelling spaces (*ke*), but that they have a special (*hare*) character (Figure 6.9). Moreover, they are perhaps symbolic of the family group. Perhaps here we can see an early precursor to the traditional Japanese house with its *butsudan* altar for establishing a rapport with the ancestors and *kamidana* for keeping the spirits happy. This is something that should not be forgotten even in our modern mansion apartments. The sacred nature of the Jomon house was quite different to what we find in the Yayoi period.[18]

Various forms of building

Jomon people did not restrict themselves to building only pit dwellings. Since pit buildings are dug into the ground, however, they are relatively well preserved and easy to discover, and this explains why they have been found all around the country. In Hokkaido, unlike elsewhere in Japan, the traces of Jomon pit buildings survive to the present day as shallow depressions visible on the ground. This is because in the colder environmental conditions of the northern island there is less development of soil than on Honshu, which in turn means that the remains of the pit buildings are not buried so quickly.

Although not found as commonly as pit houses, other types of buildings were constructed during the Jomon. These include the buildings whose floors lay directly on the ground surface, without any distinct pit being dug out. We call these surface buildings. Another architectural style was the post-built structure, comprising an arrangement of post-holes, sometimes quite substantial, which must have held sizeable wooden posts, but which are not associated with any obvious traces of a floor, suggesting to some archaeologists that they supported floors raised up above the ground. These structures became relatively common from the Early Jomon, in many regions being used in conjunction with pit buildings. Another distinctive form of building, which became popular in the Kanto and Chubu regions at the end of the Middle Jomon, had floors paved with flat stones (Figure 6.10). While stone-paved buildings are by their nature straightforward to find in archaeological settings, it can be much more difficult to recognise post-built structures and surface buildings. From the end of the Middle Jomon, people began to exploit areas away from the light loamy terrace soils, and made use of lower-lying areas where the soils are much darker, in which archaeological features such as post-holes are harder to see. The use of these darker soils, in conjunction with the relative invisibility of surface and post-built structures which became increasingly popular in the later Jomon, may explain in part why so many fewer buildings are reported from the later

Figure 6.10 A Middle Jomon stone-paved pit dwelling from Tama New Town Site 796, Tokyo. Length, 6.7m. The appearance of these distinctive and elaborate buildings suggests an increased emphasis on the domestic sphere at this time.

Jomon (Figure 6.11). Archaeologists have found, however, the remains of many individual hearths in these darker soils, often comprising settings of stones around the fireplace, and it is likely that these are all that survive of later Jomon surface buildings.[19]

These dark soils, which indicate the occupation of a different type of locale than the well-drained terraces, sometimes harbour remarkable surprises. In exceptional circumstances the special preservation conditions in these dark soils allow organic materials, such as wood, to survive over very long periods of time. In the early 1990s these circumstances led to the discovery of some Middle Jomon house timbers at Sakuramachi in Toyama Prefecture. These timbers allowed archaeologists to reconstruct one of these raised-floor buildings, which was possibly used as a storehouse or as the focus for some communal, public activity, rather different from the normal family dwelling. The building at Sakuramachi and others like it indicate that Jomon architecture was quite diverse.[20]

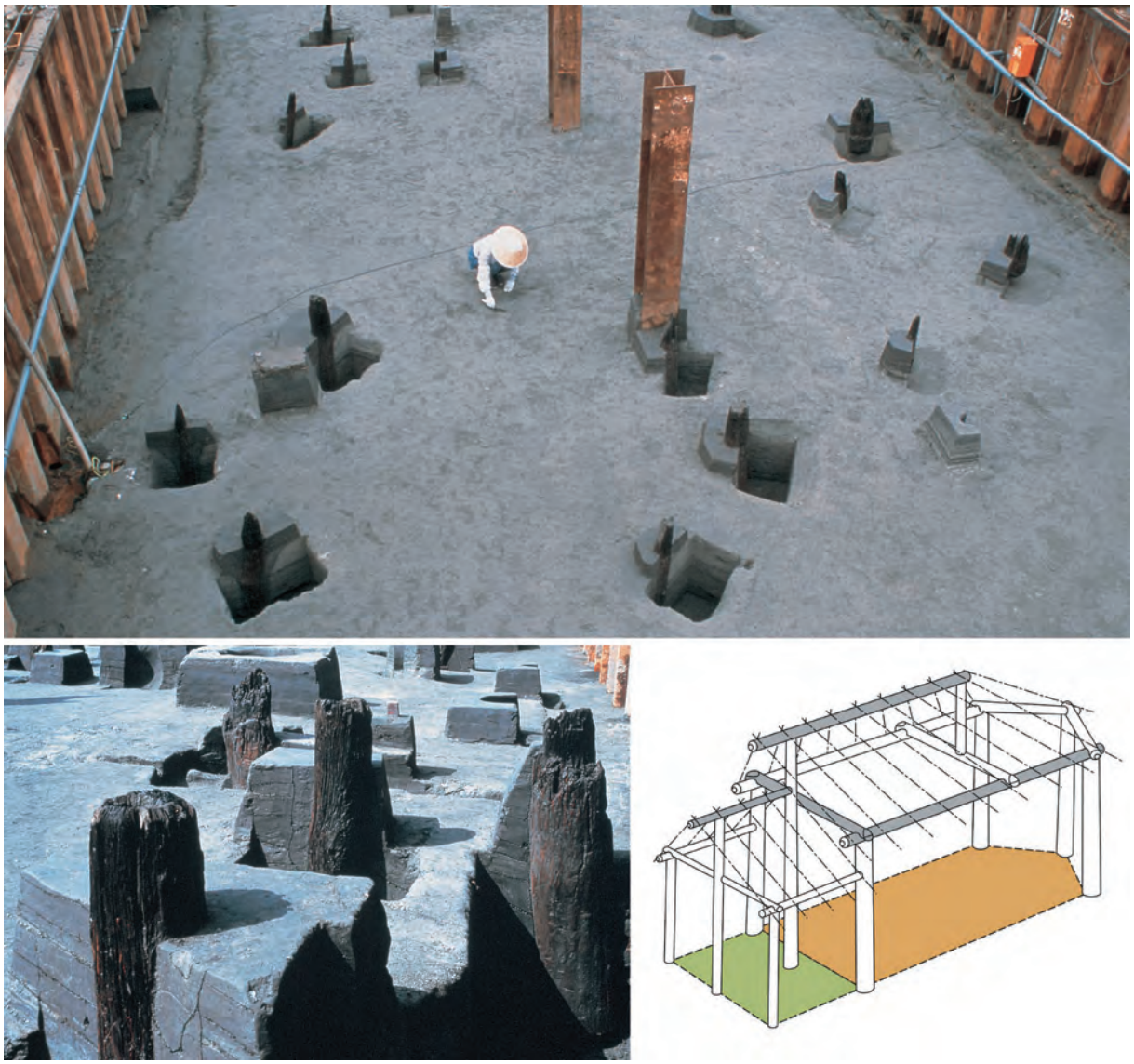


Figure 6.11 Final Jomon buildings at Aota, Niigata Prefecture. The exceptional preservation conditions at this waterlogged site meant that the chestnut posts survived to the present. Buildings of this type were well-suited to the damp ground conditions at Aota. The remains were located three metres beneath the present day ground surface and were investigated in the course of building a new road. Over twenty buildings from the Middle and Final Jomon were found at Aota and they had been flooded as the river changed its course. In addition to the architectural remains, basketry, fragments of lacquered thread and boat paddles along with extensive evidence for the processing of chestnuts and acorns were recovered.

In some areas, much larger buildings were constructed, both pit buildings and post-built structures. Many archaeologists think that these buildings are too large to be considered ordinary dwellings. Since we only find one or two of these larger buildings per site, perhaps they should be interpreted as public buildings, akin to modern village halls, rather than single family dwellings. Another possibility is that they were occupied by several family groups who lived together under the same roof. This suggestion has major implications for the prevailing model of Jomon social organisation, of village communities comprising a number of independent family-based households. The model of multi-family households living together in one large building, as we see for example among the Toraja of southeast Asia, is not necessarily an appropriate one for understanding Jomon society. But we do need to give further thought to the significance of these large buildings.[21]

Possible exceptions to this are found, however, at sites with many large buildings. Good examples were discovered at Uenoyama II in Akita Prefecture[22] and Negoyadai in Tochigi Prefecture,[23] two settlements dating to the Early Jomon, and Middle Jomon village sites at Shimizunoue and Gochobu in Niigata Prefecture (Figure 6.12).[24] At these and other sites, relatively high numbers of large pit buildings were arranged in a circular pattern around a central plaza. This is reminiscent of what we expect from a normal Jomon model village, except that the buildings are larger. In these cases the large buildings were probably ordinary family dwellings, housing extended families including aunts, uncles and cousins, rather than single nuclear families comprising just parents and children.

The character of Jomon settlements

Jomon people did not only leave behind them the remains of one form of settlement. Their social geography was more complicated than that. As we have seen, some settlements comprised just pit dwellings, some just post-built structures, whereas in other villages there was a mixture of architectural forms. Some of the buildings were large, some small. All of these factors need to be taken into consideration if we are to understand the diversity in Jomon settlement form. In addition to this, we have to address the probability that these settlements were occupied in a variety of different ways. Were these villages, for example, occupied all year around, in what archaeologists recognise as a fully sedentary residential pattern? Or did some Jomon groups move from one settlement to another as the seasons changed? Watanabe Hitoshi, an archaeologist who made good use of his extensive knowledge of the ethnographies of the native peoples of the north Pacific region including the Nivkh or Gilyak peoples of the Amur River valley in eastern Siberia and the Sanpoil who live in the middle reaches of the Columbia River in America, suggested that Jomon people alternated their place of residence between winter and summer settlements, or base camps, from which they then exploited the resources that were available at these different seasons.[25]

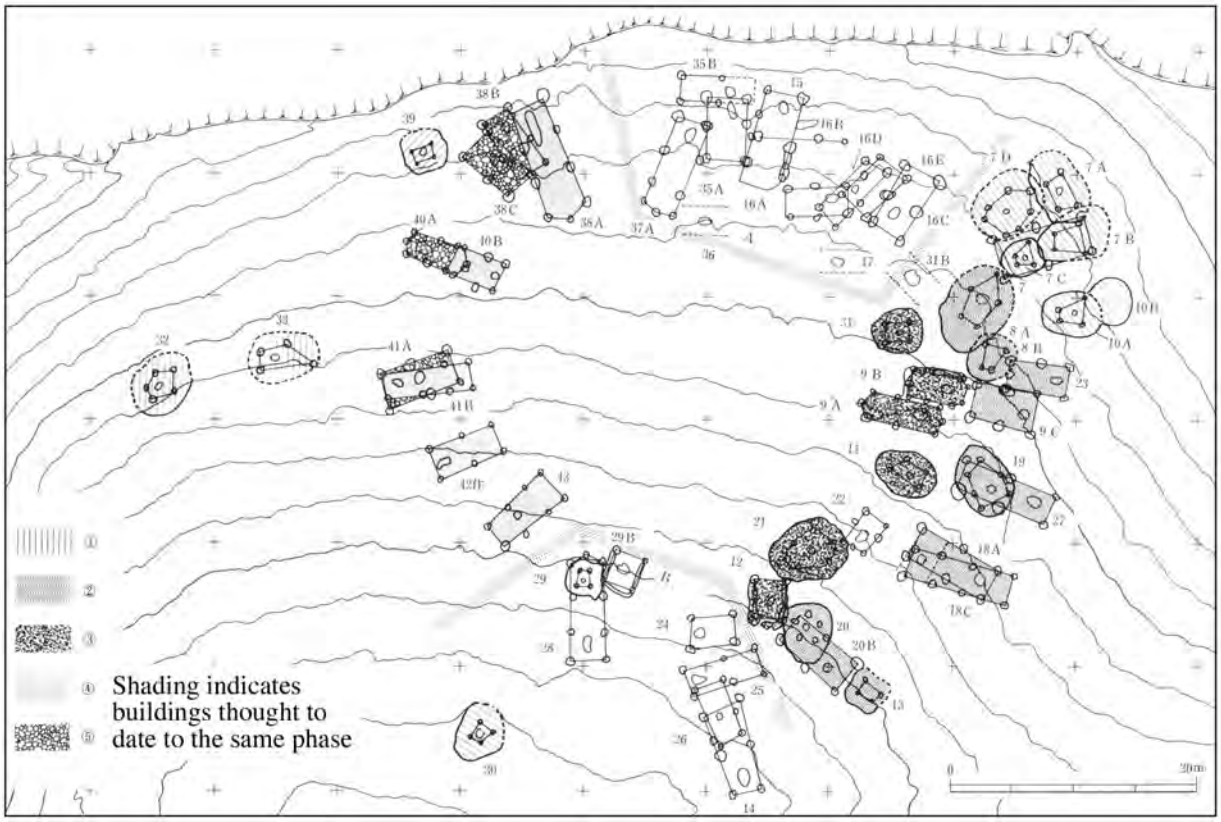


Figure 6.12 Gochobu, Niigata Prefecture: a Middle Jomon circular village of large buildings. The mixture of pit buildings and post-built structures shows the diversity of architectural forms present in Jomon villages.

The main method used by archaeologists to reconstruct these different residential patterns is the analysis of the assemblages of stone tools from various settlements in a given region. This involves understanding what the different tools were used for, such as arrowheads for hunting, stone mortars and scrapers for processing foodstuffs and animal skins, pottery for cooking and so forth, along with the various types of features found within the settlements, such as pit houses, hearths, and graves. If we adopt what is termed an ecological approach to these remains, we begin with the premise that the environmental conditions within which Jomon people lived largely determined their residential patterns.[26] Settlement location, for example, would be dictated by the proximity to seasonally available foodstuffs. We also know that Jomon people made use of a variety of locations away from their villages, including hunting camps and production sites for the procurement of important stone resources such as obsidian. All of these different types of site formed a settlement system, and a series of types of site can be proposed, based on what has been excavated from their archaeological remains, some or all of which were included in Jomon settlement systems at different times.

This model was first published in 1973, based on what we then knew from the Jomon landscapes which were being investigated through the large-scale rescue excavations in advance of the development of the Tama New Town, an extensive development zone in the west of Tokyo (Figure 6.13).[27] In the light of research since then, it is necessary to develop this model somewhat.[28] It is clear that we need to pay greater attention to the area of individual settlements, the extent to which they were occupied for shorter or longer periods, and the composition of the assemblages of stone tools, as well as the presence of what are termed secondary tools such as clay figurines and stone bars. We will return to these secondary tools in Chapter Seven.

Jomon people based their activities around their main settlement, a typical example of which would be represented by the Jomon model village. Anthropologists might use the term 'base camp' for this type of settlement. From the catchment area or territory around the main settlement, an area which was probably relatively fixed in terms of who had rights to use the resources it contained, Jomon people extracted most of what they needed for their everyday lives. This included hunted and gathered foodstuffs and a variety of raw materials including stone for tool making and firewood. When the territory around their settlement could not provide all that they needed, they engaged in some form of exchange of commodities with other groups in more distant places. These exchange activities, bartering, trading, presenting gifts and so forth, provided a good opportunity to foster and develop good social relations between neighbouring communities, which might eventually lead to marriage and other inter-community events.

Is it possible to gain a clearer picture of what these territories around settlements were like? Higuchi Shoichi has suggested that the territory of a large Middle Jomon settlement in the Matsumoto Basin in Nagano Prefecture extended for some four kilometres.[29] Hirabayashi Akira thinks that this scale of territory continued to be used into the Late Jomon.[30] A study of Middle Jomon settlements along the Nogawa River in the Kanto region by Miyazaki Hiroshi seems to confirm these estimates.[31] Taniguchi Yasuhiro has used a method borrowed from modern geographers based on Thiessen polygons to suggest that hexagonal territories existed around large settlements in western Kanto, and has argued that these remained relatively stable over much of the Middle Jomon (Figure 6.14).[32]

One problem that has caused considerable debate concerns whether we can know if all of these settlements were occupied by different groups at the same time, or if some of them were in fact occupied by the same group at different times. Koike Hiroko, adopting an ecological perspective, has questioned whether there would be sufficient quantities of food, firewood and building materials, measured as estimates of biomass, to support everyday life at so many large settlements over an extended period of time.[33] This remains an important consideration if we are to improve our understanding of how large settlements were supported, sometimes over generations.

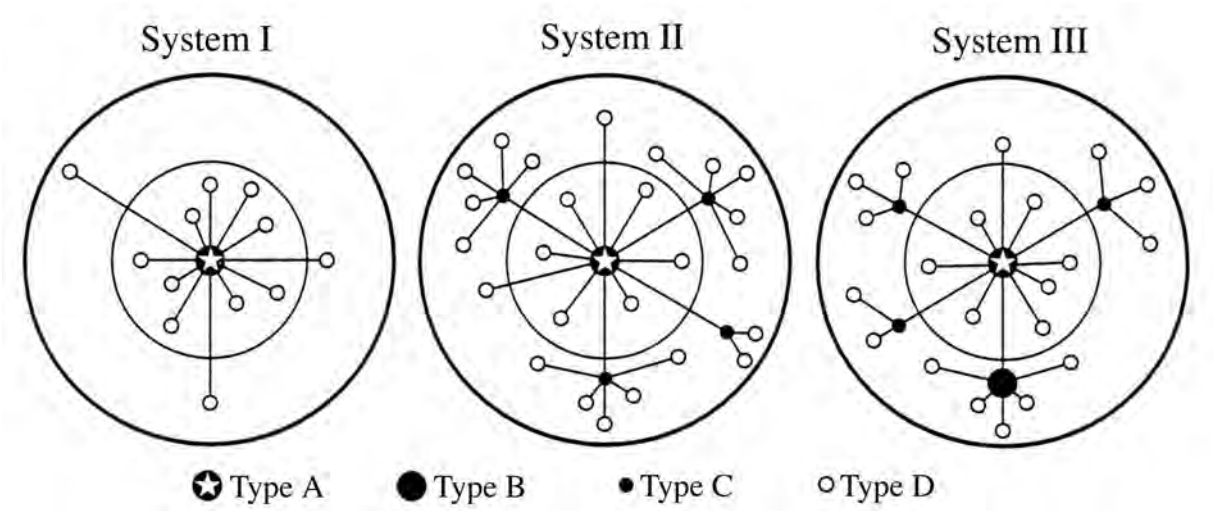


Figure 6.13 Three models for Middle Jomon settlement systems, involving four different types of site. Type A sites are relatively permanent large-scale settlements. Type B sites are smaller shorter-lived settlements. Type C sites comprise just one or two buildings. Type D sites do not have evidence for buildings at all. System I represents a sedentary residential pattern. System II represents a basically sedentary system with some seasonal camps. System III represents a residential pattern in which the main settlement is moved, perhaps between summer and winter locations.

In part related to this, we must also ask what happened when Jomon people changed their settlement. When they were looking to select a new location to establish their village, did they carefully avoid previous village sites and surrounding territories? Perhaps they were able to appreciate how much time was required to allow the resources, depleted by earlier occupations, to recover before being able to support another phase of exploitation by a new generation of settlement. Further research is needed to address this important question.

Two residential groups in a single village

Most aspects of Jomon material culture are, to a greater or lesser extent, related to the framework of Jomon social relations and world view. For example, as we saw in Chapter Four, the forms of Jomon pottery are not only constrained by manufacturing technique and what they are designed to be used for. In just the same way, the floor plans of Jomon dwellings, including the relative arrangement of posts, location of the entrance and construction of the roof, and indeed the placing of houses across a Jomon village, all speak of social principles and the world view of the people who built them and lived in them.

Therefore, in order to fully understand the nature of Jomon material culture and to read the significance of even seemingly everyday objects, we need to address how they express the social organisation and world view of the Jomon. For some time now it has been apparent that an important structuring principle of the Jomon social world is that of duality.[34] This principle can be seen in many examples of artefacts and arrangements of features on Jomon sites.

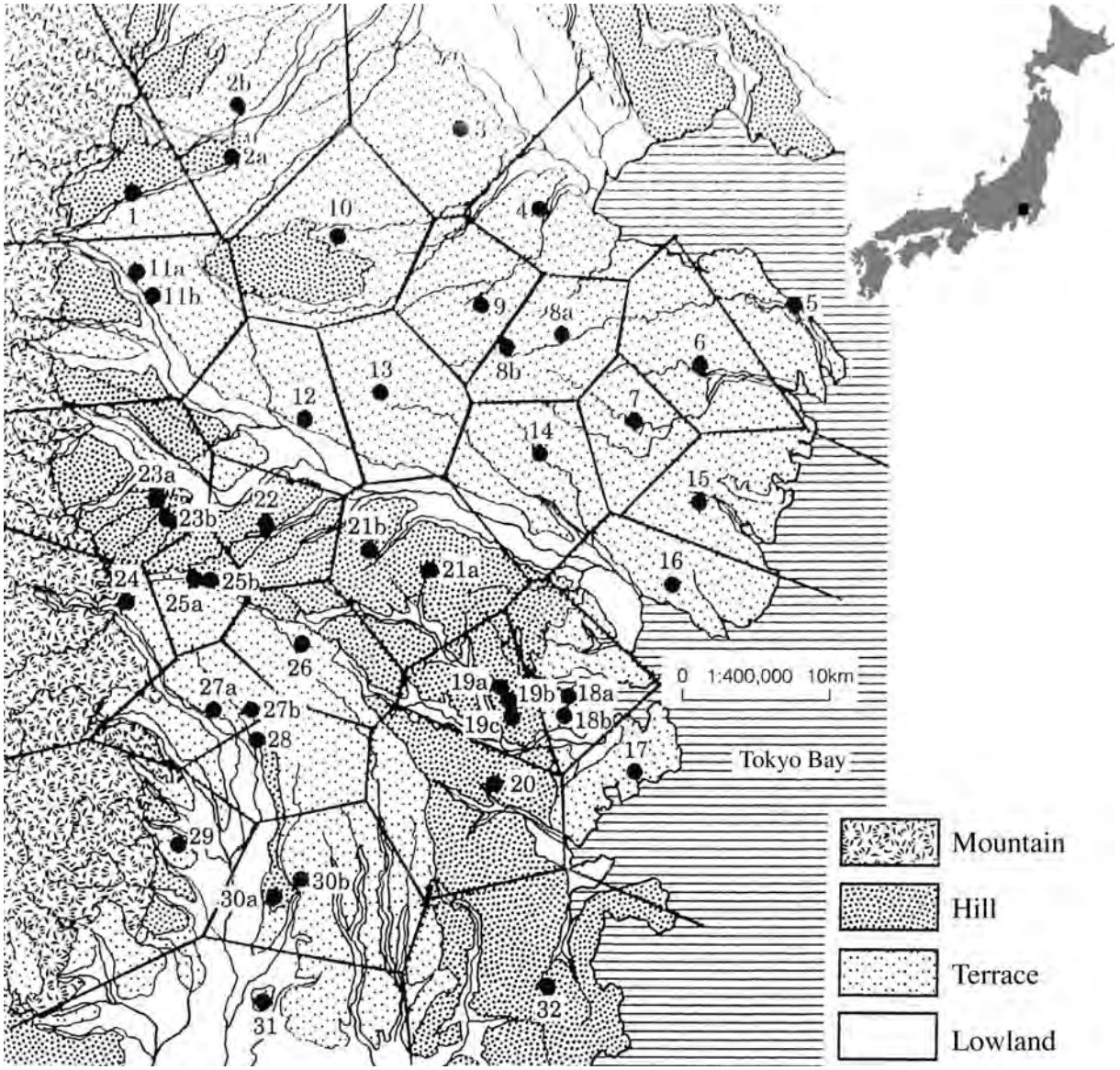


Figure 6.14 Middle Jomon settlements and their territories in the western part of the Kanto region. This area had a particularly high density of large scale settlements. Taniguchi Yasuhiro has modelled what the territories around each of these settlements might look like from above. To what extent these territories were used exclusively by the occupants of the settlements which they surrounded remains to be proven. The presence of two or more settlements in some of the territories suggests that the location of the settlement may have changed over time, although the territories themselves appear to have remained remarkably stable throughout the Middle Jomon.

The first Jomon settlement where this was made apparent was the classic Middle Jomon village at Togariishi in Nagano Prefecture, one of a large number of sites which cluster around the terraces of the imposing volcanic massif of Yatsugadake. Togariishi was excavated by a local amateur archaeologist, Miyasaka Fusakazu, in the 1930s before the outbreak of the Second World War.[35] From his excavations he made two observations of particular importance. His first observation was that the pit dwellings he discovered seemed to form two distinct clusters, a northern and a southern group. His second observation was that these two clusters of houses were separated by a central open space which contained a stone alignment, which seemed to represent a communal or public social space at the heart of the settlement. These two observations have formed an important basis for the study of Jomon settlements ever since.

In a seminal paper published in 1948 on *The structure of primitive settlements*, Wajima Seiichi developed Miyasaka's ideas.[36] Although, unlike today, at the time Wajima wrote his paper very few large-scale excavations of Jomon settlements had been undertaken, he recognised that this central plaza was an important feature of the structure of Jomon villages, and he also realised that there was a special significance to the presence of two groups of houses. This represented an advance on Miyasaka's observation that there were two groups of pit buildings, and Wajima thought that the distribution of buildings may have depended on the nuances of the local topography.

A short distance from Togariishi is an associated site, at Yosukeone (Figure 6.15). Excavation at this settlement again revealed two distinct clusters of pit dwellings, one to the east and one to the west.[37] Mizuno Masayoshi picked up on this observation in an important paper written in 1969, but he was criticised for failing to acknowledge the original observations put forward by Miyasaka.[38] Despite this, however, the interpretations proposed for the structure of settlement space at Togariishi and Yosukeone have become intertwined with our understanding of Jomon society.

Subsequent studies have demonstrated that the presence of two groups of houses at both Togariishi and Yosukeone was not simply a coincidence. Indeed it is a common pattern that we find on settlements from the Initial to the Final Jomon in all regions. At Hitachi Fushimi in Ibaraki Prefecture, pit dwellings from the end of the Initial Jomon were divided into northern and southern groups by a central plaza.[39] At about the same time something very similar can be seen at Kakuriyama in Kagoshima Prefecture, indicating that this pattern was already present at the southern end of the Japanese archipelago by the early part of the Initial Jomon.[40]

The presence of two groups of houses is a pattern that was maintained over considerable amounts of time. At the Initial and Early Jomon settlement of Hoshikusatoge in Shizuoka Prefecture, the clustering of houses into two groups was reproduced in at least two phases of occupation. The presence of two co-existent

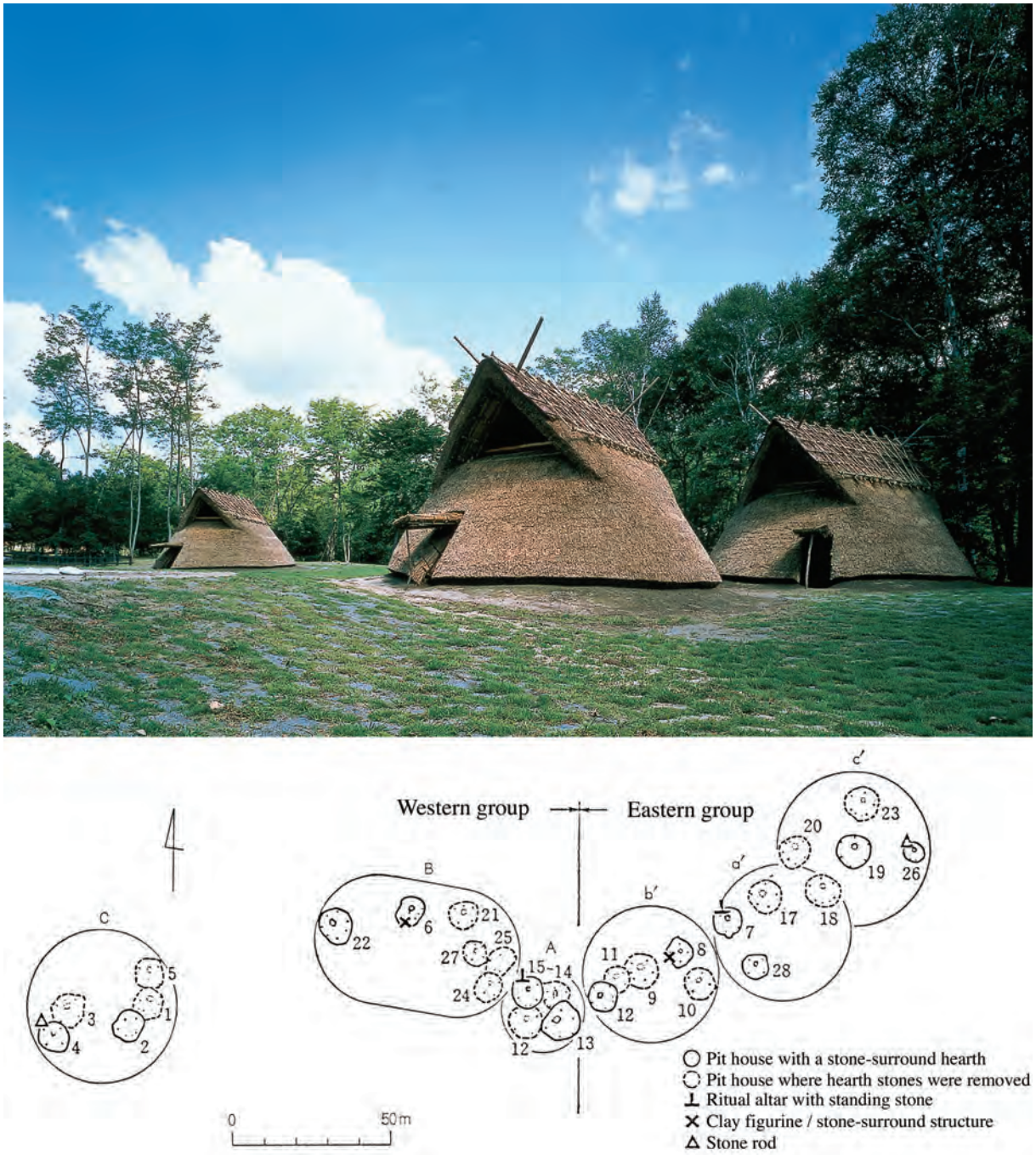


Figure 6.15 The Middle Jomon settlement at Yosukeone, Nagano Prefecture. The plan of this classic village site suggests that the community was divided into two parts. The site is now a historical park, one of many that have been built across Japan.

clusters of buildings dating to the final part of the Initial and the middle part of the Early Jomon at the Tsukagoshi A Location at Shakado in Yamanashi Prefecture is further evidence for the widespread and repeated occurrence of this duality in the structure of settlement space.[41] The number of reported examples of this phenomenon increases through the Middle Jomon (Figure 6.16).[42] At the Sankojindaira location at Shakado, occupied for at least four consecutive pottery phases in the later part of the Middle Jomon, two groups of houses were maintained, indicating a continuous stability of spatial structure.

A similar long-lived structure is seen at the famous shell midden at Kainohana in Chiba Prefecture, where the two clusters of houses dating to the Middle Jomon are reproduced in the Late Jomon occupation as well.[43] In addition to clusters of house groups, the dual structure can also be seen in the form of the shell middens themselves (Figure 6.17). For example at the Early Jomon shell midden at Fujioka in Tochigi Prefecture two areas of shell midden are separated by a central level space.[44] Very large shell middens developed on the eastern side of Tokyo Bay in the Middle and Late Jomon. Even where there is as yet no good evidence for pit dwellings at these sites, we often find that the shell deposits which built up around the central plaza were divided into two large spreads. This duality is also expressed through the overall form of these large shell middens, which in plan often resemble a horse-shoe or half moon, rather than a continuous circle, suggesting two contrasting groups. Classic examples of this can be seen at the large Middle and Late Jomon shell middens of Ubayama[45] and Horinouchi[46] in Chiba Prefecture and the Late and Final Jomon shell midden at Nakazuma in Ibaraki Prefecture. Shell middens only represent one type of deposition, that of shells. At other sites, including Shakado in Yamanashi Prefecture, Ohatadai in Akita Prefecture[47] and Iwanohara[48] in Niigata Prefecture, large deposits of pottery, perhaps representing rubbish dumps, take on a similar dual structure.

It is possible that the principle of duality was not quite so strong in the Late Jomon. The numbers of settlements known from the Late Jomon are less than the Middle Jomon, and there are also relatively fewer examples of two clusters of buildings reported from those sites which have been investigated. Nonetheless, there are some examples, for instance at Nasunahara in metropolitan Tokyo.[49] There are also some cases known from the Final Jomon, for example Arai Minami in Nagano Prefecture and Kinsei in Yamanashi Prefecture.[50]

As the foregoing examples show, there is no shortage of this kind of spatial structure of residential areas from Jomon settlements. Wherever we look, we seem to encounter them. On larger settlements, which built up over long periods of time, and whose occupational histories include occasional episodes of abandonment, with people moving away for some time and then returning to the same location to rebuild their dwelling, the boundaries between the distinct groups of houses can of course become a little blurred. This is a result of all the overlapping and intercutting of house pits, the gradual shifting of house locations

Figure 6.16 Aerial view of the Middle Jomon settlement at Namesaka, Tokyo, with two groups of pit dwellings divided by the central plaza. This duality in the structuring of settlement space is seen in many Jomon villages and probably reflects an important principle of Jomon social organisation.

over time to which we referred above, all of which can contribute to problems with identifying earlier and later phases of buildings. These complicating factors, however, should not blind us to the observation that the dual structure in the spatial organisation of residential areas in Jomon settlements was a very real and significant principle, relating to the social organisation of many Jomon villages.

It seems likely that it is the same dual principle being expressed in the spatial organisation of the residential areas of villages, in shell middens and other types of dump areas. Moreover, this repeated duality of spatial structure in Jomon sites may well result from the same causes.

The enigma of large buildings

The dual principle can also be seen in large buildings. Jomon settlements sometimes contain large structures which are bigger than the usual scale of pit house. Watanabe Makoto suggested that these large buildings played an important role in Jomon subsistence activities, namely that they were buildings used by the whole community during the winter months, especially in areas with heavy snowfall.[51] Prevented by the deep snow from undertaking many useful activities outside, Jomon people in these regions spent the winter living in these large buildings, engaged in the processing of stored foods and other materials. Another interpretation is that these large buildings were used as public meeting houses, providing an indoor space in which the community could come together to discuss matters of shared interest and concern.[52] It is possible to envisage

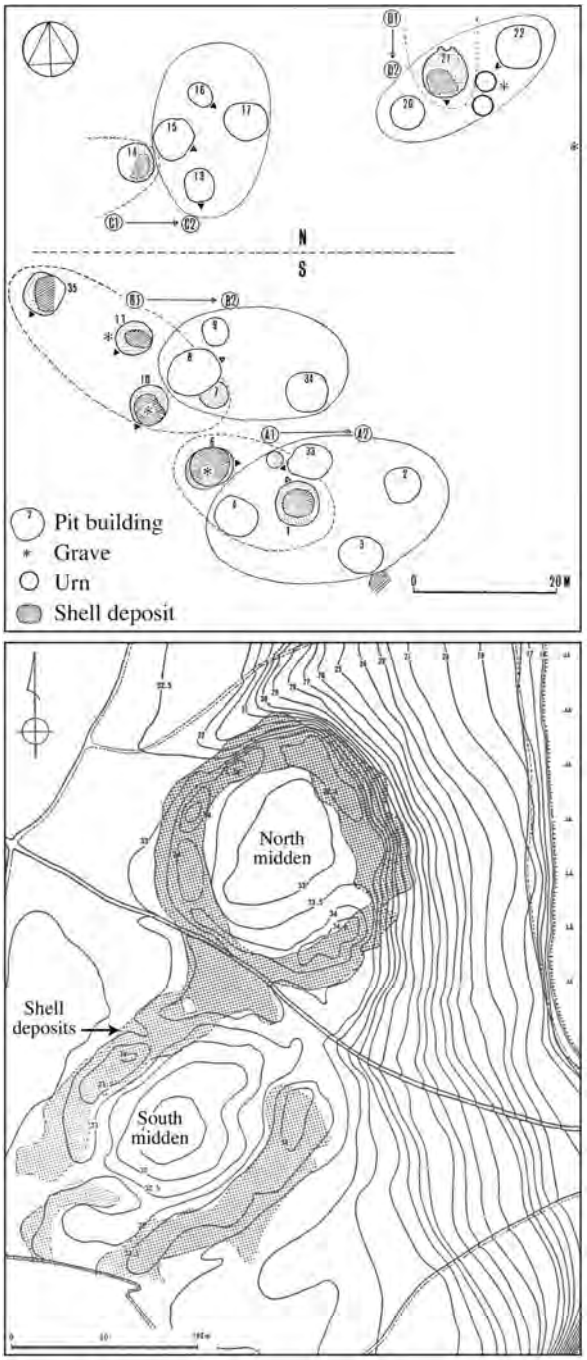


Figure 6.17 The dual structure seen in pit buildings and shell middens. (Upper) Middle Jomon settlement and burials at Kainohana, Chiba Prefecture. (Lower) Middle-Late Jomon shell middens at Kasori, Chiba Prefecture.

a wide range of uses for these large buildings, including community ceremonies and rituals, meetings to discuss village affairs, and perhaps even guesthouses for visitors from other settlements. The key to understanding them does, however, lie in their essentially public, communal, shared nature.

The first discovery of a large Jomon building was made at Fudodo in Toyama Prefecture (Figure 6.18).[53] This pit building had an oval ground plan, was seventeen metres long and eight metres wide. The long axis of the building was aligned east-west. Four stone hearths were lined up along the floor of the building. The two hearths in the eastern half of the building were rectangular, while the two in the western half were circular. In the centre of the two central hearths were set buried urns, filled with fire-reddened earth. In between the two hearths with buried urns, dividing the house into an eastern and a western side, there were three small post holes. Perhaps this was a screen-like small wall. These buildings were thus not simply divided into two halves, but the shape of the hearths was also different in the two parts.

Two phases of activity were recognised at Fudodo, the earlier dating to the early part of the Middle Jomon, and the later dating to the middle of the Middle Jomon. The large building belongs to the earlier phase. In addition to this large structure, eighteen other pit buildings, all of a scale more common in the Jomon, were discovered, five of which were completely excavated. Of these, three contained rectangular stone hearths and the remaining two had circular stone hearths. There did not appear to be any particular spatial differentiation in the location of buildings with square and circular hearths, both types occurring across the settlement. In addition, both forms appeared in both early and late phases of the site. This suggests that there were two groups living at Fudodo, one whose members identified themselves with rectangular hearths and the other whose members identified themselves with the circular fireplaces. When these two groups used the large building, the screen divided them conveniently into eastern and western groups.

Following these discoveries at Fudodo, more Middle Jomon large buildings were discovered at Hato Okazaki in Iwate Prefecture,[54] and it was not long before Early Jomon examples were found at Sugisawadai in Akita Prefecture.[55] These buildings were all rectangular or oval in ground plan and had a number of hearths arranged along the main axis, although as they contained only earthen rather than stone built hearths it is not possible to discern the difference between circular or rectangular hearths as seen at Fudodo. There is a strong possibility that there never was this clear difference. These large buildings tended not to be built on their own but were more often built in pairs. At Hato Okazaki and Sugisawadai, there is a difference between larger and smaller buildings, but the orientation of the buildings is the same, and the rooflines of these structures would have been parallel. Moreover, some of these buildings were rebuilt three times or more, indicating a high degree of continuity of occupation of a particular location. The dualism seen within one large building at Fudodo may therefore be represented in pairs of large buildings at other sites.

Large scale engineering works by the Jomon people of the Shizukawa area

Spectacular features of a kind we would not normally associate with a hunting and gathering economy were discovered in Hokkaido. They comprised a ditched enclosure dating to the final part of the Middle Jomon at the Shizukawa site in Tomakomai City (Figure 6.19).[56]

The ditch varied in depth, between one and two metres, and had a U-shaped section, two or three metres wide at the top and narrowing at the base to just twenty or thirty centimetres. Extending from the bottom of a tongue-shaped terrace which protrudes from north to south into the Abira River, the ditch runs over the back of the terrace, encircling both eastern and western slopes. The ditch, which was in total just over 135 metres long, separated the enclosed area from the steep slope at the edge of the terrace. The ditch formed a horse-shoe shaped plan, open to the north, enclosing a relatively level area of some 1600 square metres. The only two features which were found within the enclosed area were two pit buildings, one eight metres in diameter, the other slightly smaller, with a diameter of six metres.

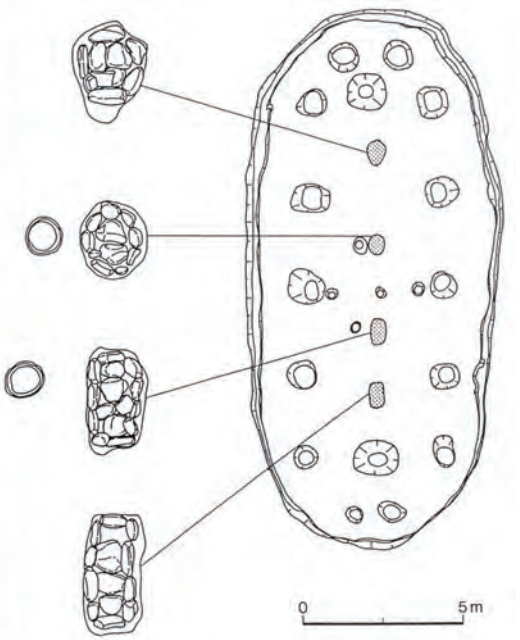


Figure 6.18 A large Middle Jomon building at Fudodo, Toyama Prefecture. The excavators are standing where the main posts were located. The dual principle is seen in the round and rectangular hearths which were found along the main axis of the building. The building was 17m long and had a total floor area of 120 square metres.

At first sight the ditched enclosure at Shizukawa somewhat resembles the settlements surrounded by ditches which were constructed by the Yayoi rice farmers after the Jomon had come to an end.[57] The best-known example is at Yoshinogari in Saga Prefecture, at the other end of the archipelago from Shizukawa. Does the site at Shizukawa represent a very rare example of a Jomon ditch-enclosed settlement? The fact that only two buildings were constructed within the enclosed area suggests that this is not the case.

Perhaps the remains at Shizukawa are of a ditched settlement which was in the process of being developed, but which remained incomplete.[58] The large amount of labour which went into constructing the ditch in the first place would seem to argue against this. Another interpretation suggests that the ditch played some kind of role in domesticating deer, although it is unlikely that attempts to corral deer, if that is indeed what was going on, would have been restricted to Hokkaido. Why have no similar features been discovered elsewhere? We need to think of some alternative interpretations which are not reliant on speculations about deer ranching or the need to build ditched villages.

Since we know that Jomon people had no iron tools, which would have made ditch digging easier, we can appreciate just how major an undertaking the digging out of the ditch at Shizukawa was for people armed only with simple digging sticks. This achievement is even more remarkable when we realise that it seems that the ditch was originally intended to have been larger, in places exceeding two metres in depth. The effort involved in extracting the soil from the base of this ditch would have pushed digging-stick technology to its limits and would have far exceeded the normal bounds of the input of Jomon effort. How can we explain this investment of labour in digging this ditch?

In Hokkaido, during winter the ground froze and it was not possible to dig the soil anyway. With the coming of spring, all efforts were directed to collecting new fresh green buds and sprouts and there was little or no time for activities unrelated to collecting foodstuffs. In autumn, in preparation for the onset of winter, all labour was directed towards collecting nuts and fishing for the abundant salmon as they made their way back upstream from the Pacific coast to their spawning grounds far upriver. Therefore, any ditch digging most likely took place in the heat of summer, when there were adequate food resources to hand. Considering the scale of the works at Shizukawa, it seems very unlikely that the ditch was dug in the course of just one summer, and the works probably continued over several years. And yet the Jomon people of Shizukawa only constructed two buildings within the ditched enclosure on which they had expended such a large amount of effort. Perhaps in order to understand what was going on at this site, we need to return to the principle of duality which we encountered in the two sets of hearths at Fudodo and in the pairs of large buildings at Sugisawadai and other settlements.

Figure 6.19 A rare example of a ditch-enclosed site from the Middle Jomon at Shizukawa, Hokkaido. The ditch enclosed an area containing just two pit buildings, indicating the special or sacred status of the site. Digging the ditch alone required a great investment of Jomon labour.

We can borrow two concepts from traditional Japanese culture to start to interpret the remains at Shizukawa, *ke* which implies an everyday, mundane quality, and *hare*, which suggests something special and sacred. Large constructions, like the ditch at Shizukawa, which clearly took a long time to build, should be considered to demarcate a *hare* space, separate and distinct from the *ke* space used by individuals and households in their ordinary daily lives. Given that the two buildings at Shizukawa are located within this *hare* space, rather than being straightforward residential dwellings, it is more likely that they were accorded some special significance within the social and belief systems of the community. This is why the two buildings stand together in the enclosure, public, ceremonial structures somewhat removed from the world of the everyday, another material expression of the dualistic principle which in part structured life in Jomon Japan.[59]

The existence of double burials

This dualistic principle is not restricted to the world of the living in the Jomon and any survey of reports of excavations of Jomon cemeteries and discussions of Jomon burial practices will quickly come across the phenomenon of double burials. One of the most comprehensive of these surveys, by Otsuka Kazuyoshi, which reviewed funerary evidence from the Initial to the Final Jomon, noted that examples of two forms of burial, extended and flexed, were found in roughly equal numbers at the Late Jomon Ubayama shell midden in Chiba Prefecture.[60] Otsuka proposed that these two burial forms indicate the presence of the deceased from two social groups in the one cemetery. Hayashi Kensaku proposed a similar interpretation in regard to the orientation of the head in burials from Final Jomon cemeteries at Satohama in Miyagi Prefecture and Kashikodokoro in Akita Prefecture.[61]

One of the difficulties of studying Jomon funerary archaeology is that human bones normally do not survive for very long in the soils of the Japanese archipelago.[62] Even where no bones remain, however, graves are sometimes marked with markers and piles of stones, and in others objects buried with the deceased, known as grave goods, survive. For example at the Early Jomon site of Negoyadai in Tochigi Prefecture there is a cluster of overlapping grave pits in a clearly demarcated area, eight of which contained slit stone earrings and long thin cylindrical stone beads which resemble bird bones, along with tanged scrapers and stone arrowheads.[63]

Once again, two groupings can be discerned within this cluster. One group comprises large circular grave pits, while the other group comprises square grave pits. These graves have many grave goods, and the northernmost one contained a set of two slit-stone earrings in a rectangular pit. The long axis of the group of circular graves is north-south, while the group of square graves is aligned east-west. The size of the grave pits, their distinctive orientation and the presence of rich grave goods, are all factors which suggest a particular significance for the occupants of these graves.

Another example of the presence of the dualistic principle in Jomon burials is found at the Late Jomon Miyanaka site in Nagano Prefecture, where again two orientations can be seen, this time in rectangular stone cist graves.[64] A similar pattern is visible in the same form of graves from the Final Jomon site of Oshide in Gunma Prefecture (Figure 6.20).[65] Although not quite as clear, the graves at the Final Jomon cemetery of Yudeno in Akita Prefecture, also comprise two groupings, the first oriented north-south, the second oriented east-west. Given the Jomon interest in the movement of the heavenly bodies, a theme to which we will return in Chapter Eight, this patterning may be related to the desire to align burials with the rising or setting sun.

Jomon stone circles are also associated with graves and cemeteries. The Oyu stone circle comprises two sets of concentric stone settings, Manza and Nonakado.[66] Otsuka Kazuyoshi noted in his study of burials the presence of both extended and crouched inhumations and thought he could make out inner and outer burials in the structure of the cemetery.

Another form of cemetery distinctive to the Jomon are burial enclosures, groupings of graves enclosed by a circular earthen bank, known as *kanjodori*, which appear in parts of Hokkaido towards the end of the Late Jomon and continue into the Final Jomon (Figure 6.21).[67] At one of the best examples of this form of cemetery, Kashiwagi B, five earth-banked burial enclosures were discovered.[68] These five enclosures form pairs (Enclosures One and Two, Four and Five, with the enclosure corresponding to Enclosure Three probably lying outside the area which was excavated). Enclosure One contained twenty-one grave pits divided into two types according to the form of the stone grave marker. The first type is marked by an angular stone placed on the edge of the burial pit itself. The second type is marked by a more rounded stone marker. As at Oyu, it is possible to see here the presence of two distinct groups of burials within a single cemetery area. This hint of duality is strengthened when we consider the arrangement of the whole group of enclosures.

Moreover, there may be some points of comparison between the spatial structure of the earth-banked burial enclosures at Kashiwagi B, the stone circles at Oyu and a series of pairs of earth-banked burial enclosures along the Misawa River. In the Misawa River group there are a number of pairs of earth-banked burial enclosures located on a series of small tongue-shaped promontories which protrude from the summit of the hilly ridge which stretches along the winding course of the Misawa River. Here again we find a further expression of the dual principle.

We therefore have evidence for two groups both in settlements and cemeteries, a pattern which seems also to be repeated in stone circles and earth-banked burial enclosures. This was an important structuring principle within Jomon Japan, a manifestation of the same principle we saw in the large buildings at Fudodo and Hato Okazaki.

Pottery types and two social groups: the principle of black and white *go* stones

This dualistic principle, which perhaps underlay the presence of two groups within one Jomon settlement, and the existence of two distinct groups in one Jomon cemetery, can be seen in various different ways. One of the most striking manifestations of this principle is the appearance of Jomon pots belonging to two different styles in the same location.

It has long been recognised that a boundary existed between the eastern and western Jomon. The line of this boundary followed a major geological fault known as the *fossa magna*, which extends from the Hida

Figure 6.20 Final Jomon burials at Oshide, Gunma Prefecture, where the burials display two different orientations, a further manifestation of the dualistic principle which underlay Jomon social organisation.

region near the Japan Sea coast to the Tokai region on the Pacific coast. A succession of distinct pottery styles developed on either side of this boundary, although as the Jomon wore on, the differences between these styles became less clear.

A classic example of this pattern can be seen at the Murayama site in Gifu Prefecture (Figure 6.22).[69] From the pottery assemblage excavated from this site it was possible to identify 1118 individual pottery vessels. Of these, 887 were recognised as belonging to the Kitashirakawa Lower style, which has its centre in the Kinki region. A further 231 vessels were of the Moroiso style, which developed in the Kanto and Chubu regions. The scale of the excavation was relatively small, and only about one-tenth of the whole site was investigated. It is therefore possible to estimate that the total number of pots from this site perhaps exceeded over ten thousand vessels. If this was the case, then extrapolating from the ratio of pots of different styles in the excavated sample, there were perhaps three thousand Moroiso vessels, a large number even if they were greatly exceeded by the Kitashirakawa pots. Indeed this is such a large number of Moroiso vessels that we cannot imagine them being carried over the Hida mountains from the Kanto and Chubu regions to the east where they would have been more at home. Instead we must accept that

Figure 6.21 Late Jomon bank-enclosed burial enclosures (kanjodori) at Bibi 4, Hokkaido, one of the clusters of enclosures in the Misawa River site group. Diameter of enclosure on the left, 29m.

both the eastern-influenced Morioso style vessels and the western-based Kitashirakawa Lower style vessels were being produced at Murayama.

The two styles are markedly different, starting with the vessel forms and the design motifs, the thickness of the walls and the colour of the finished vessel, even down to the types of tools used to apply the decoration. For example, the ways in which the cord marking was applied differs: in the Kitashirakawa style, the design comprised the impressions of a relatively short string of three twisted cords. In the Moroiso style, the impressions were of a string of two twisted cords, longer than that used in the Kitashirakawa style. These distinctively different ways of decorating the pots speak convincingly of a clear difference between the two styles.

We are not seeing the output of one potter adapting to the circumstances in which she or he found themselves, creating pots using the methods of the two different styles. Instead, what we have at Murayama is evidence for the deliberate observance of two different pottery-making traditions at the same time. We suggest that this is yet further proof of the existence of two social groups within a single Jomon community, living in a complementary rather than confrontational fashion, and whose presence explains the two different orientations of burials in cemeteries, the division of space and presence of different forms of hearths in large buildings, and the clustering of dwellings into two groupings, facing each other across the central plaza in the village.

The presence of two social groups within a single cemetery or settlement in the Jomon is further confirmed by analysis of the custom of tooth ablation, or deliberate removal. According to Harunari Hideji of the National Museum of Japanese History, who has undertaken detailed studies of Jomon skulls which exhibit the results of this practice, two patterns can be seen, especially clearly in the Final Jomon in the Tokai region (Figure 6.23).[70] The first pattern involves the removal of the two canines in the maxilla and the two canines in the mandible, creating what Harunari calls the 2C type. The second pattern involves the removal of two canines from the maxilla and four incisors from the mandible, in what Harunari terms the 4I type.

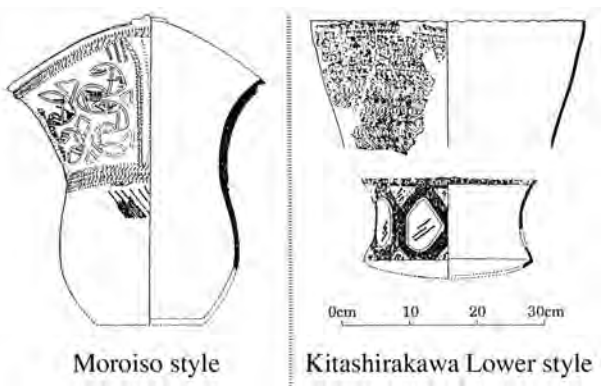


Figure 6.22 Early Jomon pots from Murayama, Gifu Prefecture: one settlement with two contemporary pottery styles.

Harunari interprets the 2C group as representing people marrying into the settlement from outside, from another village, resulting in the people upon whom these two different tooth ablation practices had been undertaken living together in the same village and hence buried in the same cemetery. Indeed, given that their front teeth were missing, each time they opened their mouths to talk or to laugh, it would be possible to recognise how they fitted into the social structure of the settlement. It is also quite likely that they were further identified by other aspects in their appearance, the way they arranged their hair and the way they tattooed and painted their faces.

Anthropologists have a special term for named groups of households into which people are born, from which identity was derived in certain societies known in the ethnographic record: the phratry. Among the Tlingit of the northwestern coast of North America, for example, three phratries are known to have existed – wolf, eagle and raven.[71] These various phratries had particular dispositions by which they could be recognised. The wolf phratry was considered to be very warlike, while the ravens had a wise, cautious and prudent manner. The Tlingit economy was based on fishing, hunting and gathering, and their villages in principle were always occupied by two phratries living together. This dual structure of Tlingit communities

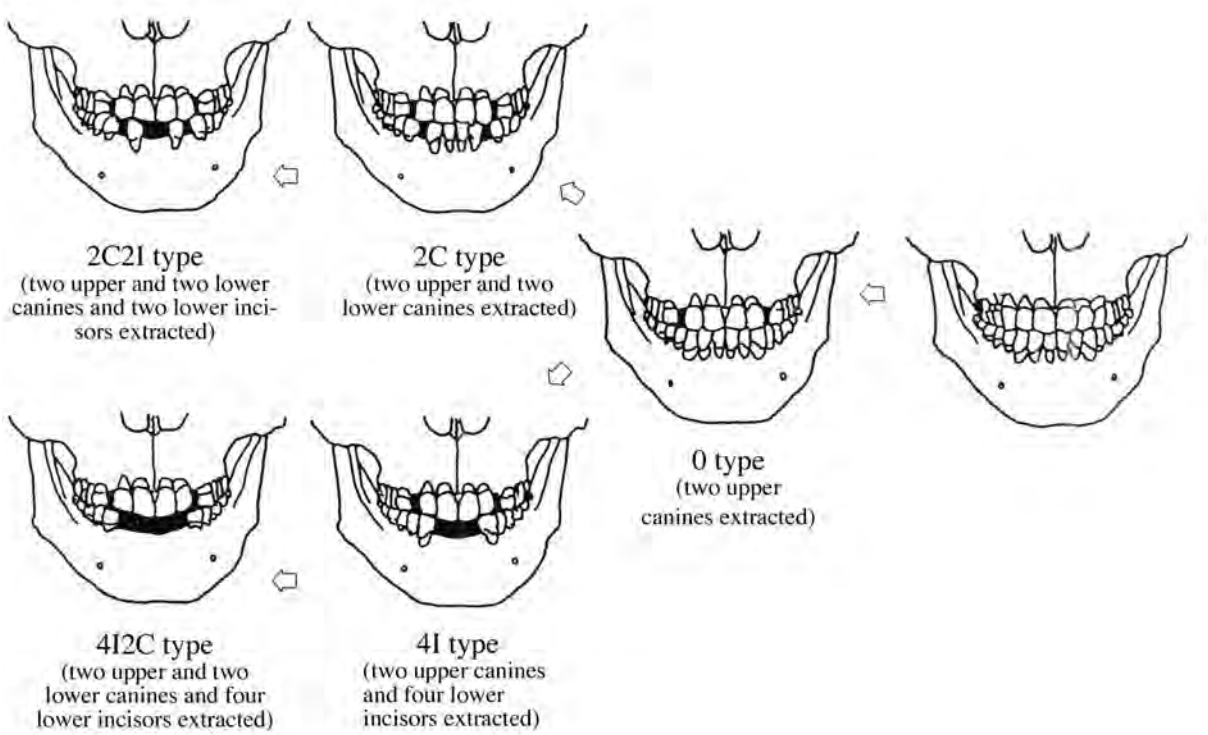


Figure 6.23 Final Jomon tooth ablation. This custom, increasingly common from the Middle Jomon onwards, allows archaeologists to distinguish people who were born in a particular village from those who married in.

underpinned many of their social conventions. Firstly, there was a strict avoidance of marrying into the same phratry, and it was the norm that one would always marry someone from the other phratry. Secondly at a wedding, presents would be given by both sides. Thirdly, there would be reciprocity in terms of privately held goods, i.e. such goods could be exchanged or shared on equal terms. Lastly, it was always the 'other' phratry which managed ceremonies, including those marking births and weddings, and those accompanying piercings to allow labrets and ear ornaments to be worn, house building and burials. For example, when a person died, the other phratry would hold a mutual funeral ceremony so that the members of the phratry to which the deceased belonged could mourn without worrying about the actual organisation of the ceremony, including arrangements for food and drink. These examples show some of the various ingenious means devised to help the two different groups live together.

Although we cannot know for sure the social function of the division of Jomon villages, on the basis of the evidence for a dualistic principle in the archaeology of buildings, settlement structure, cemeteries and pottery assemblages, we can suggest that Jomon communities were divided in the same way as Tlingit villages, and that the two groups were tied together by close social principles and customs. The anthropologist Obayashi Taryo argued very persuasively that Jomon society was based on this dual structure.[72] Just as in a single game of Japanese chess, or *go*, in which there is a clear and unambiguous division between black and white, both colours are needed to allow the game to proceed, so in the Jomon, society at a number of scales was based on the co-existence of two distinct groups, each separate and independent, but bound together by social conventions which permitted Jomon societies to reproduce themselves over time.

The appearance of social differences

We close this chapter with some thoughts on a topic which is of increasing significance in Jomon archaeology and for understanding the nature of Jomon Japan. Several ethnographic accounts of the native peoples of the northwestern coast of North America report the existence of a class of person described as slaves, suggesting a high degree of social differentiation.[73] In many ways, the cultures of the northwest coast were comparable to the Jomon cultures, especially of eastern Japan. Just like Jomon people, they had no agriculture, but differences in personal status developed, supported by a fishing, hunting and gathering economy. Is there any reason why similar status distinctions should not have developed within Jomon Japan, where economic conditions similar to those on the northwest coast prevailed? The high degree of organisational potential exhibited by Jomon societies, exemplified by the construction of large-scale features such as the ditch at Shizukawa, and the strength of what we might call Jomon cultural power, certainly provided the conditions for the appearance of a degree of social ranking and the accrual of individual status differences within the framework of Jomon society.

For example, in the middle of a community cemetery at the Late Jomon Yamaga shell midden in Fukuoka Prefecture, lies a woman with twenty shell armlets on her wrists (Figure 6.24).[74] These armlets were quite small and so she would not have been able to put them on or take them off once she became an adult, so she must have worn them until she died. Because of their fragility, she would not have been able to undertake any serious everyday work without considerable inconvenience. We should consider this woman as being of high status who avoided any manual labour. It is possible, although we have no direct evidence for this, that labour was undertaken for her by slaves. In addition, a man buried with a pattern-engraved deer antler hip ornament may also have been a person of high status. Watanabe Hitoshi pioneered discussions of the existence of stratification in Jomon society,[75] and was supported by the eminent archaeologist Sahara Makoto in the view that social differences in the Jomon were institutionalised.[76] Thinking in this way, it is possible to interpret examples of adult women being buried with children in the same fashion.[77] Perhaps rather than mothers being interred with their children, these are high status children being buried with a slave who was responsible for seeing the child safely to the other world. Perhaps the tradition which includes the slaves described as attending and protecting the mythical Queen Himiko in the Yayoi period extends back deep in time to the Jomon.[78]

Figure 6.24 Late Jomon skeletons buried with elaborate ornaments, Yamaga shell midden, Fukuoka Prefecture. Three women were buried together and the sand dunes have preserved the accessories they were wearing: hairpins, shark teeth ear ornaments, antler ornaments, shell bracelets and serpentinite pendants. Length of serpentinite pendant, 7 cms. Burials such as these with rich assemblages of grave goods indicate a degree of social differentiation within Jomon communities.

There is one more component to the story of personal ranking; ear ornaments. Appearing around the end of the Initial Jomon and the

beginning of the Early Jomon, these distinctive artefacts are suddenly found all over the archipelago. Although the distribution of these objects is very widespread, the numbers of ear ornaments from any particular site are very few. Typically less than one-tenth of burials from Jomon community cemeteries have earrings, and it seems that only certain people within these communities were allowed to wear them. Perhaps these people belonged to an elite class, at the top of a hierarchical social order, above ordinary people who in turn had more social status than our postulated slaves, who made up the lowest Jomon social group. Jomon archaeology continues to produce surprises, though, such as the recent excavations at Kuwano,[79] a community cemetery in Fukui Prefecture, where many of the graves contained slit-stone earrings, a timely reminder that we need to be cautious in our interpretations regarding the precise nature of Jomon society, and that we are well-advised to keep an open mind on the social significance of particular types of artefact.

Figure 7.1 Map showing sites mentioned in Chapter Seven.

Chapter Seven

Investigating the spiritual realm

Primary and secondary tools

The contents of the average toolkit of the Jomon period can be divided into two main groups (Figure 7.2).[1] The first group, which can be called 'primary' tools, includes items involved in productive labour. This productive labour allowed people to eat, drink, to have shelter and clothe themselves. It involved various activities, in particular collecting food through hunting, fishing and gathering, for which stone arrowheads and fishhooks were needed. Other such tools included the bone needles needed for sewing clothes. Flat stone mortars, grinding stones and pottery vessels were all used in the preparation, serving and consumption of food. Hammerstones, stone drills, chisels, and other objects were necessary for the manufacture of these items.

Primary tools have to be held in the hand of the user in order to carry out their function. The effects of the primary tool can be confirmed by the user's own eyes, and indeed their operation requires some physical exertion by the user (for example, throwing or hammering) and there is often some actual physical impact on the user (ranging from the jarring caused by flaking stone tools, to the tiredness of the arms caused by grinding nuts). The functions of many of these primary tools appear to be self-explanatory from their size and shape. The stone arrowheads were affixed at the ends of wooden shafts and fired from bows during hunting, while stone axeheads, mounted in wooden hafts, were used to cut wood. Similarly, some stone dishes were used as mortars for grinding nuts and grains.

The development of these seemingly everyday, basic and ordinary tools is one of the great achievements of humankind during the course of its long history. Stone arrowheads for example, highly effective in the hands of an experienced archer, are found around the world from ancient to modern times, wherever suitable materials exist, regardless of geography or history. These primary tools provided the basic technological framework for the Jomon period, and their appearance and development is directly and intimately tied up in the formation of Jomon culture. Once the basic Jomon lifestyles were established, in the Incipient and Initial stages of the Jomon, these primary tools continued to help shape the later manifestations of Jomon culture.

Following the establishment of these basic Jomon lifestyles, certain aspects of Jomon culture took on a more individualistic and independent nature. At this time, a second category of tool developed, which are here termed 'secondary tools'. The best known examples include clay figures, stone bars and personal

Figure 7.2 Primary and secondary tools. (Upper) Hunting tools from Kosegasawa, Niigata Prefecture. (Lower) A secondary tool of unknown function from Okyozuka, Ishikawa Prefecture.

ornaments. Other secondary tools include stone objects in the form of swords and daggers, stone and pottery plaques, pottery masks, a variety of specially-shaped pottery objects and ground and polished stone objects which to our eyes resemble familiar forms such as bells, bananas and mushrooms, others in the form of crosses and triangles, forms which are more difficult to characterise, such as the *gyobutsu sekki*, so named as objects of this unusual form were presented to the Meiji Emperor, and the evocative flat clay objects which bear the impressions of the feet and hands of real Jomon people (Figures 7.3 and 7.4).

Unlike primary tools, whose function is clear from their shape, it not so easy to understand what secondary tools were used for at first sight. Again, unlike primary tools, which tend to recur in much the same form regardless of cultural context, secondary tools tend to be specific to a particular place, time and culture. The relationship between the external appearance and use of these secondary tools is often not direct, and it is more difficult to use cross-cultural comparisons in their interpretation.

For instance, it seems quite straightforward to infer that stone arrowheads and spears were used in hunting. Modern scientific research has also found animal blood and fatty acids on these tools, apparently the remains of prehistoric hunting, although these scientific techniques need more work to be conclusive, and research like this is of course important to confirm that this is what these tools were used for.[2] We know many ethnographic examples of objects which have a specific use or meaning within that particular cultural context, which it would be very difficult to determine correctly without someone from that culture telling us what they were for. They perhaps recall the beautiful animal-shape figures made out of exquisite blue turquoise by some of the native peoples of the American southwest.[3] Although from our modern perspective we might think that these items were toys or ornaments, they were in fact objects imbued with great power, which played an important role in the rituals and beliefs associated with hunting. Without an explanation from the people who manufactured and made use of these objects, we might well opt for another, mistaken, interpretation. Another example of how misconceptions can easily arise is the use

Figure 7.3 Jomon secondary tools. (Clockwise from upper left) Final Jomon clay mask, Mamachi, Hokkaido. Height 18 cms. Final Jomon clay tablet, Aomori Prefecture. Length 12 cms. Initial Jomon clay tablet with the footprint of an infant, Bibi 7, Hokkaido, length 18 cms. Late Jomon clay 'stamps', Kazahari, Aomori Prefecture. Length of lower left, 5 cms. Even though the function of many of these objects remains unclear, they do bring us close to their Jomon makers. The mask from Mamachi was found beside a burial pit and may have been a form of death mask. The tablet with the impression of an infant's footprint is a powerful reminder of the significance of children in Jomon society.

Figure 7.4 Jomon ritual objects. (Upper left) Late Jomon pottery 'mushrooms'. Isedotai, Akita Prefecture. Height of upper central example, 5 cms. (Upper right) Late Jomon clay 'bells', Isedotai, Akita Prefecture. Height of top left example, 7 cms. (Centre) Final Jomon polished stone bars, Kamegaoka, Aomori Prefecture. Lengths (from above) 49 cms, 52 cms, 40 cms. (Lower) Final Jomon polished stone ritual objects from Okyozuka, Ishikawa Prefecture: (right) 'Imperial stone' (gyobutsu sekki), height 9 cms; (left) tanged stone bar, length 24 cms.

magic of dolls to haunt, and bring harm to one's enemies. To someone without any knowledge of Japanese folklore, the frightful use to which such dolls could be put would not be at all apparent.[4] One of the major characteristics of secondary tools, then, is the inability of people from outside the specific culture and time in which such objects were made and used to understand their precise significance, without assistance from someone from that cultural background.

This point can be illustrated further with an example of different words meaning the same thing in different languages. For instance, the English word 'dog' is translated into Japanese as '*inu*'. English and Japanese have developed as very different languages at either end of the planet, and these quite separate languages both influence and are influenced by the particular traditions and ideals of the peoples who have spoken them as they have developed through history. To a native speaker of English or Japanese respectively, it is perfectly obvious what is meant by 'dog' or '*inu*', but an English speaker coming across the word '*inu*' would not have any idea of what it meant unless given some cues, such as a Japanese person pointing to a barking four-legged hairy creature, a picture of such a creature, or perhaps the relevant word in a dictionary. To modern urban dwellers who dote on their pet pooches, it might not be obvious that these creatures were in fact the first animals to be domesticated by human beings and that they very early became the hunter's best friend. This is a very simplistic way of trying to show, firstly, how some concepts, in particular those relating to secondary tools, are specific to particular cultural contexts. Secondly, this example helps illustrate the idea that the meaning a secondary tool has in one culture may not be easily translatable into the conceptual framework of other cultures. This leads to the third point, namely that secondary tools may have a symbolic meaning which is very specific to their cultural context.[5]

Because the functions of these secondary tools often cannot be universally recognized, there is a tendency to label them as having no practical function. This, however, is to miss the point. Objects such as the carefully shaped and carved stones including the enigmatic *gyobutsu sekki* we mentioned above, the creation of which involved their makers in large amounts of time and care dedicated to roughing them out of blocks of sandstone and diorite, and then engraving intricate patterns before polishing them and finishing them off, does not speak of any absence of practicality. In the minds of those making and using such objects, at least, such items were created for a very practical function. Understanding that specific function, as we have discussed above, is not always very straightforward, and we are not necessarily helped by the actual form of the secondary tool. For example, stone bars in the form of early Chinese daggers are known from the later Jomon. To us, the daggers on which these stone objects seem to be modelled are designed to pierce and cut, but of course this cannot be done with a stone 'dagger'. The precise meaning or function of these objects, despite their apparent form, remain unclear to us.

Secondary tools such as these stone bars seem to make sense when we look just at their shape, but we know that the form we can see with our own eyes does not conform to our expectations of the functions

we normally associate with that particular form. This is not to say that these tools failed to serve the purpose suggested by their physical form, but perhaps this purpose was served rather in a symbolic fashion. In other words, when we encounter stone spears from Jomon sites, with their sharp ends, we expect them to be tools used for piercing. But when we come across these stone daggers with their blunt blades, we are at a loss to understand their function from their physical shapes alone.

Therefore, there is no direct or clear relationship between the form and function of secondary tools as we would expect in primary tools. Just as in the example of the words 'dog' and '*inu*' discussed above, the form of the secondary tool, just like the form of these words, is given meaning by the culture in which the secondary tool was made and used, and presumably named, although the name eludes us.

Archaeologists in Japan, as all over the world, have taken great trouble to identify the various functions for which the ancient artefacts they unearth may have been used, and to explore the many different ways in which particular activities were carried out using these primary tools. We need to approach secondary tools in rather a different way, and to try and address the concepts that underlie their purpose. As these concepts are often regarded as being related to the spiritual and ritual life of Jomon people, their study may well hold some clues as to the importance of ceremony and belief in the Japanese archipelago during the Jomon period.

The development of secondary tools

The development of many different forms of secondary tools is one of the most striking characteristics of the Jomon, and distinguishes the hunting and gathering cultures of the Jomon from many other peoples who derived their living from the natural environment around the world. Indeed, it seems that the creation and use of so many secondary tools, especially later on in the Jomon, became an important cultural activity in its own right, to the extent that highly developed ritual behaviour appears to have had a major impact on the development of other aspects of Jomon culture.

Secondary tools do not appear in significant quantities until the end of the Early Jomon, about six thousand years ago. There are a few examples of earlier secondary tools, including small flat engraved pebbles, but it was not until the Jomon tradition itself was well-established that secondary tools really became a distinguishing feature of Jomon Japan.

Precursors to the major development of secondary tools include some small, perforated, circular, flat fired-clay discs from Fukui Cave in Nagasaki Prefecture, dating to the Incipient Jomon (Figure 7.5).[6] These objects seem to be made from recycled sherds from broken pottery vessels and were found in association with stone tools and ordinary pottery sherds. We still do not have a clear idea about what these discs were

used for and the only examples from the Incipient Jomon are those from Fukui Cave. Further east, in the Kanto region, similar objects have been found, bearing distinctive cord-marked impressions which allow us to date them to the beginning of the Initial Jomon. These are relatively small in size and it is still not known whether they were used for the same function as the examples from Fukui Cave.

Another form of early secondary object are the small engraved stones from the Kamikuroiwa rock shelter in Ehime Prefecture.[7] These stones, which are up to about five centimetres in diameter, are of a dark green irridescent tuff, and they bear a series of finely engraved thin lines. Two types are recognised. In the first type the upper part of the stone bears incisions resembling two bundles of hair on either side of the head, beneath which are more lines which appear to signify breasts (Figure 7.5 right). On the lower half of the stone a series of thin straight lines resembles a grass skirt. These elements lead many archaeologists to view these objects as female figurines. While the second type has thin lines on the upper half resembling hair, as on the first type, there are no traces of breasts or grass skirts (Figure 7.5 left). Instead, the upper and lower parts of the stone are divided by a zig-zag line. It is obviously tempting to regard these stones as representing female and male figures respectively, but we cannot be certain that this is the case.

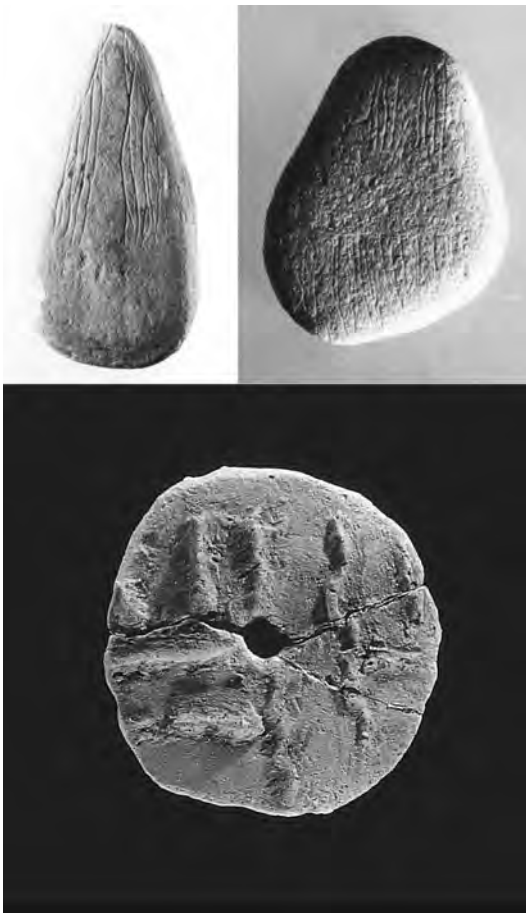


Figure 7.5 Incipient Jomon ritual objects. (Upper) Female (right) and male (left) incised pebbles from Kamikuroiwa Rockshelter, Ehime Prefecture. Height of example on right, 5 cms. (Lower) Perforated clay disc from Fukui Cave, Nagasaki Prefecture. Diameter 7 cms.

How do we explain the presence of these early forms of secondary tools in the western part of the archipelago so early in the Jomon period? One possibility is that they are the result of new elements entering the archipelago from various directions, perhaps across the newly breached Tsushima Straits from the Korean Peninsula, or from the south, the direction of the Chinese mainland. Perhaps they were used to indicate affinity between different but related groups of people, those living in the archipelago and newcomers. We cannot even be sure that these particular forms of secondary tools were invented within the Japanese archipelago. One reason why the perforated pottery discs and the engraved stones are only found on so few sites may

be that they were being made at a time of experimentation and innovation at the beginning of the long Jomon cultural tradition, during a period of cultural ferment in which ideas were taken up and abandoned as the basic Jomon material culture repertoire became established.

If this is the case, then we can suggest that the reason these early secondary objects disappeared was that it was not possible for the conceptual framework within which they were made to become fixed in this embryonic stage of the Jomon. What we can say for certain is that these particular forms did not give rise to many successors, and that these first secondary objects did not have a major impact on the subsequent development of the Jomon. It is, perhaps unfairly, their fate to be regarded as merely ephemeral to the formation of the Jomon tradition.

As we discussed in Chapter Three, the Jomon cultural tradition entered a new stage following the Incipient Jomon, one in which the Jomon began to take on a distinctive and independent identity, increasingly differentiated from the world of the Palaeolithic hunters of Ice Age East Asia. It was at this time that the most representative of the Jomon secondary tools appeared, clay figurines. The earliest examples of clay figurines appeared in the Kanto region in the middle of the Initial Jomon, followed somewhat later in the Kinki region. In recent years, early examples have also been found in Hakodate in southern Hokkaido and Kagoshima on the southern tip of Kyushu.[8] These early figurines were usually relatively simple in shape, with triangular or violin-shaped flat bodies. Some of them bear two extrusions, which appear to represent breasts, the only indications differentiating the front from the back. There is nothing to suggest a face, and indeed there is little to allow us to tell the head from the feet.

It is not until towards the end of the Early Jomon that clay figurines really begin to come into their own. Interestingly, at about the same time, body ornaments including stone earrings and shell bangles start to become popular. Bearing in mind our earlier discussion, we need to be wary of assuming, with our modern biases, that these objects were really just for ornamental purposes, worn to enhance the beauty of the person wearing them. Given what we know about the use of similar objects in other societies, we should probably expect that those wearing such objects would derive spiritual power or social status from them. These body ornaments do, however, represent the start of a long-lived trend within the Jomon cultural tradition, which came to include stone and pottery beads and other items which archaeologists now call accessories.[9]

Figure 7.6 Early Jomon phallic stone bars from Ondashi, Yamagata Prefecture. Length of example on right, 14 cms.

Figure 7.7 Middle Jomon large polished and engraved stone bar from Sakai A, Toyama Prefecture.Length 63 cms.

Again in the latter part of the Early Jomon period, another type of secondary tool appeared, phallic stone bars. Good examples are known from sites across the eastern part of the archipelago, including Yagi A in Hokkaido,[10] Takinoue in Iwate, Uenoyama II in Akita,[11] Ondashi in Yamagata[12] and Nakanoya Matsubara in Gunma,[13] a site to which we will return in Chapter Eight (Figure 7.6). These Early Jomon examples are relatively small, and could easily have been held in the hand. They can be differentiated from the larger phallic standing stones known from the Middle Jomon (Figure 7.7). The change from small stone bars to large standing stones indicates major conceptual changes in Jomon ritual and belief systems. These changes were related to the shift in scale from small to large, from individualistic rituals involving small hand-held objects which could easily be hidden from view, to more public rituals involving large items which could be seen by many people at the same time, and which perhaps became the focus of shrines or other ceremonial structures.

The gradual development of the basic forms of secondary tools, including clay figurines, stone bars and body ornaments, in the course of the Early Jomon was an important component in the formation of the Jomon cultural tradition. And it was from the Early Jomon period that we can really begin to talk of what can be regarded as truly Jomon, with a distinct identity. At this time the cultural buds appeared which were to flower in the Middle Jomon. The Jomon tradition continued to bloom, albeit in a multiplicity of variegated forms, through the Late and Final Jomon, carefully nurtured by the people living in the archipelago at the time, drawing on the strong roots laid down in the Early Jomon. In the Middle Jomon, new varieties of secondary tools appeared, including large phallic stone bars, triangular pottery plaques, and stone and pottery flutes, evidence for a musical tradition to which we will return in Chapter Eight. These were complemented in the later Jomon by the stone bars in the shape of swords and daggers to which we have already alluded, different forms of stone and pottery plaque, and a variety of other ceremonial stone objects.

After the Jomon had come to an end, secondary tools continued to comprise an important part of Yayoi artefact assemblages, making use of the new materials available from the continent, including metal. Bronze ritual implements included bells, halberds, swords and spears. Other Yayoi secondary tools included a variety of wooden ritual implements, animal bones, in particular deer scapulae used in divination, and weight-shaped pottery objects. The range of types and numbers of secondary tools, however, are much less than in the Jomon. This suggests that the role of secondary tools in the Jomon, and the conceptual framework of beliefs and rituals in which they operated, including prayers, spells, curses and auguries, played a more substantial role in cultural practices than in the succeeding cultures of the Yayoi period, in which solutions to problems were increasingly sought through the use of primary tools.[14]

In addition, while the cultures of the Yayoi period rice farmers inherited many types of primary tools from the Jomon, the majority of the secondary tools which were so important in the Jomon disappeared with the end of the Jomon tradition. Although the Yayoi occupied the same archipelago as the Jomon, it was a very different cultural tradition. We must accept that the appearance of the Yayoi did not just represent the end of the Jomon, but the emergence of a whole new world view for the occupants of the Japanese archipelago.

The many faces of Jomon clay figurines

Clay figurines, one of the most representative of the secondary tools from the Jomon period, were borne from the spiritual world and beliefs of Jomon people (Figure 7.8). Figurines began to appear sporadically in the Kanto, Kinki, Hokkaido, and Kyushu regions in the middle of the Initial Jomon, but they were few in number, and only very rarely can any connections between them be seen. In the later part of the Early Jomon, figurines started to be made on the Pacific coast of Kanto, but it is not until the Middle Jomon that the use of figurines really became established throughout the archipelago. In Hokkaido and the west of Japan the number of figurines remains low into the later part of the Jomon, although as we will see below there are some notable exceptions.

The first clay figurines had no face. If this is an overstatement, they at most had a small impression above their shoulders, their makers appearing to deliberately avoid creating any lifelike facial features or expression. A figure with no face is indeed mysterious. But looking at this another way, this very mystery encourages us to want to understand what we can about Jomon figurines by investigating hidden meanings within this deliberate ambiguity. What we can suggest is that these figurines were probably not actual Jomon gods, nor were they direct representations of Jomon people, nor were they just toys to be played with and talked to by Jomon children.

Figure 7.8 Clay figurines. (Clockwise from upper left) Initial Jomon small figurine from Komuro Uedai, Chiba Prefecture. Height 2 cms. Middle Jomon large standing figurine from Nishinomae, Yamagata Prefecture. Height 45 cms. Middle Jomon cross-shaped figurine, Sannai Maruyama, Aomori Prefecture. Height 33 cms.

The actual physical proportions of the figurines themselves are often unrealistic. This has nothing to do with any lack of figurative ability or an inability to sculpt figurines into a more 'accurate' shape on behalf of the people making them. Jomon people were quite capable of producing magnificent and realistic objects, elaborate stone tools and fine objects from bone and antler. Their production of such a range of items demonstrates the sophistication of their artistic skills and that they were completely in control of the media in which they worked. Despite these abilities, however, the figurines were created faceless, their bodies barely recognizable as human. Why was this?

The fundamental reason was probably that Jomon people themselves did not know the actual identity of the figurines. They did not know the accurate physiognomy or physical form of the entities the figurines were intended to represent. The figurines were probably expressions of shapeless presences that were thought to inhabit the natural objects which surrounded Jomon people or with which objects created by Jomon people were imbued. They transcended realistic shapes, had powers similar to those of gods, and represented images of otherwise invisible spirits. It might be expected that the makers of these figurines would represent these presences in a form similar to themselves, and to an extent this is true. Even the simplest figurines seem to have some anthropomorphic characteristics. And yet at the same time there was a deliberate effort not to make them appear too much like people. Perhaps their makers were afraid to attempt to represent the faces of the spirits in too accurate a form.

In addition, it is likely that Jomon people did not conceive of the spirits the early figurines were intended to represent in terms of any specific shape. Thus searching for any intrinsic meaning within the shape of the figurines would be a fruitless task. Because the appearance of the figurines was conceptually a shape the Jomon people could not envisage, so there were no intrinsic meanings within their precise shapes. It can be understood that the figurines were spiritual beings believed to have existed within the consciousness of Jomon people who had borrowed these physical forms to appear in the Jomon world.

Early clay figurines were all quite small, between five and ten centimetres in height. This is probably because they were made to be held in the palm of the hand and used for making wishes and prayers. These early examples were thus perhaps for personal spiritual use, rather than for large public ceremonies in the open air. They exerted their power in the confines of a person's hand, rather than being enshrined on a stone altar as appears to have happened later.

The Inuit of Greenland had a strong belief in a mythological being akin to a goblin. As they began to come in contact with European culture in the nineteenth century, the Inuit began to carve the image of this being on objects made from whale bones. Looking at the facial expressions on these carvings, we can almost hear their high-pitched laughter, and so appreciate that as well as being somewhat fierce, they also had a good sense of humour.[15]

The reason why the forms of Jomon figurines differ so dramatically from the realistic representations of the Inuit goblins has nothing to do with differences in artistic abilities, materials, or techniques, but lies instead in the fundamental difference in the conceptual frameworks within which the two traditions were conceived and produced. The way in which the spirit world and its denizens were perceived in Inuit and Jomon culture were quite different, and we must recognise that the clay figurines of the Jomon and the bone carvings of goblins of the Inuit were the products of unrelated and very different world views, in which spirits were not only represented in different ways, but also fulfilled different functions. We have to be very cautious in transposing our understanding of how secondary tools work in one culture to another culture, even if both cultures produce apparently anthropomorphic representations.

Another example can be taken from a people who are often considered more closely related to the Jomon. The Ainu peoples of Hokkaido have a very rich body of legends and myths, traditionally passed down the generations in an oral fashion. Characters often encountered in these stories are rather comic diminutive figures called Korobokkuru. The Ainu were renowned for their wood carving skills, but despite all their expertise in this endeavour, they never managed to create a realistic wooden carving of the Korobokkuru. If they had made carvings of the Korobokkuru, they would have resembled the Inuit goblins rather than the clay figurines of the Jomon.[16]

By the Middle Jomon, the Jomon figurines begin to have limbs and their heads are more defined (Figures 7.9 and 7.10). However, some still continue to have no eyes, nose, mouth, or other recognisable facial features. Even the magnificent tall figurine excavated at Nishinomae in Yamagata Prefecture lacks any real facial expression. Facial expressions do not emerge as a defined form until about half way through the Middle Jomon, but when at last they do, a great diversity of forms rapidly develop, each with their own distinctive attributes depending on when and where they were made. Some of these forms have acquired nicknames, including: heart-shaped; figurines with a head in the shape of a mountain; owl-shaped; and perhaps the most famous of all, the goggle-eyed figurines, which look as though they are wearing the flat wooden snow goggles as worn by many Arctic peoples. Even within these recognised types, however, all examples are different and each figurine seems to be unique. In addition, we can see that although facial features are represented from the Middle Jomon onwards, they are still very unlike normal human faces. All of this confirms that the Jomon clay figurines are not straightforward representations of human beings.[17]

One aspect of Jomon figurines that is especially intriguing is that the people who made them decorated the clay bodies in ways which were familiar to the people themselves, using earrings, tattoos on the face and around the mouth, and red pigments, perhaps similar to the colours they daubed on their own skins. Therefore, even though these figurines were not representations of people, at least to some extent their makers could not help projecting something of themselves on to these figures, on which they lavished

Figure 7.9 Middle Jomon 'Venus' figurine from Tanabatake, Nagano Prefecture. Height 27 cms. Only from the Middle Jomon were figurines given distinct facial features. This is a rare example of a figurine which was complete when excavated from a small pit in the centre of a Jomon village. The figurine is made of solid clay and weighs over two kilogrammes. It was named the Jomon 'Venus' due to the pronounced swelling of the abdomen, suggesting pregnancy.

considerable effort and labour. Consequently, despite not being images of Jomon people themselves, the figurines do reveal something of how Jomon people looked, or would have liked themselves to have looked, and the tattoos, colours and accessories provide a tantalizing glimpse of a prehistoric world of highly decorated bodies and body consciousness.

The demise of the clay figurines

As we have already seen, clay figurines first appeared in the Kanto region during the early part of the Initial Jomon. At about the same time, true cord-marking developed as the key decorative technique for Jomon pots. In the Kanto, pots were being made which seem to represent a fusion of two styles, the shell-incised (*kaigara chinsenmon*) wares of the Tohoku region and the rouletted wares (*oshigatamon*) of the Chubu region. It was a time of frenetic stylistic activity and innovation, and one of the side-products of this cultural melting pot was the emergence of the clay figurines which were subsequently to become one of the most important of all the Jomon secondary tools. The role that the prevailing social and cultural conditions played in the development of Jomon figurines is clear also in the subsequent appearance of other types of secondary tools. Moreover, as secondary tools, they have a remarkable vivid and lifelike appearance.[18]

Once they had appeared in Kanto, figurines started popping up in the Kinki region, in the far southwest in southern Kyushu, and across the Tsugaru Straits in Hokkaido, although the main concentration continued to be in Kanto. Only from the Middle Jomon did the numbers of clay figurines increase throughout the eastern part of the archipelago, a trend which continued through the Late and Final Jomon. Numbers continued to be low across western Japan, however, which leads us to consider the different cultural contexts between the eastern and western parts of the archipelago.

The distribution of sites which have produced clay figurines in western Japan is tightly concentrated in the Kinki region, but during the Late Jomon another centre of production appears in Kumamoto in the far west of Kyushu. Current archaeological thinking is that rice cultivation was introduced to northwestern Kyushu by immigrants from the Korean peninsula in the Late Jomon.[19] We find rice opals, tiny grains of silica found in rice plants, incorporated into the bodies of some Late Jomon pottery vessels from northwestern Kyushu, where the rice farmers are thought to have first settled. It is quite probable that the appearance of the rice-growing newcomers in Kyushu caused considerable disturbance and confusion within the Jomon world view, and was viewed by Jomon people as a major threat to their traditional ways of life. It was within this context that the clay figurines, objects deeply implicated in the Jomon conceptualisation of the world, took on a new significance. Figurines perhaps came to symbolise Jomon

Figure 7.10 Later Jomon clay figurines. (Clockwise from left) Final Jomon 'goggle-eyed' figurine, Kamegaoka, Aomori Prefecture. Height 35 cms. Final Jomon 'goggle-eyed' figurine, Ono I, Akita Prefecture. Height 16 cms. Late Jomon figurine with hands clasped together, Kazahari, Aomori Prefecture. Height 20 cms. These figurines suggest elaborate clothing, hairstyles, and accessories. The example from Kazahari has traces of asphalt on its left foot, which appears to have been broken and repaired in the Jomon. Other figurines, such as the example from Kamegaoka, were often apparently deliberately broken in Jomon rituals.

resistance to rice and their increased production can be interpreted as representing symbolic opposition to the threat of the incoming farming peoples as part of a concerted campaign to preserve Jomon culture.[20]

It was, however, a short-lived campaign in Kyushu, perhaps doomed to failure in the face of the inexorable spread of rice farming. By the beginning of the Final Jomon the front line had been pushed east, back to the Kinki region, where we find another centre of figurine production, at Kashihara in Nara Prefecture,[21] flourish and fizzle out. It seems that all the powers of the figurines were insufficient to halt the advance of the new culture from the Korean peninsula, and these episodes of frantic figurine production, first in Kyushu and then in the Kinki region, were destined to become sideshows in the great historical transition which saw the demise of Jomon culture and the ascendancy of the Yayoi way of life across much of the archipelago.

Yayoi culture had no need for clay figurines and the world view they represented, and so they were eradicated despite the occasional acts of resistance at Kashihara and elsewhere in western Japan. Jomon culture and the world of figurines were in retreat, as the Tokai and Chubu regions fell under the influence of the Yayoi. Figurines had never been made in large quantities in these regions, but at this time of cultural turbulence there was some degree of innovation in figurine manufacture, resulting in the appearance of new forms of figurine, such as those with beards, which represent a temporary reconsolidation of the Jomon identity, or perhaps another conceptual challenge to the advancing wave of Yayoi culture. These tactics, however, were ultimately unsuccessful in the face of the incoming rice farming way of life, and it was not long before much of the Kanto, the original heartland of Jomon clay figurines, succumbed to the Yayoi, and the tradition of making figurines died out along with many of the other secondary tools such as clay plaques, with which indigenous Jomon communities had sought to protect themselves. In considering the archaeology of the transition from the Jomon to the Yayoi in Kanto, there is an atmosphere of anticipation, awaiting the arrival of a storm which is rapidly picking up speed as it makes its inevitable way east, the air crackling with extraordinary tension.

Only in the north of Tohoku was a successful stand taken against the tidal wave of Yayoi culture. In this region, far from the plains of northwestern Kyushu where the Yayoi first took hold in the archipelago, Jomon culture survived in inaccessible fastnesses. While Yayoi culture flourished further west, these last remnants of the Jomon world continued to make and use clay figurines as they had before rice agriculture had taken sprout in Kyushu. But even here, they were not sufficient to keep Jomon culture alive for long, and gradually the numbers of Jomon communities with clay figurines declined until they all disappeared. So it was that Jomon culture died out and the whole of Honshu was conquered by the Yayoi.[22]

Figure 7.11 Fragments of some of the 1116 broken clay figurines from Shakado, Yamanashi Prefecture. Middle Jomon. The very large number of figurines from this one site suggests that certain settlements were the centres for rituals involving figurines.

The role of clay figurines

According to the Clay Figurine Research Group based at the National Museum of Japanese History, some fifteen thousand Jomon figurines are known to archaeology today.[23] This of course only represents the number of figurines which have actually been discovered through excavation and chance find. We can never know how many were made altogether, but a reasonable estimate would probably be in excess of ten times the number we currently know about. If this is the case, then perhaps two hundred thousand figurines were made across the Japanese archipelago following the first examples from the Initial Jomon, all playing a role within the Jomon world.

The majority of these figurines were made in eastern Japan between the Middle and Final Jomon, a period of some 2500 years. They differ quite dramatically from each other depending on when and where they

were made. If we divide our estimated total number of 200,000 figurines by 2500 years, we can suggest an average output of between 100 and 150 figurines per year. This overlooks the probability that large numbers of figurines may have been made in a relatively short period at particular sites in a kind of intense burst of mass production, while at other times and places there would have been no figurines made at all. This model of occasional large-scale activity fits the observation that figurines are not distributed regularly across space and time, but do tend to cluster at particular locations at specific periods. Given that by our estimate we only know about less than ten percent of all the figurines that were made, and with new discoveries being made every year, this remains a speculative model of clay figurine production which may yet prove to be completely mistaken. Nonetheless, starting to ask questions about the organization of the production of clay figurines is important if we are to understand the role of figurines in the Jomon world.

So what was the role that clay figurines played in the Jomon? As already suggested, their role was closely associated with the spiritual beliefs of Jomon people, but it remains difficult to be more precise from the broken pieces of figurine we recover from archaeological sites (Figure 7.11).[24] Undeterred, however, archaeologists continue to examine and analyse how the figurines appear when they are excavated, their shape, the way they fracture and break, and through this detailed and painstaking work we hope to discover some more details about what these figurines meant to Jomon people and how they were used.

Many people have speculated as to the functions of these clay figurines. A large proportion of the interpretations proposed are based on an assumption that most if not all of the figurines represent females. We need to exercise some caution before accepting this widely-held belief. One of the characteristics of the figurines often taken in support of this idea are the breasts or nipples which many of the figurines have, but we must not overlook the fact that men also have these attributes. Indeed the presence of breasts or nipples on figurines which did not have clearly defined facial or other features could well have been intended to differentiate between the front and the back of the figurine. In addition, representations of large voluptuous breasts are quite rare, seen in only a few examples of goggle-eyed figurines. In this way the Jomon clay figurines differ from the majority of European figurines from the Palaeolithic.[25]

For these reasons, it is considered here that these clay figurines are neither male nor female, nor do they simply represent a model of the Jomon person, but rather they are images that surpass the realms of gender and shape, and are designed to allow spirits to appear in concrete form. If this is indeed the case, most of the figurines, starting with the earliest examples, take on an ambiguous appearance. The reason that clay figurines were given anthropomorphic forms at all, given that there was no practical necessity for this to be the case, is further evidence of the underlying humanism and humour of the Jomon people.

Let us return to the question of the size of the first figurines from the Initial Jomon, which were all small enough to fit into the palm of the hand. As suggested above, the size of these early figurines suggests that they were not made to be shown off or seen in the public sphere. In the Middle Jomon, we begin to see larger figurines which have one outstanding characteristic, namely that they were hollow. In addition, when these larger figurines are discovered, they are much less likely to be broken, and seem to have been deposited in the ground in perfect condition. This suggests that they have a special significance, rather different to the smaller figurines, which are very rarely found complete, perhaps indicative of a functional distinction depending on size and shape.

Clay figurines were made from the same raw material as Jomon pottery vessels. There has not been sufficient analysis undertaken to determine whether the figurines were made from exactly the same sort of clay as cooking pots and other ceramic items. One possibility is that the clay used for figurines was prepared in a special and distinctive way. Further elucidation of this point requires more research in the future.

In order to make pottery, it is not possible just to use the naturally available sedimentary clays, although this is an important ingredient. To ensure that pottery objects do not simply collapse or explode while being fired, it is necessary to mix the clay with a variety of other materials, all of which are combined through kneading and preparing the clay mix. These inclusions make the clay more workable by reducing the natural stickiness of untreated clay, as well as preventing cracking while the pot dries and is then fired. The materials used for these purposes, and the relative quantities of inclusions and natural clay vary from place to place and culture to culture.

Should it turn out that the clay used to make figurines was indeed different from the clay used to make other pottery vessels and objects, this would further emphasise the importance of the figurines. As already pointed out, however, research into the physical composition of the clays used in figurine manufacture needed to explore this possibility still needs to be done. The same question remains unanswered in regard to other secondary tools made of clay, including the animal-shaped figurines, ear ornaments and pottery plaques. Some indications are available which suggest that this will be a fruitful avenue of enquiry. At Kayano in Gunma Prefecture, a large number of ear ornaments were discovered from a settlement dating to the Final Jomon.[26] Two main types of ear ornament could be identified, relatively simple forms with fretwork designs, and more elaborate forms with circular and spiral three-dimensional designs. The simpler forms appear to have been made with a finer grade of clay, while for the more elaborate designs a rougher more granulated variety of clay was used. Future research will subject these clays to closer, microscopic analysis, but for the time being we must be satisfied that a difference in clays can be gauged even by the naked eye – which was after all the only visual implement available to those making the original selection of clays.

Figure 7.12 Head of a large Late Jomon figurine, Shidanai, Iwate Prefecture. Height 25 cms. This object was discovered broken into more than ten pieces. A few fragments of possible hands and legs were also found, and the figurine would have been over one metre in length when complete. Unlike many of the smaller figurines, however, this example was not particularly well-fired.

Just as the variety of clays may be an important key to building our understanding of the significance of Jomon figurines, we also need to examine the methods used to fire these objects. Most pottery items from the Jomon were fired in open bonfires at temperatures of up to about 500 degrees centigrade, producing what is called a biscuit firing. This temperature allows all of the moisture in the clay to escape and reconfigures all of the minerals so that the resulting fired object is impermeable to water. A perfectly satisfactory vessel can be produced through this type of biscuit firing, but the addition of more firewood during the firing process can increase the temperature within even a relatively simple bonfire to 700 or 800 degrees centigrade. Unfortunately we have no direct way of knowing how much firewood was used in the course of an average Jomon pottery firing session, nor do we know for how long the bonfire was kept alight. If we did have this information then we could better evaluate the different firing methods used by Jomon potters. It remains an intriguing yet unproven possibility that more time and care was taken over the firing of figurines than other pottery objects, and advances in experimental archaeology may well allow us to make more substantial statements about this in the future. What we do know, however, is that the figurines, especially by the Middle Jomon period, were usually made of carefully prepared clays and were well fired.

There are some interesting exceptions to this rule. When the broken pieces of the head of a large figurine were excavated at Shidanai in Iwate Prefecture, examination of the sherds showed that the clay comprising the interior of the head was not at all well fired (Figure 7.12).[27] Perhaps the head was too large to be properly fired, or perhaps the firing time was deliberately kept short because of the form of this particular figurine. Currently we do not have a satisfactory answer to this, but ongoing research into the manufacture of these important objects will doubtless cast more light on this important topic in the future.

The value of jade

Jomon people made a wide range of primary tools using various stone materials available to them. As well as these implements for hunting and cooking, they also created many items which archaeologists today call accessories. These are an important category of secondary tool and include earrings and earspools, beads and pendants (Figure 7.13). The manufacture of these objects began in the middle of the Initial Jomon and by the Early Jomon they had become a popular and established part of the Jomon material culture repertoire in many parts of the archipelago.

In areas which were particularly rich in stone materials especially suitable for these accessories, certain communities seem to have specialised in the large-scale production of these objects. Greenstones such as jade and talc are found in relatively limited areas in Hokuriku, in particular the borders of Toyama, Niigata and Nagano Prefectures. Gokurakuji in Toyama Prefecture[28] and Ariake Sansha in Nagano[29] are two good examples of settlements where specialised greenstone workshops developed, where several different styles of stone bead were produced, including slit-stone earrings which have parallels on the

Figure 7.13 Initial Jomon slit-stone earrings from burials at Kuwano, Fukui Prefecture. Diameter of example on upper left, 7 cms.

Chinese mainland and comma- and tube-shaped beads. The large numbers in which these beads were made at these sites is evidence that these objects were not just being made for the personal use of the people living at these settlements, but that they were being distributed to members of other communities through some form of trade or exchange networks.

Although sources of talc and jade are scattered throughout the archipelago, it is probable that Jomon people did not have knowledge of all of them, and the borders of Toyama, Niigata and Nagano Prefectures made up the main area where such materials were exploited in the Jomon. The presence of extensive distribution networks can be seen from the spread of the slit-stone earrings, which appear in the later part of the Initial Jomon. Finding these exquisite artefacts on sites across the archipelago shows how popular they had become within the Jomon world, leading to the area where the beads originated, in what is today regarded as a distant corner of Hokuriku, being accorded a special status in Jomon geography.

As time passed, people in the western part of Niigata Prefecture around the Itoigawa region began to work the hard jade nodules and cobbles which were found in the area. The Hime River flows out of the mountains into the Japan Sea just north of the dark cliffs of the inhospitable and bleak Oyashirazu coast. Natural outcrops of jade can still be found in the upper reaches of the Hime River and the river eroded out nodules of this highly prized greenstone which subsequently found their way downstream to the coast where they turned up on the beaches among the other pebbles and rocks, and caught the eye of Jomon beachcombers. By the Middle Jomon people in this area made large and small beads from this hard-to-work material (Figure 7.14).

Figure 7.14 Large Middle Jomon jadeite pendants from Iwanohara, Niigata Prefecture. Height of example on left, 10 cms.

At Chojagahara in Niigata Prefecture we find a settlement from the later part of the Early Jomon where people were already experimenting with the locally available jade.[30] A beautiful jade pendant from the Early Jomon was excavated at Tenjin in Yamanashi Prefecture, a considerable distance from the jade sources.[31] These claims for early jade working, however, still need to be substantiated, and for the present we can really only talk about jade working from the Middle Jomon.

Jade is a much harder stone than talc. While the two stone types have a similar green colour, the process of working jade, including roughing out the basic shape, chiselling, shaping, polishing and drilling a hole through the bead, is no easy task. Nonetheless, Jomon people were not deterred from working this difficult and rather intractable material into beautiful beads. As were people in ancient China and South America, the Jomon were enticed by the bewitching and calming deep green colour of jade.[32]

What is it that separates jade from other types of stone and makes it so attractive? Part of the answer lies in the translucent quality and the colour of this most treasured of Jomon stones. It is also very hard, and the very difficulties that this quality presented to the people working jade probably also contributed to its being valued so highly. Jade also seems to have been well suited to Jomon tastes and Jomon value systems. The jade beads reflect these value systems and embody something of the spirit of Jomon people, taking a particular commodity and integrating it into their view of the world. In short, Jomon people created their own value systems for themselves and incorporated new elements as and when the need arose, contributing to the independence and distinctiveness of Jomon Japan.

Once the Jomon people living in the areas where jade sources were to be found had perfected the manufacture of beads, from their settlements at places such as Chojagahara in Niigata Prefecture and Sakai A in Toyama Prefecture,[33] they began to foster their newly developed form of social power deriving from their ability to make beads from this difficult material (Figure 7.15). The quantities of raw materials which were discovered during the excavation of these bead-making sites suggest that beads were being made on a scale which far exceeded the local needs of the inhabitants. As happened in the Early Jomon with the production of talc objects, it seems that certain communities began to specialise in the production of jade beads that were then distributed to other Jomon groups elsewhere in the archipelago. While the majority of the jade beads measured just a few centimetres in length, some much larger examples have been found. Up to ten centimetres in length, these large beads stand out from other Jomon accessories. These large beads are found throughout Chubu during the Middle Jomon, with some additional examples being known from the Kanto and Tohoku regions.

By the Late Jomon, these large beads are found on sites from Hokkaido to Kyushu, although the more outlying examples tend not to have the same finely balanced shape and tend to be a little smaller than those from Chubu. On average, one or two of these large beads are found on each settlement from the Middle Jomon period onwards. This observation leads us to suggest that these large beads were not owned by any particular individual in our modern sense, but rather that they had some connection to the whole group. It is also likely that the person who wore such a large bead was a person of considerable social standing within the group, although the group as a whole may have shared the ownership of this important item.

Figure 7.15
Raw materials and partly-made beads and pendants from the Middle Jomon jadeite factory site at Sakai A, Toyama Prefecture.

Perhaps this is the reason that these large beads were as large as they were, and also why they were made of this rare jade material. It is interesting that many of these large beads are made of jade which has a milky white hue, rather than the clear green colour we normally associate with jade. This indicates that the green colour of most jade was not the major reason why these beads were valued so highly. What was perhaps more important to the Jomon people wearing and seeing them worn was that these large beads were made of this hard enduring stone from far-off carefully protected sources. The value system of which these beads were an important part probably gave jade an abstract meaning, lost to us today, beyond the superficial beauty of the greenstone.

The people of the jade production sites at Chojagahara and Sakai A achieved a remarkable coup in Jomon Japan by winning recognition of this special status for jade across the archipelago. The jade nodules they picked up from the beach became much more than just another rock from the pile. The use of jade became fixed within the Jomon value system and, as the special value of this stone came to be widely acknowledged across Jomon Japan, the jade workers succeeded in influencing the whole Jomon. We can visualise them as holding the sole rights to the distribution of jade, and using these rights to establish and maintain their position within the Jomon world. This position was secured through the distribution of small beads, and perhaps maintained and enhanced by the very limited supply of large jade beads.[34]

Evidence for the careful maintenance of the jade distribution networks, which were embedded in the social, economic and political contexts of Jomon Japan, is seen in the distribution of find spots of Jomon jade beads. The quantities of jade beads do not become progressively smaller the further we move from the sources. The distribution pattern does not seem as simple as this. The distribution of jade beads from the Middle to the Final Jomon is not a matter of large quantities of beads being recovered from excavations near the production locations. On the contrary, large numbers of jade beads are found in relatively distant locations, in Nagano, Yamagata and Aomori.

It is of particular significance that we find large concentrations of jade beads in Aomori Prefecture. Located at the northern tip of Honshu, more jade beads have been found in Aomori than in any other regions outside the prefectures immediately encircling the jade production sites in Niigata and Toyama. Aomori was an important centre of Jomon culture, being at the core of the Ento pottery zone in the Early and Middle Jomon, and the original focus of the Kamegaoka zone in the Final Jomon. This area developed close links with the jade producers and had the power to draw large amounts of jade into its boundaries and perhaps to command the respect of the people in control of the production and distribution of this valued resource.

In the Final Jomon, small beads became widely available throughout the archipelago and many were discovered from graves especially in Tohoku and Hokkaido. Where jade itself was not available, beads were made of other stone materials, such as serpentinite, which has properties quite similar to jade. Comma-shaped beads, precursors of the *magatama* beads which were valued accessories buried in the great mounded tombs of elite individuals at the time of the formation of the Japanese state, from the fourth to sixth centuries AD, became very popular in the northern Tohoku region. Closer to the sources of jade, the people living on the production sites created monuments, including large wooden pillars and extensive settings of stones. One such example was discovered at Teraji, near the Japan Sea coast in Niigata Prefecture (Figure 7.16).[35]

Figure 7.16 Monumental Final Jomon wooden pillars and stone arrangements at Teraji, Niigata Prefecture. Teraji was located close to the source of jade, and the people who lived there probably had a controlling interest in the Jomon jade industry.

Large quantities of jade nodules, cobbles and pebbles were found by archaeologists at Teraji. Indeed so much raw material had been stored up during the Jomon occupation that there could have been little room to step without treading on the green stones. Even if the Jomon jade bead producers worked with the greatest conceivable efficiency, using only the most effective techniques available to them, it is estimated that they would have been able to work less than half of the raw materials they brought to the site – and then only if the Jomon continued until today. This degree of storing jade raw materials is testimony to their desire to maintain their monopoly over this highly prized resource. They celebrated the social power this monopoly brought them with the building of monumental wooden and stone constructions, facilities which would have reminded any outsiders of who controlled the jade trade.

Spiritual numbers: the significance of three and five in the Jomon world view

Lastly let us return to the pottery and briefly consider how the study of the structure of pottery designs, which we encountered in chapters Three and Four, can contribute to our understanding of the Jomon mindscape. To cut a round apple into halves or quarters is not a very difficult thing to do. However, to cut it into threes or fives takes more concentration. So why did Jomon people design some of their cooking pots or divide up the bodies of some of the clay figurines in accordance with these numbers? As one might expect, some of the vessels with three or five projections flaring out of the rim at first glance look somewhat out of balance. For purely decorative purposes surely twos or fours would have

made more sense. The preference for ornamentation based on the concepts of three and five indicate that these numbers had more than just a decorative or casual significance in the Jomon world (Figure 7.17). From our modern aesthetic point of view, the use of three and five to structure the form and decorative field of many Jomon vessels appears to create a lack of balance which can even detract from their overall impact. In order to understand what was behind this predilection for three and five, we must examine what the Jomon motives might have been.[36]

Let us assume that the numbers three and five had a special meaning for Jomon people, perhaps having some particular significance within the Jomon world view. As we saw in Chapter Three, the patterns on Jomon pots were not always meant to serve just a decorative purpose, and the patterns we see and describe on the vessels were probably used to tell stories. These narratives would have dealt with a whole range of ideas, the specifics of which are long lost, but it is within this context that we can start to think of the numbers three and five taking on some particular meanings within the Jomon world. Admittedly, until the Middle Jomon, the number four seems to have been more influential in structuring the design of pots, but there is a change from the Middle Jomon towards the use of three and five. Let us consider this a little more closely.

The number three as a structuring concept in the Middle Jomon is particularly apparent in pottery vessels of the Katsusaka style. In some cases the number six was used, but this can be explained as a multiple of the number three. In the Kasori E style which followed on from the Katsusaka style in Kanto, we can see this in the six projections which are found on the wavy rims of the deep pots of this stage. Within a single pottery style we sometimes find some very local variations. For example, in the Middle Jomon Flame style pots made in eastern Niigata Prefecture and on the island of Sado emphasis was placed on the number four. As we saw in Chapter Four, however, in the Aizu region, the number three seems to have been more important. In the later half of the Middle Jomon, the Ento Upper pottery style of northern Tohoku is normally thought of as being greatly influenced by the Middle Daigi pottery styles which were prevalent in southern Tohoku. And yet we can see that in terms of preferred numerological concepts, the Ento style was based on the number three, while the Daigi style was based on the number four. Again, this time in the Late Jomon, Horinouchi style dishes often exhibit three large wavy projections around their rims, while the deep pots of the same style are often adorned with three protruberances, perhaps symbolising an important aspect of the world view of their makers.

During the middle of the Late Jomon in the Tohoku region, a preference for the number five appeared in pots of the knobbed (*kobutsuki*) style, expressed in the five wavy projections found on the rims of many vessels of this type. This interest in the number five was picked up in the Ubayama type of the first part of the Final Jomon in Kanto, and went on to influence the development of subsequent pottery styles in this region. In pots of the Final Angyo type, for example, the potters seem to have gone to considerable trouble

to incorporate the five concept into their designs, and the difficulty of achieving this can be seen in the fact that one of the five motifs is often noticeably smaller than the other four, or has had to be squeezed into the overall design somewhere.[37]

Our last example of this interest in number concepts in the Jomon is a rare rectangular pottery vessel from Asahi in Niigata Prefecture dating to the Final Jomon (Figure 7.17).[38] This unusual piece has a different set of special motifs drawn on each of its five sides, including the base. These motifs exhibit the typical characteristics of Jomon patterns which were perhaps used to tell a story. The story which emerged from the different motifs on each side probably conveyed deep and complex meanings to which we do not have access, but it is still evident that the unit five played an important role in structuring the narrative embodied by this pot. Just below the rim on each side is incised a curvy line, each comprising five curls. These curls vary in size, but each line fits within the space available. This pattern was therefore perhaps not based on any desire to decorate the pot using curvy lines, but instead is based on the wish to express the conceptual meaning behind the number five. Just above the base of the pot, on two of the opposing sides, we find two more curvy lines, one with two curls and the other with three. As we well know, two plus three gives a total of five. Given that these designs seem to correspond to each other, it seems that they should not be seen independently, but rather as drawing their significance from their relationship in a narrative sequence.

Even today, the numbers three, five, and seven have special meanings to the Japanese and perhaps we can trace the history of our concepts back to the Jomon world view. This brief consideration of the significance of numerical representations in Jomon material culture leads us in new directions as we attempt to understand the nature of the Jomon mind and the way Jomon potters expressed concepts which were familiar to them. Along with the other themes we explored in this chapter, the evidence for an awareness of the concept of numbers indicates the great potential for understanding prehistoric cognition offered by Jomon archaeology.

Figure 7.17 Objects embodying Jomon numerical concepts. (Upper left) Middle Jomon deep pot with perforated rim with a three-fingered arm, Sakai A, Toyama Prefecture. Height 19 cms. (Upper right) Late Jomon deep pot with five wavy protrusions around the rim, Oshorodoba, Hokkaido. Height 50 cms. (Lower) Final Jomon rectangular bowl with different designs on each of its five outer surfaces, Asahi, Niigata Prefecture. Height 9 cms.

Figure 8.1 Map showing sites mentioned in Chapter Eight

Chapter 8
The mindscape of Jomon people

Sound in the Jomon world

There are doubtless many aspects of Jomon culture which have not survived in the archaeological record of the period. While, as we saw in Chapter Three, large quantities of pottery survive from the Jomon, objects made out of other, more perishable materials have vanished in the soil. These include objects made from antler, bone, textiles, leather and wood. These fragile components of the Jomon material repertoire are not the only aspects of Jomon culture to have disappeared. The beliefs, thoughts and ideas of Jomon people are as much part of Jomon culture as more durable components, such as artefacts and the remains of houses, even if they are apparently invisible to the archaeologist's eye. Although music is one of these invisible elements, a number of objects have been excavated from Jomon sites which were probably used to make music.[1]

One of the most intriguing and remarkable of these forms is the pot with a series of holes around the rim (Figure 8.2). The earliest form of pottery was the deep cooking pot. Over time, however, Jomon potters developed a variety of pottery types including shallow bowls for the serving and consumption of food, and jars for beverages of various types. By the Middle Jomon more elaborate forms of pottery were being manufactured, including pots with large handles for suspending the vessel, burial jars, pots on pedestals and some particularly distinctive-shaped vessels which resemble incense burners known from later periods. While some of these forms were still used to prepare food, others served very different functions to the simpler cooking vessels which preceded them.

It is usually the case that the more exquisite the pottery, the more they are decorated with exaggerated projections and wave patterns on the rim. Although these spectacular pieces certainly count as one of the more exquisite forms of pottery in the Jomon ceramic tradition, the decoration on these pots with holes around the rim is not focused on the rim itself. This attribute led the great Jomon scholar Yamanouchi Sugao to propose that these pots were perhaps drums, with tanned skin stretched over the mouth of the pot and attached to the body of the pot using leather thongs or cords.[2] Yamanouchi backed up his interpretation of these vessels with ethnographic examples of drums which are made in a similar way.

When Yamanouchi put forward this idea, however, it was met with objections from some other very influential scholars. Fujimori Eiichi, for example, the archaeologist who is perhaps best known for suggesting that Jomon people in the Japan Alps practiced agriculture in the Middle Jomon period, considered that it was more likely that these pots with holes around the rim were used for storing the

Figure 8.2 Middle Jomon 'drums', deep pots with perforated rims. (Left) Nagamine, Nagano Prefecture. Height 42 cms. (Right) Tanabatake, Nagano Prefecture. Height 30 cms. Skin surfaces were stretched over the mouths of these pottery vessels and held in place by ties which passed through the holes around the rim.

seeds of cultivated plants, the holes being to secure lids rather than drumming surfaces.[3] A little later, Muto Yuroku[4] and then Nagasawa Hiromasa[5] proposed that these vessels were used for brewing wine. The debate over whether or not Jomon people produced and consumed alcoholic beverages was recently reinvigorated with the discovery of large quantities of elderberry seeds at Sannai Maruyama in Aomori Prefecture.[6] Indeed some of the most enthusiastic proponents of this hypothesis have conducted some experimental archaeology and found that it was possible to produce wine using containers such as the vessels with holes around the rim. Perhaps the most compelling evidence for the practice of brewing was the discovery of wild grape pips inside some of these vessels with holes around the rim.

A different approach to the idea of Jomon drumming is explored by Tsuchitori Toshiyuki, a professional percussionist (Figure 8.3).[7] Tsuchitori has travelled the world playing drums, and drumming has been his lifelong passion. Developing his interest in America, he has also sought out examples of ethnographic drumming across Africa and Asia. More recently he has gone back in time to look for the origins of music in prehistoric cultures. As a result he has stepped into the world of Jomon sound.

Tsuchitori has collected more information about clay drums around the world than any other archaeologist or ethnologist. He is convinced that the pots with holes in the rim are most likely drums for the production of sounds. Rejecting the brewing hypothesis, he argues that the wild grape pips found in

Figure 8.3 Tsuchitori Toshiyuki recreating the sounds of Jomon drumming. Tsuchitori has toured the world collecting ethnographic data on drumming and percussion. His performances evoke the sounds of the Jomon world.

some of these vessels have parallels among some native American societies in which the act of placing seeds inside a drum forms part of certain ritual ceremonies.

Tsuchitori has actually reproduced the sound of Jomon drumming, using a pot with holes around the rim covered by a deer skin. The lively sounds which emanated from the Jomon drum in the summer of 1989, when Tsuchitori performed at the foot of Mount Yatsugatake in Nagano Prefecture, one of the major centres of the Jomon world five thousand years ago, were truly unforgettable. One of the invisible aspects of Jomon culture was fleetingly revealed, and one's soul was seized by Jomon sounds. All societies and ethnic groups around the world have their own sounds and rhythms. The reproduction of Jomon sounds in this landscape so evocative of the prehistoric Jomon world brought Jomon people and the actualities of their lifestyle closer to reality.

Jomon musical instruments

Encouraged by the work of Tsuchitori, we can now follow Yamanouchi in considering that these pots with holes spaced at regular intervals around the rim were indeed probably used as drums. These vessels are all of a similar barrel shape but they are distinct from other Jomon pots as they are often decorated with red colouring and unusual patterns representing dancing figures. Moreover, these pots with holes around the rim occur in many different sizes. It is usually thought that the shape of Jomon pots depended upon their function. The great variety in size among these pots with holes may relate to their function as drums, and the desire to create a variety of drumming sounds.

What of other types of Jomon musical instrument? While it has long been considered likely that sound and music played an important part in the rich Jomon lifestyles, there has not been much concrete evidence to suggest that musical instruments were an important component of Jomon material culture. There are, however, a number of objects from Jomon sites which can be interpreted as musical instruments. One such object is a hollow pottery sphere containing small hard lumps of clay or small

stones which make a jingling sound when the sphere is shaken. These objects, which occur at about the same time as the pots with holes around the rim, namely in the Middle Jomon, some 4500 years ago, would have fitted neatly into a Jomon palm. Another form of hollow object had a hole in it, is reminiscent of an ocarina and makes a beautiful sound when blown (Figure 8.4).

A particularly intriguing variation on these clay rattles, which were sounding out across Jomon settlements towards the end of the Jomon period, is an example in the shape of a tortoise, complete with head and legs. Like the ocarinas, this instrument also makes a sound when blown. Stone whistles complete the wind section of the Jomon band. Pierced bivalve shells were often used as bracelets, and may also have acted as castanets when shaken. More percussion sounds were possibly produced by knocking together the small polished pebbles which are known from several sites.

If we accept that these stone and pottery objects were indeed musical instruments, what of instruments made of wood? Sadly, unless exceptional preservation conditions prevail, as for example in waterlogged places, wooden objects rapidly decompose in the soil, leaving few if any traces. There are some objects, however, thought to be wooden musical instruments or parts of instruments, which have survived where conditions were favourable. These include a wooden spatula-shaped object excavated at Korekawa Nakai in Aomori Prefecture, which was possibly the frame for a stringed lyre-type instrument, although any strings have long since perished.[8] Similar wooden

Figure 8.4 Possible Jomon musical instruments. (Upper left) Middle Jomon clay rattle from Kabutsuppara, Yamanashi Prefecture. Diameter 5 cms. (Centre left) X-ray photography reveals the presence of small lumps of hardened clay inside another rattle from Sakenomiba, Yamanashi Prefecture. (Lower left) Final Jomon ocarina in the shape of a sea mammal from Takaishino, Akita Prefecture. Length 12 cms. (Right) Part of a Late Jomon wooden stringed instrument, Oshorodoba, Hokkaido. Length 30 cms.

objects have recently been found at Oshorodoba in Hokkaido[9] and Matsubara Naiko in Shiga Prefecture,[10] suggesting that this form of wooden instrument was widely distributed throughout the archipelago.

It is quite likely that Jomon people made music with a greater variety of instruments, some carefully designed and made, such as the clay ocarinas, while others were more *ad hoc*. When a bowstring is snapped, it makes a sharp sound. A simple but effective drum can be made from a hollowed-out tree trunk, and a whistle can be rustled up from a reed. Inspired by the sounds recreated by people like Tsuchitori, we can imagine Jomon drummers beating the pottery drums being accompanied by whistling and noises from a variety of other instruments, which regrettably have left no traces in the archaeological record.

Rhythms of nature

Despite the relative wealth and abundance of Jomon material culture, there are only very few objects which can be identified as musical instruments known from the period. This suggests that music made by Jomon people using instruments was only one part of the Jomon soundscape. After all, there are many sounds and rhythms within the natural world. Today we have to perhaps seek out a quiet place away from the bustle of modern life to hear the sound of the wind, birdsong and the gentle murmuring of reeds and trees in the breeze. In Jomon times, with no traffic or other mechanical noise, the sounds of the natural world were much more prominent. Perhaps for Jomon people, musical sounds made by artificial musical instruments had a special quality, and Jomon musicians offered up their own beats and rhythms as a complement to the natural soundscape, perhaps incorporating the sounds of the natural world in their modest musical expressions.

Jomon people had many potential sources of inspiration for a sense of rhythm. The human body, for example, makes many sounds of its own accord. Think of the beating of the heart or the regular sound of breathing. These sounds associated with the body often have their own rhythm, which may speed up or slow down depending on other activities the body is engaged in, such as walking or running, sleeping or fighting. Other rhythms are created by people making stone tools: striking flakes from a core of obsidian or sanukite creates sharp sounds of impact, the clinking of stone against stone. Different types of stone materials make different sounds while they are being worked, and the sounds change according to the type of hammer being used to knock off the flakes – hard hammers of stone, or softer hammers of antler or wood. The preparation of food has its own soundscape, including the breaking of acorn shells, the pounding of grains or starch in a stone mortar.[11]

There were many sounds in the Jomon environment and a great variety within each type of sound. The sound of flowing water, for example, varies depending on whether the water is flowing gently along a sandy stream bed, rushing over turbulent rapids, tumbling over a waterfall, or interrupted by the plop of

jumping fish. It is worth taking a moment to listen to the sounds of the forests, home to the Jomon people, and into which the voices and sounds of the Jomon people were completely integrated.

The relationship between Jomon lifestyles and Jomon sounds is comparable to the Jomon preference to use all of the resources available to them in their rich environment. Their careful consumption of all the edible resources, including fish, shellfish, birds, animals, grasses and nuts, was based on a profound understanding and deep relationship with the natural world. Part of this relationship was an acknowledgement and appreciation of the sounds of the natural world and the place of human noise within the natural order. Perhaps this is why there are so few known Jomon musical instruments.

Jomon concepts of inside, outside and the Other World

The pit dwelling was the principle form of building constructed by Jomon people. The construction of these buildings required the digging out of the floor, hence the name pit dwelling, and the excavation of holes in the floor into which posts were set to support the roof which was normally thatched. These buildings were material expressions of a concept of shelter quite different from the much more ephemeral tent-like structures set up in the preceding Palaeolithic period. Jomon pit buildings did indeed function as shelters from the elements, but equally significantly, they became the embodiment of the idea of the separation of what was inside and what was outside the house.

Jomon people identified inside the house with the space created within the pit building, structured around an open hearth, which was usually to be found in the centre of the dwelling. The symbolic importance of this interior space was emphasised in many buildings in the Middle Jomon in particular, by setting up a cylindrical standing stone near the fireplace, sometimes along with a stone altar. Features such as these made the inside of the house a very special place for its Jomon inhabitants, and represents a first manifestation of the distinction between inside and outside which was to become of great significance in later Japanese society.

Stepping outside the dwelling, the Jomon householder would have seen several other buildings which comprised the village. In the Palaeolithic period, three or four families moved around the landscape together to hunt wild animals. This scale of social group continued into the Jomon period and, as these groups began to spend longer living in one particular place, sometimes staying in one location all year around, we find that the size of the group did not increase very much, and that the three or four families each built their own dwellings in what became a village. The establishment of these village communities was a very important development in the Jomon, and marks a major change from life in the Palaeolithic. For while during the long Palaeolithic period, people lived within nature, using temporary campsites largely undifferentiated from their surroundings, Jomon people began to use the resources available to them in the natural world to create their own distinctive spaces which they distinguished from the natural

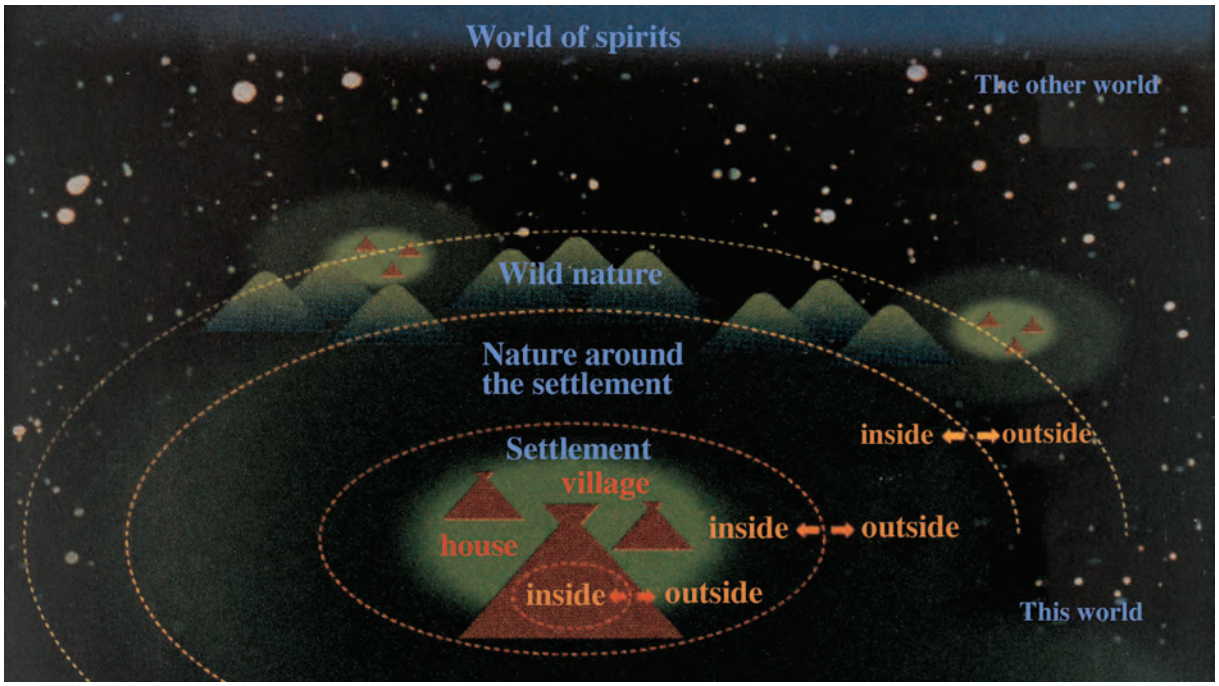


Figure 8.5 A model of the Jomon landscape. Jomon people probably had well-developed concepts regarding their own place in the world and their relationship to the landscapes they inhabited. The Jomon world view had at its centre the house and village, and drew a distinction between the socialised territory around the settlement and untamed nature beyond. The different concentric zones reflect the structure of the Jomon model village and emphasise the significance of the relationship between the inside and outside of each zone.

environment around them, and which they moreover wanted to keep as their own, to pass on to their successors (Figure 8.5).

Jomon landscapes and the socialisation of nature

Jomon people created artificial spaces and, at the same time, they lived in a landscape which they conceived of as being framed by the distant mountains. This was no longer the wild landscape occupied by Palaeolithic hunters, but an encultured landscape, viewed through the filter of Jomon knowledge and experience. The creation of these landscapes formed an integral part of the socialisation of nature by Jomon people.

At Nakanoya Matsubara in Gunma Prefecture a group of pit dwellings surrounded a plaza which contained a cemetery comprising many graves, as was the case in many Jomon village (Figure 8.6).[12] The dead were buried in oval burial pits, their bodies flexed into a foetal position, their arms and legs bent by their sides. Their heads were all oriented towards the same direction. This site does not benefit from the favourable preservation conditions of a shell midden, and the bones of the deceased long ago dissolved

into the acidic volcanic soils. We know where their heads were originally laid, however, from the position of the many ear ornaments recovered from the graves. A tall standing stone looms over the cemetery, and the heads of the deceased were all pointing towards this solitary marker.

Daikuhara Yutaka, the principal investigator of the site, was surprised by an observation he made during the excavations. He realised that if he stood in the centre of the plaza and looked out over the graves towards the standing stone, he found himself looking directly towards the distinctive if distant shape of the volcano Mount Asama. It seems that the residents of Nakanoya Matsubara consciously and deliberately incorporated the local topography into the layout of their village and cemetery, suggesting a high degree of planning, and supporting the idea that Jomon people took a proactive approach to designing their landscapes.

Another example of this phenomenon can be seen at Akyu in Nagano Prefecture,[13] which is roughly contemporary with Nakanoyama Matsubara, both sites dating to the Early Jomon (Figure 8.7). At Akyu, a series of large stones was discovered in the middle of the settlement. They had fallen over in antiquity, but when once again they were set up in their original locations, they formed an alignment of two parallel rows pointing towards the distant form of Mount Tateshina. These alignments at Akyu and Nakanoya Matsubara are evidence that Jomon people did not regard the views that surrounded their settlements as simply pleasant vistas, but as meaningful landscapes imbued with special significance.

Figure 8.6 Early Jomon grave pits at Nakanoya Matsubara, Gunma Prefecture. (Upper) Stone grave markers aligned on the volcanic peak of Mount Asama. (Lower) A pair of slit-stone earrings can be seen at the bottom of one of the grave pits. The skeletons have long since decomposed.

Figure 8.7 View across the Early Jomon settlement at Akyu, Nagano Prefecture with Mount Yatsugatake in the background. A stone setting at the centre of the settlement was aligned with the distant Tateshina peak.

In thinking about Jomon landscapes, Kobayashi was reminded of childhood memories of growing up in the city of Nagaoka on the banks of the Shinano River in Niigata Prefecture, memories which still leave a vivid impression on him. To the east of his village, located on the outskirts of Nagaoka, rose the form of Mount Nokogiri, at 720 metres in height, taller than the other mountains. In spring, the snow on the mountain melted, but remained in the valleys which descended from the sides of the mountain. There were three valleys and from the village they looked like the Chinese character meaning 'river'.[14] The river character on the side of Mount Nokogiri appeared to flow down from the sky, and so it was called the 'reversed river'. When this reversed river character appeared before the villagers' eyes they knew that the spring had nearly arrived, and everyone was very pleased to play outside knowing that the snow would soon be gone. The appearance of the reversed river was also the cue for the adults in the village to start to prepare the nursery beds for the rice seedlings, which would be laboriously transplanted into the paddy fields later in the spring. In this way the appearance of the reversed river signified the beginning of a new cycle of life. Who knows, perhaps the Jomon inhabitants of the place now occupied by Nagaoka also looked to the appearance of the 'river' on Mount Nokogiri as a sign of the coming spring and renewal.

These days, we schedule our activities according to printed calendars. Jomon people had no calendars in that sense, but probably created their own form of calendar by observing the movements of the sun and other celestial bodies. As we saw at Akyu and Nakanoya Matsubara, the notion of directionality was an important aspect of Jomon landscapes, and alignments and directions were cleverly incorporated into the structure of those landscapes. This Jomon sense of direction was closely related to their observations of the movement of the sun. Many examples of sites with evidence for alignments with the movements of celestial bodies have recently been investigated, adding to the credibility of the theory that the Jomon calendar was based on these solar observations.[15]

As we saw in Chapter Five, Jomon people were completely dependent on nature to secure the necessities of life and these necessities, in particular foodstuffs, were only available in certain seasons. Since the movements of the sun often heralded changes in season, Jomon people were probably very interested in the portents of change these movements indicated.

We have already encountered the Final Jomon site of Yudeno in Akita Prefecture. At Yudeno many people were buried in a communal cemetery, each body interred in an oval or rectangular grave pit (Figure 8.8).

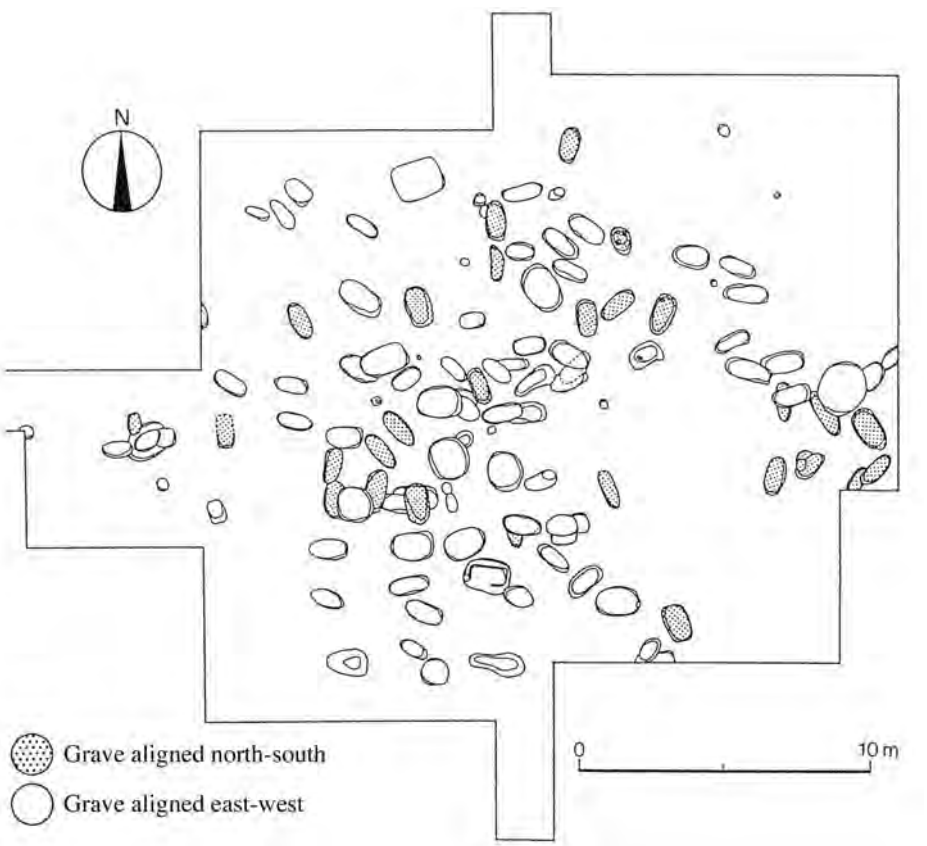


Figure 8.8 The Final Jomon cemetery at Yudeno, Akita Prefecture. The different orientations of the burials reflect not only the possible dual structure of the community, but also the influence of the movements of the heavenly bodies in determining the placing of the deceased.

At first glance it seems that the graves were scattered at random across the cemetery, but a closer examination suggests that the graves can be sorted into two groups, depending on the orientation of their long axes. Two orientations predominate, at right angles to each other. One interpretation for this is that the people at Yudeno were buried in pits aligned in one direction or the other depending on whether they were buried at sunrise or sunset, without the need for a compass. At the spring and autumn equinoxes the sun rises in the east and sets in the west, and as the summer solstice approaches, the direction of sunrise and sunset moves towards the north, then moves south towards the winter solstice. It seems very likely that people at Yudeno were guided by the direction of the sunrise and sunset at Yudeno site when they were digging graves for their dead.[16]

Another example suggesting that directionality and the movement of celestial bodies was important for Jomon people was unearthed in the city of Oyama in Tochigi Prefecture in the spring of 1993.[17] Terano Higashi is a very interesting site for many reasons (Figure 8.9). Although no remains of buildings were discovered, the site did produce a large ring shaped earth mound, some 177 metres in diameter.

Figure 8.9 The later Jomon ring-shaped earthen bank at Terano Higashi, Tochigi Prefecture. The bank had a diameter of 177m and a maximum height of 5m. The midwinter sunrise directly over the peak of Mount Tsukuba is clearly visible from the site.

Associated with the mound were a large number of ritual artefacts and facilities, including clay figurines, sword-shaped stone tools and other ceremonial implements. These finds suggest that more than just burial was happening at Terano Higashi and that it was perhaps an important regional ritual centre. Looking out from the Terano Higashi mound, the skyline to the southeast is dominated by the majestic shape of Mount Tsukuba. Standing in the middle of the site at the winter solstice, it seems that the sun rises from the top of Mount Tsukuba itself. Photographs taken at the winter solstice in December 1993 caused something of a sensation when they first appeared, as the summit of the mountain was illuminated by the midwinter dawn. This indeed seemed to be compelling evidence that Jomon people incorporated the winter solstice into their view of the world.

Sundials at the Oyu stone circles

In 1956, a study by Kawaguchi Shigekazu suggested that the Oyu stone circles in Akita Prefecture could have something to do with the movement of celestial bodies.[18] Sadly for Kawaguchi, his ideas were largely ignored by most archaeologists, while those who did comment were negative and dismissive. With hindsight, this was probably rather unfair and unfortunate, and demonstrated that many archaeologists at that time were allowing their preconceptions and assumptions about the state of Jomon knowledge to prejudice their own attitudes towards innovative approaches to the past.

There are two stone circles at Oyu called Manza and Nonakado (Figure 8.10).[19] Each circle consists of two concentric rings of stone arrangements comprising a large number of stone settings. The diameter of each outer ring is about fifty metres. Between the outer and inner rings is located a particularly interesting structure made of a tall, slender standing stone surrounded by many carefully-laid long stones lying horizontal and radiating away from the central standing stone. These structures have been given the name 'sundials' by Japanese archaeologists. There seems to be a close relationship between the circles at Manza and Nonakado, but the precise nature of that relationship has long been something of a mystery.

All of the excitement generated by the probability of certain Jomon sites being laid out and aligned in accordance with the movement of celestial bodies gave Kobayashi a strong urge to revisit the stone circles at Oyu, and to reconsider the explanation of their location. First, he showed a carefully surveyed map of the site to his colleague Ogura Katsuo, Professor of Astronomy at Kokugakuin University. Kobayashi asked him for his opinion as an astronomer about the stone circles, and in particular about why the 'sundials' should be located in the same place in between the two concentric rings of stones. Kobayashi was delighted when the answer seemed to confirm his suspicions. Ogura also thought that the two stone circles formed an alignment with sunset at the summer solstice.

On the basis of what Ogura told him, Kobayashi knew that he should undertake further investigations at Oyu. But it just so happened that at exactly this time an opportunity arose for him to spend a year at the University of Cambridge in England, which is where he found himself from April 1994. Even in Japan, the

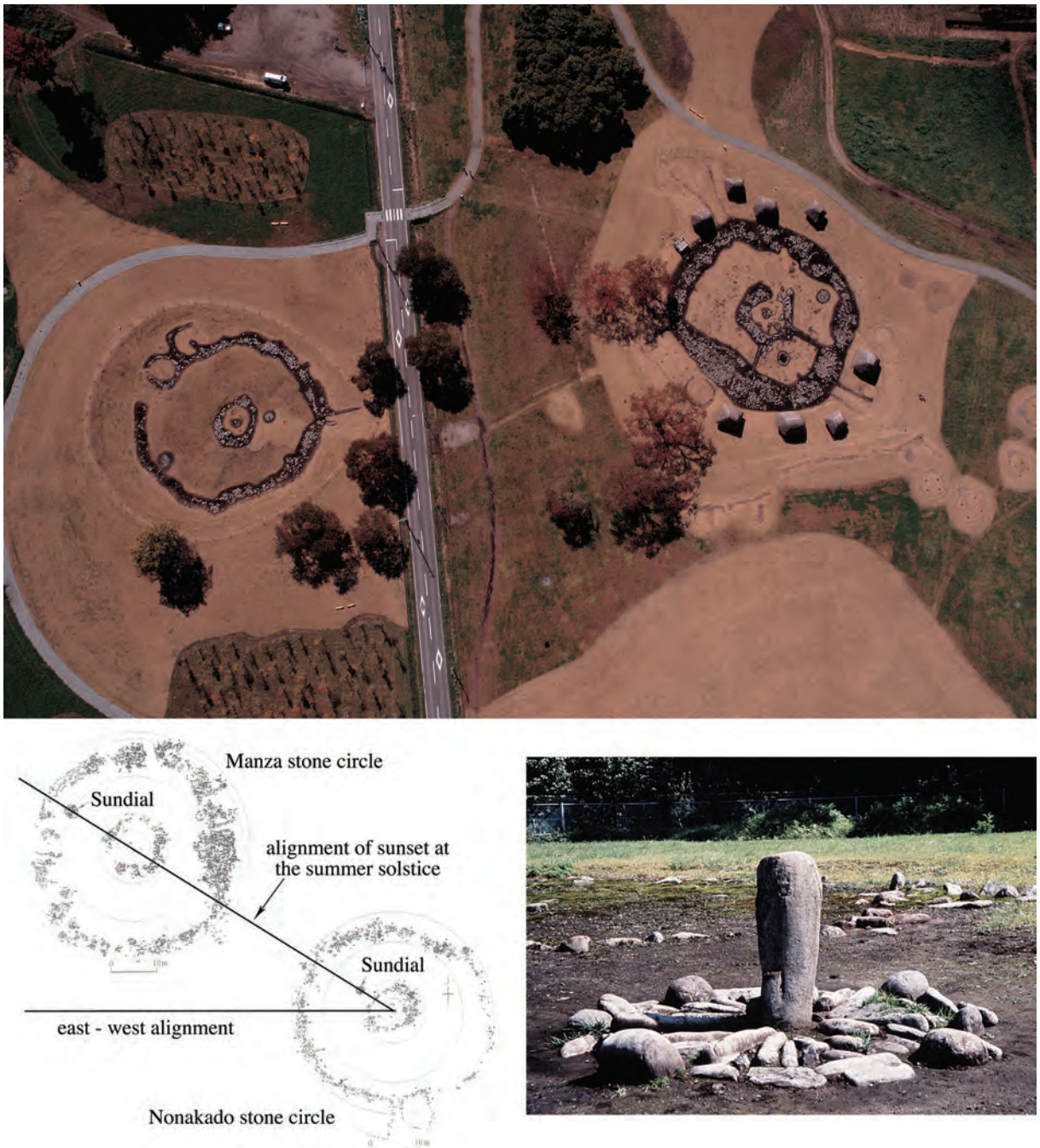


Figure 8.10 The Late Jomon stone circles at Oyu, Akita Prefecture. (Upper) Aerial view of the two circular arrangements of stone features at Oyu, Nonakado on the left (diameter 42m) and Manza on the right (diameter 46m). (Lower right) The stone 'sundial' at Nonakado stands to a height of 80 cms and the central standing stone weighs 89 kg. (Lower left) Kawaguchi Shigekazu was the first person to suggest that the two sundials at Oyu were aligned with the midsummer sunset.

Figure 8.11 Midsummer sunset at Oyu: the sun goes down over the sundial in the Nonakado stone circle.

great prehistoric monument of Stonehenge is very famous. Constructed during the late Neolithic and Bronze Age, Stonehenge was carefully laid out to align with sunrise at the midsummer solstice. It seemed a strange coincidence that Kobayashi had to give up his plans for investigating the solar significance of the stone circles at Oyu to spend time so close to one of the greatest monuments to peoples' fascination with the movement of celestial bodies anywhere in the world. So it was that the development of the project at Oyu was left to his friends Togashi Yasutoki, Director of the Akita Prefecture Archaeology Centre, and Akimoto Shinobu of the Board of Education of the city of Kazuno, within whose borders the remains at Oyu were located.

The summer solstice was a rainy day, but their chance came as the sun momentarily came out from behind the clouds. Togashi and Akimoto placed a pole on each of the sundials and recorded the shadow cast by each pole. The results they obtained confirmed that the two sundials in the two stone circles of Manza and Nonakado were aligned with the midsummer sunset. The next summer solstice, immediately after Kobayashi arrived back in Japan from his study leave in England, he drove to the stone circles at Oyu with Miyao Toru, one of his research assistants, and Hu Jiang, a student from the Shanghai Museum in China, so that Kobayashi could at last witness for himself the midsummer sun setting over the two sundials (Figure 8.11).

These studies convinced Kobayashi that Jomon people were clearly conscious of the summer and winter solstices and that these important events in the movement of the celestial bodies were a major factor in the construction of monuments in the Jomon period. This appears to have been the case at stone circles such as Oyu, and at monumental sites which made use of other building materials, such as Terano Higashi, where the monument comprised a large mound made of earth. This widespread desire to construct monuments in the Jomon appeared to be evidence for a shared view of the world – and indeed a shared view of what lay beyond their world.

Let us consider a further example. The site of Komakino in the city of Aomori in northern Honshu was excavated in 1992.[20] A large arrangement of stones was discovered, comprising a concentric double ring of stone settings (Figure 8.12). The investigator, Endo Masao of the Aomori City Board of Education, thought that Komakino was connected with the midsummer sunrise. In the middle of the stone circle at Komakino there is a large stone, and if one stands next to this stone at midsummer, the sun rises over the head of a nearby statue of the Bato Kannon, one of the Buddhist deities, usually represented as having either three or four heads, one of which was a white horse head, and two or four arms. This statue was made in the Edo period (AD 1603-1867). Far from suggesting that the people who set up this statue in the Jomon period were aware of the stone circle that was constructed four thousand years earlier, they may, however, have unwittingly made use of one of the stone platforms associated with the stone circle as the foundation for their statue. This stone platform may originally have been the base for a part of the Jomon

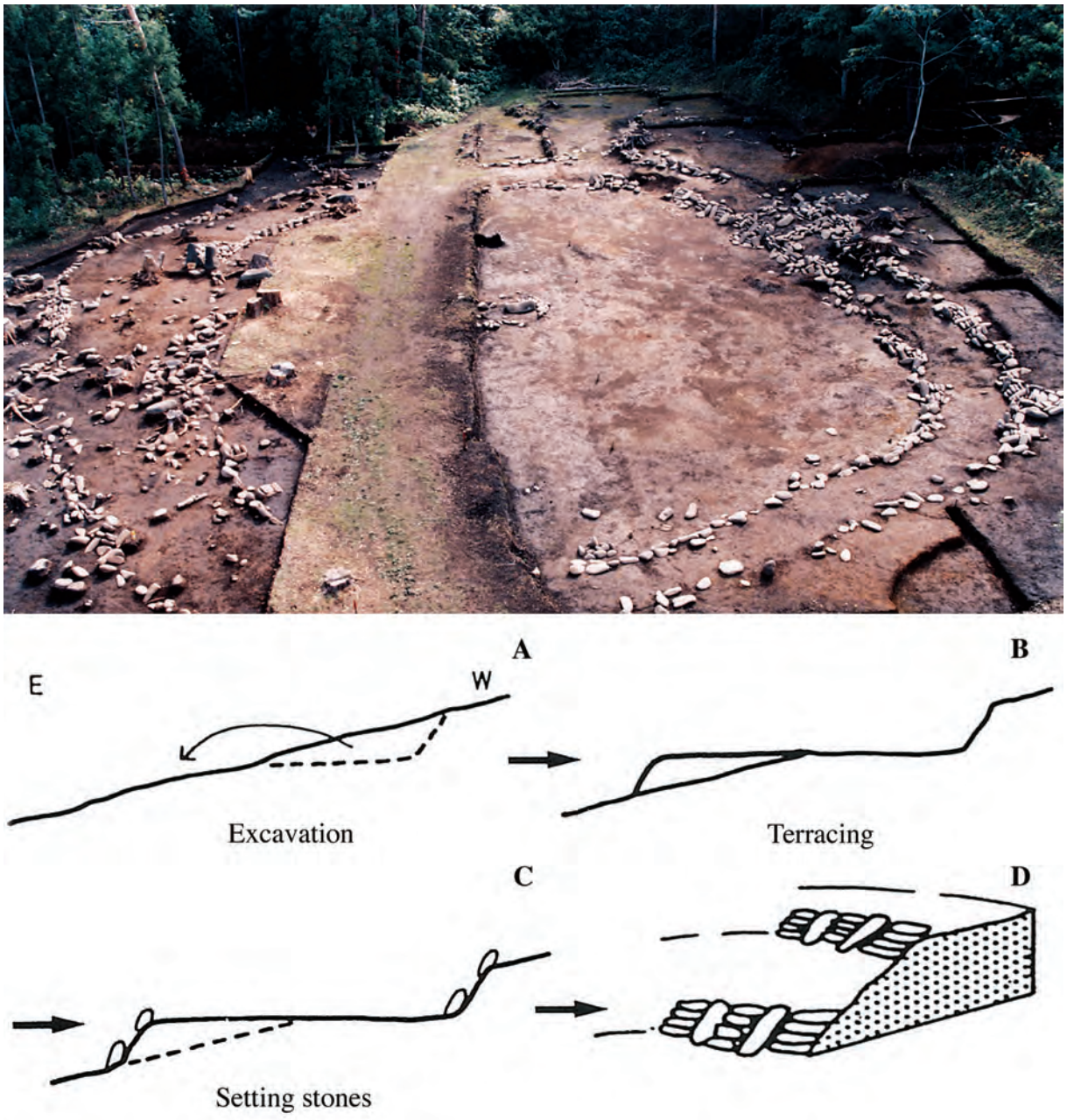


Figure 8.12 Late Jomon stone circles at Komakino, Aomori Prefecture. The outer stone circle has an outer diameter of 35m and was built on a specially constructed terrace. The site was mainly ceremonial, as very few apparent houses were discovered, although there were other features including burials, storage pits and a midden. Over 2400 stones were brought to the site from a river 0.5 kilometres away. At the centre was a large stone which weighed approximately 500 kilogrammes. The construction of this ritual complex required a great investment of Jomon labour.

monument which may have functioned in much the same way as the sundials at Oyu. What is remarkable is that the re-use of this stone platform as the base for the statue of Kannon allows us to appreciate the rationale behind the layout of the Komakino stone circle, and to enjoy the midsummer sunrise over the head of the Edo period statue, benefiting from an original design of the landscape by Jomon people over four millennia ago.

The excavations at Komakino have revealed just how extensive that design was. The topography at Komakino was originally a slope and in the course of constructing the monuments, the Jomon builders had to level parts of the site by a process of excavation, terracing and levelling, as shown in Figure 8.12. This was a building project on a much larger scale than, say, constructing a pit dwelling, and shows how strong the desire was to set up these grand monuments. All of this hard labour followed an initial decision about where to locate the monument, and this was dictated by the need to build somewhere with a good view of the midsummer sunrise.

Figure 8.13 Final Jomon monuments to the celestial bodies at Tenjinbara, Gunma Prefecture. The many arrangements at Tenjinbara include three standing stones, each about 1m in height, apparently corresponding to the triple peaks of Mount Myogi whose summit is 1104 metres high. Archaeologists working at the site have suggested that the stone arrangements were aligned with the sunset at the spring equinox over Mount Myogi.

Another interesting example is the Tenjinbara site in Gunma Prefecture (Figure 8.13).[21] Tenjinbara also has a stone circle and some tall and slender standing stones, each of which would have required the strength of at least two or three people to move. When the site was investigated, these standing stones had fallen over and lay pointing to the west. When they were set up in their original positions, however, they form an alignment which, when viewed from the centre of the stone circle, points towards one of the three great mountains which dominate the landscape of Gunma Prefecture, Mount Myogi. Mount Myogi itself comprises three peaks, and at the spring and autumn equinoxes the sun sets behind the central peak. At midwinter, the sun sets behind Mount Oketa which lies to the southwest of Tenjinbara.

The reason that Jomon people were interested in the movement of the sun is that it acted for them as a kind of calendar and clock for them. In the modern world, to find out the time or know what the date is, all we have to do is look at a clock or printed calendar. For Jomon people, it was the movement of the sun that allowed them to predict the changes in the seasons, changes which had a profound impact on their lives.

Jomon people would have known that the sun rises and sets in different places depending on the time of year.[22] At the summer solstice the sun rises in the northeast and sets in the northwest. As the year moves towards the midwinter solstice, this is reversed, so that the sun rises in the southeast and sets in the southwest. As the winter solstice approaches, so the days become shorter, restricting the activities that could be undertaken – gathering and hunting trips would have to be shorter if people wanted to make it back to their village before sunset. In addition, the scenery around them changed, leaves falling from the trees, colder weather, all these things could be related to the changes in the position and direction of sunrise and sunset. Once the shortest day had passed, however, and as the sunrise and sunset gradually moved north, Jomon people would start thinking about renewal and the creation of a new world, as happened each year. Such a momentous occasion demanded a suitable celebration, and it is very likely that Jomon people held an important festival at certain special locations, designed to make the most of the careful solar observations. Some of these special locations have survived from Jomon times to be discovered by archaeologists. Consequently, we can appreciate the way in which the Oyu stone circles were planned out, based on the midsummer sunrise and the mound at Terano Higashi designed around the winter solstice. We can acknowledge that Jomon people created their landscape in accordance with a calendar structured around the midsummer and midwinter solstices.

There remains much to be done to develop these ideas and theories, and Kobayashi is aware that not all archaeologists will accept his interpretations. He has already been involved in an interesting debate about alternative reconstructions of some of these monumental sites, for instance the wooden monumental structure at Sannai Maruyama (Figure 8.14).[23] Research into the movement of the celestial bodies, which must include the moon as well as the sun, will continue as more new and exciting discoveries are made. Kobayashi relishes the prospect of challenges to his ideas and looks forward to strengthening our understanding of the relationship between Jomon people and the conceptual worlds they created.[24]

Figure 8.14 Middle Jomon monumental wooden posts at Sannai Maruyama, Aomori Prefecture. The bases of six large chestnut posts, c. 1m in diameter, were discovered still in their post holes. Kobayashi Tatsuo has noted how the midwinter sun sets between the two lines of posts.

Notes

The original essays on which *Jomon Reflections* are based contained no references. The following notes are offered as a guide to further reading on the various topics and sites mentioned in the text. All references followed by [j] indicate works listed in the Japanese bibliography. All other references can be found in the Western language bibliography.

Preface

1. See Habu 2004: 16-25 for a detailed discussion of the current social context in which Jomon archaeology is practiced.

2. See Hudson 2003a for an overview of linguistic history in the Japanese archipelago.

3. For the report for the Omori shell mounds see Morse 1879.

4. See Kidder 1977:17-19 for a brief review of Western archaeologists in Japan.

5. Discussions of Odai Yamamoto in English are available in Keally et al. 2003 and other papers in Kuzmin (ed.) 2003. Also see Kaner 2002a and 2003.

6. See Barnes 1993: 70-71.

7. English summaries of the extensive excavations at Sannai Maruyama and discussions of the implications of the site are provided by Habu 2004, Habu et al. 2001, Habu and Fawcett 1999, Kidder 1998 and Okada 2003.

8. See Habu 2004, Imamura 1996, Kaner 1990, Kenrick 1995, Kidder 1968, Mizoguchi 2002 and Munro 1911. Recent article-length summaries include Anonymous 1996 and Mori et al. 1994.

9. See Anonymous 1996 and Sugiura et al. 1998.

10. See Harris 2001.

11. See Habu and Fawcett 1999.

12. See Hudson 2003b.

13. See Fawcett 1995, 1996.

14. See Fawcett 1986 and Fukasawa 1998.

15. See, for example, Kobayashi 1992, 1993a, 1993b, forthcoming a and b.

16. See Boas 1927, Kroeber 1939 and Hodder and Hutson 2003.

17. See Kempton 1981.

18. See Hodder 1990.

19. See, for example, Fitzhugh and Habu 2003.

20. See Kodama 2003 for a detailed discussion of Jomon stone circles.

Chapter 1 (pages 1-6)

1. See Edwards 1999, Farris 1998.

2. See Hobbes 1651.

3. See Mithen 2003.

4. See Crawford 1992.

Chapter 2 (pages 7-18)

1. Discussion of the transition from the Palaeolithic to the Holocene from a global perspective is provided by Mithen 2003. Ikawa-Smith 1986 refers to the technological changes that took place in the archipelago at this time. Aikens and Akazawa 1996 provide a useful overview of the Pleistocene-Holocene transition in Japan.

2. Between the 1980s and 2000, a series of claims were made for an Early Palaeolithic in Japan. These claims are now discounted (Japanese Archaeological Association 2004, Kaner 2002b).

3. Summaries of the later Palaeolithic in Japan are provided by Inada 1987, Kidder 1993, Pearson 1992, Reynolds and Kaner 1990 and Tsutsumi 2002. Okamura 1992, Ono et al. 2002 and Reynolds and Barnes 1984 provide useful overviews including brief histories of the study of the Japanese Palaeolithic, the latter accompanied by an extensive bibliography of Western language sources on the Japanese Palaeolithic. A series of Japanese Palaeolithic sites are introduced by Aikens and Higuchi 1982: 25-94.

4. Excellent introductions to the Upper Palaeolithic in Europe are provided by Gamble 1986 and Mellars 1998.

5. Reports for Fukui Cave are provided in Kamaki and Serizawa 1960, 1966, 1967 [all j].

6. For an English summary of excavations at Fukui Cave see Aikens and Higuchi 1982: 99-104.

7. Reports for Senpukuji Cave are provided in Aso 1973 and Aso et al. 1984 [both j]. For an English summary of excavations at Senpukuji Cave see Aikens and Higuchi 1982: 104-106.

8. The report for Kamino is provided in Yamato City Board of Education 1986 [j]. For discussion of Kanto Loam sequences see Oda and Keally 1975.

9. Reports for Jin are provided in Kobayashi (ed.) 1980,1981,1982,1983 [all j].

10. Vere Gordon Childe (1892-1957) is most famous as the great synthesiser of European prehistory in the mid-twentieth century. He was a proponent of the use of Marxist ideas of historical materialism in archaeology (see Childe 1943, 1951), but the framework he constructed for European prehistory was completely undermined by the advent of radiocarbon dating. He is popular in Japan, where Marxist thinking in archaeology had a great impact (see Mizoguchi 1997). For a recent retrospective on Childe's contribution to archaeology see Harris 1994.

11. Further details about Dolni Vestonice are available in Klima 1963. Early pottery in Africa is discussed by Angela Close 1995.

12. For further discussion of this distinction see Kimura, Kanaseki and Sahara 1991 [j].

13. For further discussion of the continuity between the Palaeolithic and Jomon see Kobayashi 1981b [j].

14. Further discussion of the northeast Asian microlithic cultures are provided in Aikens and Akazawa 1996 and Barnes 1993: 58-60.

15. Details of the various tool types from the later Japanese Palaeolithic are provided in Akazawa et al. 1980. For details of sites in Figure 2.6 see Nakamura 1961 and Nara Prefectural Kashihara Archaeology Institute 1991 a and b [all j].

16. Steven Mithen provides a lively reconstruction at life at Uenohara, another of the south Kyushu early Jomon settlements (Mithen 2003: 370-375). The report for the excavations at Kakoinohara and Shikazegashira was published by Kaseda City Board of Education 1998 [j].

17. The term 'sedentary' is usually used to refer to communities which spend all year around in one location, and they are distinguished from communities which lead a 'mobile' lifestyle, travelling from place to place. The development of these sedentary lifestyles, or sedentism, is thought to have occurred mainly after the end the last Ice Age. Detailed discussions are available in Rafferty 1985. Watanabe 1986 provides an interesting study from a Japanese perspective.

18. The report for Sojiyama is provided in Kagoshima City Board of Education 1992 [j].

19. No site report is currently available for Okunonita, although further details are provided in Yokohama City Museum 1996 [j].

Chapter 3 (pages 19-50)

1. Evidence for early pottery in East Asia includes the discovery of pottery sherds dating to 16,500 calibrated radiocarbon years ago at Odai Yamamoto in Aomori Prefecture and claims for pottery nearly as old as this in China and eastern Siberia (Kaner 2002a and 2003, Keally et al. 2003, Kuzmin 2003). Papers from a conference on this topic are to be published in a forthcoming issue of the *Journal of East Asian Archaeology*. Barnett and Hoopes 1995 provide a good survey of the appearance of pottery in different parts of the world.

2. Obayashi, Kato and Kobayashi 1976, Kato 1988 [all j].

3. Reports for Fukui Cave are provided in Kamaki and Serizawa 1960, 1966, 1967 [all j]. An English summary can be found in Aikens and Higuchi 1982: 99-104.

4. Yamanouchi 1932 [j].

5. Sato 1971 [j].

6. Okamoto 1986 [j]. Also see Kobayashi 1970 for further details of microblades in East Asia.

7. Serizawa 1960, 1967, 1982 [j].

8. A view that Kobayashi has held for a long time (see Kobayashi 1974b) [j].

9. See Kuzmin 2003.

10. For the Kakoinohara report see Kaseda City Board of Education 1998 [j].

11. Early pottery in Western Asia is discussed by Andrew Moore 1995.

12. Kohler 1925.

13. Miyashita 1980 [j].

14. See Amiran 1965. For further information about Jericho see Bartlett 1982 and Kenyon 1957. The report of excavations at Hassuna is presented in Lloyd and Safar 1945. Excellent up-to-date accounts of the prehistory of Mesopotamia are provided by Matthews 2000 and Charvat 2002. For studies of innovation in archaeology generally see van der Leeuw and Torrence 1989.

15. For further information about the Natufian see Bar-Yosef and Valla 1991.

16. See Smith 1967 etc for reports on Ganji Dareh Tepe. For a very interesting study on what happens when mud brick houses burn down see Stevanovic 1997.

17. For details of prehistoric pottery production in the American Southwest see Mills and Crown 1995.

18. For an account of revolutions in archaeology, see Childe 1943.

19. For an interesting study of wild food resources available in traditional Japan see Koyama 1981, and for traditional Japanese nut processing methods see Matsuyama 1981.

20. Sugihara and Serizawa 1957 [j]. An English summary of the remains at Natsushima is provided in Aikens and Higuchi 1982: 114-124.

21. Imamura 1996b: 46-50 gives full details of this debate and Barnes 1990 provides an interesting historical context for the emergence of the idea of prehistory in Japan in general.

22. For an overview of Jomon shell middens see Oikawa and Koyama 1981. Also see Suzuki 1986 for a very interesting account of shell midden archaeology.

23. The report for Kosegasawa is provided by Nakamura 1961 [j].

24. An English summary of Kamegaoka is provided by Aikens and Higuchi 1982: 164-165. Details of the system of archaeological heritage management in Japan are provided by Kobayashi 1986 and Tsuboi 1992. Sites regarded as being of the greatest significance are designated 'sites of national historical importance'. An excellent account of early antiquarian activity in Japan is provided by Bleed 1986.

25. Morse 1879 [j] and 1879.

26. Edward Morse's contribution to Japanese archaeology has been discussed by Maeda 1988.

27. The Yayoi period, named after the location in Tokyo where a distinctive form of pottery was discovered in 1888, follows the Jomon. There is currently a major debate about the dating of the Yayoi due to the calibration of radiocarbon dates. Good introductions to Yayoi archaeology are provided by Hudson 1990, Mizoguchi 2002: 116-196 and Pearson 1992: 129-186.

28. Sugiyama 1928 and Oyama 1927 [both j].

29. Yamanouchi 1929, 1930 [both j].

30. Kono 1976 [j].

31. Yamanouchi 1979 [j].

32. Further details about Kobayashi's approach to pottery typology are given in Kobayashi 1975, 1977, 1978, 1979 and 1989 [all j] with an English introduction in Kobayashi 1993b. Hudson forthcoming presents an interesting test of some of the assumptions underlying Kobayashi's approach to Jomon pottery style zones.

33. The hypothesis that pottery was made by women because only women would have hands small enough to go inside the pots is questioned in Nelson 1997: 106-109. For an excellent introduction to gender archaeology see Sorensen 2000. See Ikawa-Smith 2002 for a discussion of gender in Japanese archaeology.

34. Figure 3.7 summarises Kobayashi's approach to typology. He uses a number of Japanese terms in the following discussion which are translated as follows: style (*yoshiki*); type (*keishiki*); model (*hankei*); copy (*kotai*) meaning an individual potter's version of the type; style system (*ryugi*); personality (*kojin*) suggesting a more personal or private version of the type; atmosphere (*funiki*); tradition (*dento*); and group symbol (*shudan hyosho*). All of these terms are rather different from those used in the West. For a summary discussion of the use of style in Western archaeology and further references see Renfrew and Bahn 1996: 401 and interesting case studies in Carr and Neitzel (eds.) 1995.

35. See Habu and Hall 1999, Habu et al 2003. Further details about sites mentioned in Figure 3.8 are given in Editorial Committee of the History of Machida City 1974 and Nakamura and Ogata 1964 [both j].

36. Hagi ware, Karatsu ware and Bizen ware are all types of traditional Japanese stoneware. See Miller 1960 and Harris 1997.

37. The Kasori shell midden in Chiba Prefecture is described in English in Aikens and Higuchi 1982: 156-164. See Kidder 1968: 304 for English descriptions and illustrations of Kasori pottery. An outline of Jomon pottery styles is provided in Kobayashi (ed.) 1988b, 1988c, 1989a and 1989b [all j].

38. For details and examples of the Shomyoji pottery style in English see Kidder 1968: 307.

39. Sanju Inaba is discussed in detail in Chapter Four. For details and illustrations of the Sanju Inaba style in English see Kidder 1968: 306 and Kobayashi 1982.

40. For further details about the Yoriitomon style see Imamura 1996b: 57-61. Further details and examples of the Kamegaoka style pottery are provided by Kidder 1968: 303.

41. For details about radiocarbon dating of pottery styles see Habu 2004: 26-27 and 37-42.

42. Sue ware is the name given to the grey stonewares which were introduced from the East Asian continent at the beginning of the Kofun period. Haji ware is the name given to the red earthenwares which were made in the Kofun period. For details of Sue and Haji pottery see Barnes 1986, Kidder 1990 and Miwa 1990.

43. Reports for Jin are provided in Kobayashi ed. 1980,1981,1982,1983 [all j]. The report for Muroya is in Nakamura and Ogata 1964 [j]. Details of the round-based pottery from Ishigoya in Figure 3.10 can be found in Nagamine 1967 [j].

44. Kobayashi 1987 [j].

45. For the report for Senpukuji see Aso et al. 1984 [j].

46. A large number of wetland sites are now known from the Japanese archipelago, all with good preservation (see Matsui 1992 and 1999).

47. For a discussion of basketry in the American Southwest see Fagan 1995.

48. For discussions of Pueblo pottery see Mills and Crown 1995.

49. Kobayashi 1981b [j]. For reports of materials from sites in Figure 3.12 see Hokkaido Archaeology Centre 1996, Kagoshima Prefectural Board of Education 1981, Kani 1968 and Nakamura 1958 and 1963 [all j].

50. For interesting studies on archaeology and prehistoric religion see Garwood et al. 1991 and Hayden 2003. For details of the burial urn at Tama New Town No. 72 see Tokyo Metropolitan Archaeology Centre 1999b [j].

51. Kobayashi 1986b and Kawasaki City Museum 2000 [both j].

52. See Jameson 1999 for a brief discussion of symbolic archaeology.

53. For the pottery with 'S' shaped motifs in Figure 3.16 see Kokugakuin University Archaeological Museum 1998 [j]. For the pot with the 'dagger' motif from Tsunagi in Figure 3.17 see Yoshida 1956 [j].

54. See Layton 1994 for a good introduction to Australian rock art in general and Faulstich 1992 for an account of Walbiri art in particular. Kobayashi was originally inspired by the work of Munn 1973.

Chapter Four (pages 51-72)

1. Details in English of many Jomon pottery styles are provided in Kidder 1968 and Kobayashi 1993b.

2. Kobayashi 1983 [j] and 1993b.

3. Sasaki 1987.

4 Tsukada 1986 and Yasuda 1978 provide details of the composition of these forest zones. According to Koyama 1979: 19-20 the main forest zones comprise the following: "(1) Subalpine evergreen coniferous forest is found in relict stands in high mountain ranges in the northern half of Japan. Larger zones are concentrated in the central mountain area. The predominant species are varieties of spruce, hemlock, fir and tamarack. Birch often occurs as secondary forest in the north. A slightly warmer element

composed of Japanese cypress, cedar and Pine occurs at lower altitudes. The upper limit of the zone is about 2,500 m and the lower is at 1,600 m in central Honshu. In the southwestern area, Kinki and Shikoku, it occurs only on mountains higher than 1,800 m. (2) Cool temperate broad-leaved forest comprises bush forest mixed with deciduous oak and with dwarf bamboo undergrowth. Beech, deciduous oak, elm, linden and maple are the dominant species. In areas of high precipitation, cryptomeria and umbrella pine forests are formed. In northern Honshu, the lower limit is at 500 to 600 m; in central Honshu it is slightly higher. In the southwest it is limited to the higher mountain ranges. (3) Warm temperate broad-leaved evergreen forest typically includes varieties of evergreen oak and cedar. Because of the characteristic hard shiny surface of the leaves of these trees, it is sometimes called the laurelled or lucidiphyllous forest. This forest originally covered western and the northeastern coastal area. Large areas have been destroyed by agricultural activities and today are replaced by secondary red pine or deciduous oak trees. Artificial forests of cedar now occur in the mountain areas. (4) The warm temperate broad-leaved deciduous forest zone is usually included in the cool temperate broad-leaved deciduous forest, but due to the effect of elevation it contains characteristic components such as sweet chestnut not prominent elsewhere".

5. See Nishida 1983 and 1985 [both j].

6. For accounts of storage pits see Imamura 1996b and Miyaji 1999.

7. Mizoguchi 2002: 94-102 and Yamamoto forthcoming provide interesting examples of the style concept in action, taking into account in particular the concepts of assemblage and context.

8. See Hodder 1982.

9. See Chapter Three Note 54.

10. Mithen 1996 provides an excellent introduction to cognitive archaeology, or the archaeology of mind.

11. See Kidder 1968: 306 and 303 respectively for discussion and examples of the rouletted wares (*oshigatamon*) and the Kamegaoka style zone.

12. Kobayashi's discussion relates to work on site catchment analyses. See Akazawa 1981 and Bleed et al. 1989 for further studies of this sort for the Jomon.

13. The Japanese term *kuni* is difficult to translate. Mark Hudson and Yamagata Mariko in their introduction to Kobayashi 1993b do not give a translation for this reason. The term 'lands' is offered here.

14. See Chapter Three Note 34 for Western references to style zones.

15. See Shennan 2002 for an interesting discussion of cultural inheritance.

16. See Fujita 1984 for further discussion of the concepts *ke* and *hare* and the related concept *kegare*. Fujita defines *ke* as profane ordinariness, *hare* as sacred extraordinariness and *kegare* as defilement, and shows how they are made explicit in the context of the cycle of stages (*ke – kegare – hare – ke*) which comprise a Japanese *matsuri* or religious festival. The sacred in traditional Japanese is therefore seen as having a tripartite structure rather than the bipolar structure of sacred and profane more familiar in the Western tradition.

17. See Akazawa 1986b and Habu 2001 for studies of different Jomon stone tool assemblages.

18. See Kidder 1968: 303 and 302 for discussion and examples of Kamegaoka and Ento style pots respectively.

19. See Abe forthcoming for a study of the Jomon "axe trade" and Bausch 2004 and forthcoming for studies of jadeite and serpentinite exchange. Abiko 1985 [j] provides an account of the use of asphalt in the Jomon.

20. Kobayashi's term is *jomon doki no arikata*. Kobayashi 1982 has previously set out his thoughts on Flame pottery in English.

21. See Ota Ward Museum 1995 [j], Kobayashi 1981a and 1988a [both j] and 1982 for more on the Flame and Sanju Inaba styles. For reports of key sites of the Flame style including Umadaka and Sasayama see Nagaoka City 1992, Nakamura 1955 and Tokamachi City Board of Education 1998 [all j].

22. Koyama 1984 [j] and 1979 provides an interesting method for estimating Jomon populations.

23. See Kidder 1968: 305 and 303 respectively for discussion and examples of the Moroiso and Jusanbodai styles.

24. For further details of the pot from Urayama Terazo from Figure 4.7 see Sakai et al. 1974 [j].

25. See Kidder 1968: 302 for discussion and examples of the Daigi style. In the text Daigi refers to Middle Daigi style pots.

26. For the report on Kayakarizawa see Owaku 1960 [j].

27. See Kidder 1968: 302 for discussion and examples of the Goryogadai style and Yamamoto forthcoming for an up-to-date analysis of Goryogadai pottery.

28. See Kidder 1968: 301 and 304 respectively for discussions and examples of the Atamadai and Katsusaka styles. The report of the Atamadai pot from Bogaido in Figure 4.7 is in Gunma Prefectural Archaeology Centre 1989 [j].

29. Other possible interpretations of the 'cockscomb' design include, for example, salmon splashing around in the river, as suggested in a video shown as part of a display at the Niigata Prefectural Museum of History.

30. See Koyama 1979.

Chapter 5 (pages 73-98)

1. See Testart 1982 for a fuller discussion of the implications of storage for hunter-gatherers.

2. See Koyama 1979.

3. For the report on Osawa see Maki Town Board of Education 1990 [j].

4. Shirai 1903 [j].

5. Kobayashi 1993c [j].

6. For a detailed discussion of the remains at Mawaki in English see Hiraguchi 1992. For the Japanese excavation report see Mawaki Site Research Group 1986 [j].

7. Watanabe 1968, 1973 provide the classic accounts of Ainu subsistence in English. See also Fitzhugh and Dubreuil 1999.

8. For the report on Okura Minami see Nishimura and Kaneko 1956 [j].

9. For discussion of the faunal remains from Hobi, Iha and Sakihikawa see Oyama 1922 [j].

10. See Akazawa 1981 for a study of fish exploitation in the Jomon and Akazawa 1972 for the report for Kamitakatsu shell midden referred to in Figures 5.2 and 5.4.

11. Matsui 1985 [j]. See Matsui 1996 for an English discussion of this issue.

12. Naora 1938, Kano 1998 and Suzuki et al. 1994 [all j]. Seaweeds identified by Kano include eelgrass and grass wrack.

13. See Janik 2003 for a discussion of the cultural categorisation of foodstuffs affecting the choice of what was selected to eat in European prehistory.

14. See Kelly 1995: 87 for other ethnographic examples of the role of insects in the diet of hunter-gatherers.

15. See Fagan 1995 for a recent review of Inuit archaeology.

16. Kondo 1962 and 1984 and Tsuchiura Archaeology Museum 2000 [all j].

17. Reports for Ondashi are provided in Nagahashi 1990, Sasaki and Sato 1986, and Yamagata Prefectural Ukitamu Archaeology Museum 1996 [all j].

18. Interestingly, Kohara 1999:203 points out how in historical times salt was a very valuable resource among the Ainu and could only be obtained by trade with the Japanese, except where sea ice could be gathered and stored.

19. A report of Higashi Kurotsuchida is provided in Kawaguchi 1982 [j].

20. The report for Motono is provided in Numazu City Board of Education 1975 [j].

21. The report for Unoki Minami is provided in Sato 1992 [j].

22. The report for Minamikata Maeike is provided in Kondo (ed.) 1995 [j].

23. See Watanabe 1973 for a very comprehensive account in English of the Ainu diet and the way they used the rich natural resources available to them – although see Fukasawa 1998 for a critique of Watanabe's approach to the Ainu.

24. Kobayashi 1995 [j].

25. See Price and Brown 1985 for many studies of complex hunter-gatherers and the relationship between economy and social structure.

26. Watanabe 1976 [j].

27. The report for Yaze is provided by Tsukiyono Town Board of Education 1998 [j].

28. The report for Terano Higashi is provided in Tochigi Prefectural Archaeology Centre 1997 [j].

29. Reports for Akayama Jinya are provided in Kawaguchi City Research Group 1989 and Kanebako 1990 [both j].

30. Reports for Kuribayashi are provided in Nagano Prefectural Archaeology Centre 1994 and Okamura 1995 [both j]. The report for materials from Takaseyama in Figure 5.10 is included in Kobayashi 2000 [j].

31. Reports for Sori are provided in Fujimori and Muto 1964 and Muto (ed.) 1978 [both j].

32. Reports for Tomonohara are provided in Sakai 1977 [j].

33. For the report for Mineichigo see Oe 1973 [j].

34. For the report for Bozutoge see Kitakami City Museum 1974 [j].

35. For the report for Okinohara see Esaka and Watanabe 1977 [j].

36. For the report for Tsukuehara see Watanabe 1983 [j].

37. For the report for Ondashi see Sakai and Sato 1986, Nagahashi 1990 and Yamagata Prefectural Ukitamu Archaeology Museum [all j].

38. Matsuyama 1981 gives an interesting account of how nuts were processed and used to make cookies or cakes in traditional Japan. See Takahashi and Hosoya 2002 for more details of nut usage in the Jomon.

39. Sakazume 1956 [j].

40. For reports for Juno see Saitama Prefectural Museum 1982, 1984 [j].

41. For the report for Yoneizumi see Ishikawa Prefectural Archaeology Centre 1989 [j].

42. See Rackham 2003 for an excellent account of woodland and remains of woodland in Britain.

43. Yamada and Shibauchi 1997 [j].

44. For the report on Kyobara see Yamanashi Prefectural Board of Education 1974 [j].

45. Sato 1997 [j]. Sato also has published some of his results in English (Sato et al. 2003). The whole question of the genetic basis for domestication is explored in detail by Jones (2001).

46. Minagawa 1989 [j]. Discussed in English in Minagawa and Akazawa 1992. See Chisholm forthcoming and Chisholm and Habu 2003 for other studies of this type. Since the 1980s a number of archaeological scientists have been analysing human bones from Jomon burials in order to identify what proportion of different types of foodstuffs, in particular terrestrial versus marine ingredients, made up the diet of different Jomon populations. The method is called stable isotope analysis. Details are given in Renfrew and Bahn 1996: 347-350.

47. Fujita and Suzuki 1995 [j]. Fujita is now at the Niigata Prefectural Museum of History.

48. For the report on Natsushima see Sugihara and Serizawa 1957 [j]. An English summary of Natsushima is provided in Aikens and Higuchi 1982: 114-124.

49. For reports on Kamikuroiwa and Fujiwara Kannondo respectively see Esaka, Okamoto and Nishida 1967 and Funabashi Tobinodai Museum 2000 [both j]. An English summary of Kamikuroiwa is provided by Aikens and Higuchi 1982: 106-107.

50. For the report on Kaitori see Kusama and Kaneko (eds.) 1971 [j]. For an interesting study about the genetic ancestry of Japanese dogs see Okumura et al. 1999.

51. For a discussion of the domestication of wild boar see Kato 1980 [j]. For the report on Shimotakabora see Oshima Town Shimotakabora Site Research Group 1985 [j].

52. For the report on Kurawa see Hachijo Island Kurawa Site Research Group 1986 [j].

53. For the report on Hinohama see Yoshizaki 1965 [j].

54. The wild boar figurine from Tokoshinai in Figure 5.16 is reported in Imai and Isozaki 1968 [j]. For more on deer see Koike and Ohtaishi 1985, and Hudson 1992 on ritual relations between Jomon people and animals.

55. For the report on Tagara see Miyagi Prefectural Board of Education 1986 [j].

56. See Aikens 1981, Aikens 1986 a and b, Aikens, Ames and Sanger 1986, Aikens and Dumond 1986, Koyama and Thomas 1981, Price 1981 and Price and Brown 1985 on Jomon and hunter-gatherer complexity.

57. For the most recent summary of possible Jomon cultigens in English see Habu 2004: 60.

58. Sasaki 1991 [j]. Useful discussions in English on the possibility of Jomon cultivation include Crawford 1992 and Hudson 1999.

59. See Ames and Maschner 1999.

60. See Ames and Maschner 1999

61. Tsuji 2003 [j].

62. For reports on Ondashi see Nagahashi 1990, Sasaki and Sato 1986, Yamagata Prefectural Ukitamu Archaeology Museum 1996 [all j].

63. Torihama Shell Midden Research Group 1979-1986, 1987 [all j].

64. For the report on Ikenai see Akita Prefectural Archaeology Centre 1999 [j].

65. Mills and Crown 1995.

66. For reports on Maedakochi see Kato et al. 1983 and Miyazaki 1983 [both j].

67. Koike 1975, 1983 [both j]. Koike has also published extensively in English, e.g. Koike 1986. The shell deposits at Nakazato are reported in Kita Ward Board of Education 2000 [j].

68. For reports on Awazu see Tsuboi 1994 and Shiga Prefectural Cultural Properties Association 1997 [both j]. An English summary of Awazu is provided by Iba et al. 1999. For reports on Akayama Jinya see Kanebako 1990 and Kawaguchi City Research Group 1989 [both j].

69. For the report on Korekawa Nakai see Kono 1930 [j].

70. For the report on Nakamichi see Komagata 1996 [j]. For reports on Ondashi see Nagahashi 1990, Sasaki and Sato 1986 and Yamagata Prefectural Ukitamu Archaeology Museum 1996 [all j]. For the report on Okinohara see Esaka and Watanabe 1977 [j].

71. Watanabe 1983 [j].

72. Takahashi Ichirobei pers. comm.

73. Akazawa 1994 [j].

74. Akimichi 1994 [j].

75. Ushizawa 1981 [j].

76. Hayashi 1971 [j].

77. Kobayashi 1977, Kobayashi 1979, Niigata Prefectural Museum of History 2000 [all j].

78. Nishida 1980, Okamura 1984, 1987 [all j]. Torihama is also discussed in English by Akazawa 1981 and Nishida 1983.

79. Suzuki 1975 [j].

80. Materials from Tama New Town No. 901 in Figure 5.22 are reported in Tokyo Metropolitan Archaeology Centre 1999a [j]. For the report on Yamada Mizunomi see Yamada Site Research Group 1977 [j].

81. Imamura et al. 1973, Imamura 1983 [both j]. Good English discussion of Kirigaoka and Jomon pit traps are available in Imamura 1996b: 79-88. See Sato forthcoming for more on pit traps.

82. For the report on S153 see Sapporo City Board of Education 1976 [j].

83. Iwate Prefectural Board of Education 1982 and Iwate Prefectural Museum 1986 [both j]. Matsui 1992 gives an English summary of fish traps at Shidanai.

84. For an interesting example of hunting rituals among the Ainu see Utagawa 1992 on *iomante* rituals.

85. For the report on Higashi Kushiro see Kono and Sawa et al. 1962 [j].

86. For the report on Kinsei see Yamanashi Prefectural Archaeology Centre 1989 [j]. Hudson 1992: 143 discusses Kinsei in the context of Final Jomon ritual.

87. For the report on Saibana see Tachibana and Kaneko 1977 [j].

Chapter 6 (pages 99-136)

1. Rafferty 1985 gives a good summary of the issues concerning sedentism.

2. Inada 1987 gives an interesting account of how obsidian cores are carried from site to site. A brief English discussion of Hasamiyama is provided in Reynolds and Kaner 1990. For the full Japanese report see Osaka Prefectural Board of Education 1986 [j].

3. For an English summary of Japanese cave sites see Serizawa 1979.

4. Yamanouchi 1964 [j].

5. Kamaki and Serizawa 1960, 1966, 1967 all [j].

6. See Jeremy and Robinson 1989 for a fascinating study of traditional house building and household space in Japan.

7. The ritualised nature of household space is a theme that has received considerable attention in recent studies of prehistoric buildings. See for example Richards 1990 for the ritualised nature of prehistoric houses at Skara Brae in Orkney, the best known British Neolithic settlement.

8. Iwate Prefectural Board of Education 1980. For English summaries of Nishida see Kobayashi in Pearson 1992: 89-91 and Mizoguchi 2002: 104-106.

9. For an interesting interpretation of circular sites see Evans 1988 on Neolithic causewayed enclosures. For further discussion see Kobayashi 1973, 1980, 1986a [all j].

10. Saga Prefectural Board of Education 1982 [j]. Hudson and Barnes 1991 provide an English introduction to Yoshinogari.

11. Kobayashi 1993a [j]. Also see Kaner forthcoming and Akayama forthcoming.

12. See Kobayashi 1974 on Jomon depositional practices in English. See also Kobayashi et al. 1965 and 1968 [both j]. For the report on Fukiage see Kurihara et al. 1959 [j].

13. See Rackham 2003 for an excellent discussion of the uses of woodland resources.

14. See Bradley 2002 for a discussion of how prehistoric societies gave meaning to evidence for past activity.

15. See Ames and Maschner 1999.

16. Kobayashi 1974.

17. For the report for Hirobakama see Oba and Nagamine 1968 [j].

18. Kobayashi 1988d [j]. For the report on Matsubari (Figure 6.9) see Kamimura et al. 1995 [j].

19. Yamamoto Teruhisa 2000 [j] provides a comprehensive account of stone-paved buildings such as that shown in Figure 6.10. For the report on Aota see Niigata Prefectural Archaeology Centre 2002 [j].

20. For the report on Sakuramachi see Toyama Prefectural Board of Education 1991 [j].

21. Waterson 1991 for discussions of Toraja houses.

22. For the report on Uenoyama II see Akita Prefectural Archaeology Centre 1988 [j].

23. For the report on Negoyadai see Utsunomiya City Board of Education 1988 [j].

24. For the report on Shimizunoue see Niigata Prefectural Board of Education 1990 [j]. For the report on Gochobu see Niigata Prefectural Board of Education 1992 [j].

25. Watanabe 1966 and 1990 [both j]. Many of his ideas are set out in English in Watanabe 1986.

26. For a good introduction to ecological archaeology see Butzer 1982.

27. For discussions of Jomon settlement patterns at Tama New Town see Kobayashi 1973, 1980, 1986 [all j]. For an outline of the Tama New Town sites see Tokyo Metropolitan Archaeology Centre 1993a and b [both j]. Kobayashi's typology of sites comprises the following: A type settlements are located on wide and flat terraces, with pit buildings arranged around a central plaza. Many pit buildings are built in the same location, with the result that sometimes the remains of hundreds of buildings are found at one site, up to ten of which were probably occupied at one time. These sites also contain large quantities of pottery vessels and stone tools, and also have many artefacts associated with rituals and ceremonies, such as clay figurines and stone bars. A succession of pottery styles is normally present at such sites, and at least three pottery phases, suggesting considerable longevity of occupation, are represented. B type settlements are often located on saddle-back terraces or on gentle slopes. Such sites contain the remains of from a few to several tens of buildings, but there is no central plaza. The quantities of pottery and lithics depends on the number of buildings present, but secondary tools are few in number, if present at all. Only a few buildings are thought to have been occupied at one time, and such sites were not occupied for more than three successive pottery phases. C type settlements are located on level areas on slopes below ridges and on narrow terraces, and comprised just one or two pit buildings. The quantities of pottery and stone tools are few, as would be expected with the small number of buildings present. Although there may be some secondary tools present, they are very few in number. D type settlements are located on relatively difficult-to-access steeper slopes and comprise of scatters of small numbers of artefacts. There are no features that are recognisable as dwellings on these sites. E type sites are special purpose sites including production sites for beads and stone tools such as axes and spears, cemeteries and clusters of pit traps for hunting, and can therefore be distinguished from locales used for everyday activities. F type sites comprise individual find spots of stone arrowheads and pottery sherds, and it is difficult to characterise them in terms of function. See Habu 1988 for an excellent study of how to work out how many houses were occupied at any one time in an Early Jomon village and Habu 2001 for an exemplary study of Early Jomon settlement patterns.

28. Kani 1993 [j].

29. Higuchi et al. 1964 [j].

30. Hirabayashi 1993 [j].

31. Miyazaki 1986 [j].

32. Taniguchi 1993 [j]. For a history of settlement archaeology in Japan in English see Sasaki 1999.

33. Koike 1987 [j].

34. Kobayashi 1993b [j] and 1993a. Maddock 1996 provides a brief but useful introduction to the concept of the dual organisation of society from an anthropological perspective.

35. Miyasaka 1950, 1957 and Chino City Togariishi Jomon Museum 2000 [both j]. English language summaries of Togariishi and its accompanying settlement, Yosukeone, are provided in Aikens and Higuchi 1982: 137-154, Kaner 1999, Kato 1987 and Kidder 1993.

36. Wajima 1948 [j].

37. Miyasaka 1950a and 1950b [both j].

38. Mizuno 1969 [j].

39. For the report on Hitachi Fushimi see Fushimi Site Research Group 1979 [j].

40. For the report on Kakuriyama see Kagoshima Prefectural Board of Education 1981 [j]. There is currently no report for Hoshikusatoge.

41. For the report on Shakado see Yamanashi Prefectural Archaeology Centre 1986, 1987 [j]. Also see Bausch 1994.

42. Hachioji City South Area Research Group 1988 [j].

43. For the report on Kainohana see Yahata ed. 1973 [j].

44. For reports on Fujioka see Okamoto and Tsukada 1962 and Tochigi Prefectural Board of Education 1981 [both j].

45. For the report on Ubayama see Sugihara and Tozawa 1971 [j]. Groot and Shinoto 1952 provide an English site report for Ubayama.

46. For the report on Horinouchi see Okamoto 1957 [j]. For reports on Nakazuma see Suzuki and Suzuki 1979 and 1981, Suzuki 1984 et al. [all j].

47. For the report on Ohatadai see Isomura and Kodama 1979 [j].

48. For the report on Iwanohara see Nagaoka City Board of Education 1981 [j].

49. Nasunahara Site Research Group 1984 [j].

50. For the report on Arai Minami see Nagano Prefectural Board of Education 1976 [j]. For the report on Kinsei see Yamanashi Prefectural Archaeology Centre 1989 [j].

51. Watanabe 1980 [j]. A series of studies of societies which construct and live in large buildings is provided in Coupland and Banning 1996.

52. Ogawa 1985 [j].

53. For reports on Fudodo see Kojima 1973, 1979 and 1980 [all j]. An English language summary of Fudodo is provided in Aikens and Higuchi 1982: 155-156.

54. For the report on Hato Okazaki see Iwate Prefectural Board of Education 1982a [j].

55. For the report on Sugisawadai see Akita Prefectural Board of Education 1981 [j].

56. For the report on Shizukawa see Sato et al. 1983 [j].

57. See Hudson and Barnes 1991 for an account of Yoshinogari and ditched settlements from the Yayoi.

58. See Thomas 1999: 38-45 and 74-77 for a discussion of ditch digging in the British Neolithic which provides an interesting comparison with the point being made here.

59. See Chapter Four note 16 for more details on *ke* and *hare*.

60. Otsuka 1967 [j]. See Chapter Six note 45 on Ubayama.

61. For more on burials see Hayashi 1977 and 1980 [both j]. For the report on Satohama see Matsumoto 1919 [j]. For the report on Kashikodokoro see Owaku 1966 [j].

62. See Barnes 2004 for a geological approach to what happens to bones in Japanese soils, which suggests that the acidic nature of Japanese soils is not the only factor in the rapid decomposition of bone and other organic materials on most Japanese archaeological sites.

63. For the report on Negoyadai see Utsunomiya City Board of Education 1988 [j]. Negoyadai was to be located in the planned Seizan Koen cemetery after which the site report is named. Once the significance of the archaeological remains encountered in pre-development investigations at Negoyadai was recognised, however, the plans for the cemetery were abandoned and a historical park created instead.

64. See Takahashi et al. 1998 for a recent English summary of Jomon burial practices.

65. For the report on Oshide see Komochi Village Board of Education 1987 [j].

66. For the report on Oyu see Cultural Properties Committee 1953 [j]. An English summary about Oyu is provided in Aikens and Higuchi 1982: 175-179.

67. Ikawa-Smith 1992 discusses these burial enclosures in English.

68. For the report on Kashiwagi B see Kimura ed. 1981 [j]. For the report on the Misawa River Site Group see Hokkaido Archaeology Centre 1997 [j].

69. For the report on Murayama see Ono and Shioya 1960 [j].

70. Harunari 1973, 1974, 1992, 2002 [all j]. For a full account of Harunari's study of tooth ablation in English see Harunari 1986.

71. The classic anthropological study of the Tlingit is Oberg 1973.

72. Obayashi 1971 [j].

73. See Ames and Maschner 1999 for discussions of social complexity on the Northwest Coast. See Pearson forthcoming and Habu and Fitzhugh 2003 for a review of recent Japanese work on social organisation. Keally 1984 provides an interesting analysis of burial data to suggest what he terms 'unequal privilege' in the Jomon.

74. For the report on Yamaga see Nagai and Maekawa et al. 1972 [j].

75. Watanabe 1990 [j].

76. Sahara 1985 [j].

77. Kobayashi 1988c [j]. For interesting studies on the archaeology of children see Sofaer Derevenski 2000, and for gender archaeology see Sorensen 2000.

78. See Edwards 1995 and Farris 1998: 9-54 for discussions of Queen Himiko and Yamatai in English. Yamatai was one of a number of polities in the country of Wa (Japan) mentioned in early Chinese chronicles and Himiko was named as its ruler. Controversy over the actual existence of Himiko and the location of Yamatai has fuelled one of the great debates in Japanese archaeology.

79. For the report on Kuwano see Kinoshita et al. 1995 [j].

Chapter 7 (pages 137-168)

1. The distinction between primary and secondary tools is further developed in Kobayashi 1988a [j]. Kobayashi's terms are *dai-ichi no dogu* and *dai-ni no dogu*. The word *dogu* is usually translated as 'tools' and hence this usage is retained here rather than the vaguer terms 'objects' or 'artefacts'.

2. For a discussion of the scientific methods used for this type of analysis see Renfrew and Bahn 1996: 260-262.

3. For a fuller account of the archaeology of the American Southwest see Fagan 1995.

4. Kobayashi is here referring to *waraningyo*, rough straw dolls used to bring harm to one's enemies. For general surveys of Japanese religious practices, including folk religions, see Kasahara 2001 and Kitagawa 1966.

5. For a useful summary of Western approaches to the symbolic meanings of material culture in archaeology see Jameson 1999 and a series of classic studies in Hodder (ed.) 1982.

6. For the report on Fukui Cave see Kamaki and Serizawa 1960, 1966 and 1967 [all j]. An English language summary is provided in Aikens and Higuchi 1982: 99-104.

7. For the report on Kamikuroiwa see Esaka, Okamoto and Nishida 1967 [j]. An English language summary is provided by Aikens and Higuchi 1982: 106-107.

8. See Bausch 1994 and Naumann 2000 for recent surveys and analyses of Jomon figurines in English. See also Harada 1995 [j].

9. For an interesting discussion about the significance of appearance in prehistory, including accessories, clothes and hairstyles, see Sorensen 2000.

10. For the report on Yagi A see Minami Kayabe Town Board of Education 1995 [j].

11. For the report on Uenoyama II see Akita Prefectural Archaeology Centre 1988 [j]. For the report on Takinoue see Kitakami City Museum 1974.

12. For reports on Ondashi see Nagahashi 1990, Sasaki and Sato 1986 and Yamagata Prefectural Ukitamu Archaeology Museum 1996 [all j].

13. For the report on Nakanoya Matsubara see Annaka City Board of Education 1998 [j].

14. For an extended discussion of Yayoi ritual see Hudson 1992. For details of secondary objects in Figures 7.3 and 7.4 see Akita Prefectural Archaeology Centre 1999, Aomori Prefectural Museum 1996, Hachinohe City Museum 1997, Hokkaido Archaeology Centre 1987, Naganuma 1987 and Takahori (ed.) 1983 [all j].

15. For a full account of Inuit and Eskimo carvings see Swinton 1972.

16. See Fitzhugh and Dubreil 1999 for details and examples of Ainu carvings.

17. For the report on Nishinomae see Yamagata Prefectural Archaeology Centre 1994 [j]. For the Initial Jomon figurine with no face in Figure 7.8 see Funabashi City Board of Education 1991 [j]. For further details about the other figurines in Figures 7.9 and 7.10 see Hachinohe City Museum 1997, Nakamura 1995 and Tanabatake Site Research Group 1990 [all j].

18. For more details and examples of the shell-incised wares and the rouletted wares see Kidder 1968: 307 and 306 respectively.

19. For details on the appearance of rice agriculture in the archipelago see Crawford 1992 and Hudson 1999.

20. For an interesting discussion of the Late Jomon figurines from Kyushu see Togawa forthcoming.

21. For the report on Kashihara see Suenaga et al. 1961 [j].

22. For the end of the Jomon culture see Okamoto 1993 [j].

23. Details about the Jomon figurine database are provided in Yaegashi ed. 1991 [j].

24. Kamei and Kobayashi 1977 [j]. For a discussion of why figurines were so often broken in the prehistoric world see Chapman 2000. Naumann 2000 presents a very detailed account of Jomon figurines. Hamilton et al. 1996 provide an interesting discussion of the interpretation of prehistoric ceramic figurines.

25. See Bahn 1998.

26. For the report on Kayano see Shinto 1991 [j].

27. For the report on Shidanai see Iwate Prefectural Board of Education 1982 [j].

28. For the report on Gokurakuji see Kojima 1965 [j].

29. For the report on Ariake Sansha see Aonuma et al. 1970 [j].

30. For the report on Chojagahara see Fujita and Shimizu 1964 (eds.) [j].

31. For reports on Tenjin see Ito and Watanabe 2001 and Yamanashi Prefectural Archaeology Centre 1994 [both j]. The jadeite pendant in Kyushu is discussed in Aso 1972 [j].

32. Rawson 1999 provides an excellent overview of the use of jade around the world. Bausch 2004 and forthcoming discusses the jade trade in Jomon Japan.

33. For reports on Sakai A see Toyama Prefectural Archaeology Centre 1989, 1990, 1991 and 1992 [j].

34. Kobayashi 1993c [j].

35. For the report on Teraji see Teramura, Aoki and Seki 1987 [j].

36. Kobayashi 1988b and Nakamura 2003 [both j]. For recent Western thinking on the archaeology of numbers and its relationship to cognitive archaeology see Renfrew 1982.

37. For details of the various pottery styles mentioned in these paragraphs see Kidder 1968. Suzuki Kimio 1970 has also written about the significance of numbers in later Jomon pottery designs.

38. For the report on Asahi see Nakamura and Kobayashi 1965 [j].

Chapter 8 (pages 169-188)

1. See Hughes 1988 on music archaeology in Japan and Devereux 2001 for an innovative approach to the archaeology of sound in prehistory.

2. Yamanouchi 1964 [j].

3. Fujimori and Muto 1963 [j].

4. Muto 1970 [j].

5. Nagasawa 1984 and 1992 [both j].

6. For reports on Sannai Maruyama see Editorial Committee of the History of Aomori Prefecture 2002 and Aomori Prefectural Board of Education 1996 [j]. See Habu 2004 and papers in Habu et al. 2003 and Kidder 1998 for good introductions in English to the archaeology of Sannai Maruyama.

7. Tsuchitori 1999 [j].

8. For the report on Korekawa Nakai see Hosaka ed. 1972 [j].

9. For the report on Oshorodoba see Hokkaido Archaeology Centre 1989 [j].

10. For the report on Matsubara Naiko see Shiga Prefectural Cultural Properties Association 1993 [j].

11. See Edmonds 1999 for a phenomenological approach to stone tools which brings their manufacture vividly to life.

12. For the report on Nakanoya Matsubara see Annaka City Board of Education 1998 [j]

13. For the report on Akyu see Nagano Prefectural Site Research Group 1982 [j].

14. The Chinese character for river comprises three roughly parallel vertical lines.

15. See Ruggles 1999 for an introduction to archaeoastronomy.

16. For the report on Yudeno see Ono (ed.) 1978 [j]. See Binford 1972 for one of the classic archaeological studies of hunter-gatherer mortuary practices.

17. For reports on Terano Higashi see Tochigi Prefectural Archaeology Centre 1997 and Hatsuyama 1995 [both j].

18. Kawaguchi 1956 [j].

19. For the report on Oyu see Cultural Properties Committee 1953 [j]. An English language summary is provided in Aikens and Higuchi 1982: 175-178.

20. For reports on Komakino see Aomori City Board of Education 1996 and Endo 1997 [both j].

21. For reports on Tenjinbara see Annaka City Board of Education 1994 and Daikuhara 1995 [both j].

22. Kobayashi (ed.) 1995 [j].

23. For further discussion about the monumental wooden posts at Sannai Maruyama see Otahara 2000 and 2002 [both j].

24. Kobayashi 2002 and 2003 [both j]. See also Kodama 2003 for details of other Jomon stone monuments.

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Picture credits

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2.5

Appendix: List of animals, birds, plants and fish which are mentioned in the text or played an important part in Jomon Japan

English name	Latin name	Japanese name
Animals		
Bear	*Ursidae sp.*	*kuma*
Brown bear	*Ursus arctos*	*higuma*
White collar bear	*Selenarctos thibetanus*	*tsukinowaguma*
Dog	*Canis familiaris*	*inu*
Ermine	*Mustela erminea*	*okojo*
Japanese hare	*Lepus brachyurus*	*no-usagi*
Japanese macaque	*Macaca fuscata*	*saru*
Japanese serow	*Capricornis crispus crispus*	*kamoshika*
Japanese wild boar	*Sus scrofa leucomystax*	*inoshishi*
Marten	*Martes melampus melampus*	*ten*
Otter	*Lutra lutra*	*kawauso*
Raccoon dog	*Nyctereutes procyonoides*	*tanuki*
Rat	*Rattus sp.*	*nezumi*
Shika deer	*Cervus nippon*	*nihonjika*
White-cheeked flying squirrel	*Petaurista leucogenys*	*musasabi*
Wild cat	*Prionailurus bengalensis*	*yamaneko*
Wolf	*Canis lupus*	*okami*
Aquatic resources		
Abalone	*Halitiodae sp.*	*awabi*
Abalone	*Nordotis discus*	*kuro*
Abalone	*Nordotis giganta*	*madaka*
Abalone	*Nordotis sieboldii*	*megai*
Arabian pike eel	*Muraenesox cinereus*	*hamo*
Bartailed flathead	*Platycephalus indicus*	*kochi*
Black porgy	*Acanthopagrus schlegeli*	*kurodai*
Blower fish (or puffer fish)	*Tetraodontida, Spheroides sp.*	*fugu*
Bonito (skipjack)	*Katsuwonus pelamis*	*katsuo*
Brown kelp	*Undaria pinnatifada*	*wakame*
Carp	*Cyprinus carpio*	*koi*
Cockle		
Egg cockle	*Fulvia matrica*	*torigai*
Ribbed cockle	*Anadara granosa bisenensis*	*haigai*
Clam	*Meretrix lusoria*	*hamaguri*
Freshwater clam	*Corbicula leana*	*yamato shijimi*
Corbiculids	*Corbiculidae*	*shijimi*
Dolphin	*Delphinus sp.*	*iruka*
Dugong	*Dugong dugong*	*jugon*
Eel	*Anguilla japonica*	*unagi*
Eelgrass/grass wrack	*Zostera marina*	*amamo*
Greenling	*Hexagrammos otaki*	*ainame*
Grey mullet	*Mugil cephalus*	*bora*
Horned turban	*Batillus cornutus*	*sazae*
Horse mackerel	*Trachurus japonicus*	*aji*
Japanese abalone	*Halitiodae aquatilis*	*tokobushi*
Japanese flounder	*Paralichthys olivaceus*	*hirame*
Japanese freshwater pearlshell	*Margaritifera laevis*	*kawashinjugai*
Mackerel	*Scomber japonicus*	*saba*
Oyster	*Ostreidae*	*kaki*
Red mouthed purpura	*Rapana thomasiana*	*akanishi*
Red sea bream	*Pagrus major*	*madai*
River snail	*Viviparidae sp.*	*tanishi*
Rock bream	*Oplegnathus faciatus*	*ishidai*
Salmon	*Oncorhyncus sp.*	*sake*
Cherry salmon (trout)	*O. masou*	*sakuramasu/ masu*
Dog or chum salmon	*O. keta*	*sake*
Scorpion fish	*Sebastisus marmoratus*	*kasago*
Sea bass	*Lateolabrax japonicus*	*suzuki*
Sea lion	*Zalophus*	*ashika*
Steller's sea lion	*Eumetopias jubata*	*todo*
Sea urchin	*Echinotidae*	*uni*
Seal	*Phoca sp.*	*azarashi*
Shark	*Plagiostomi*	*same*
Short necked clam	*Tapes (Amygdara) japonica*	*asari*
Small rollshell	*Thais bronni*	*reishi*
Small rollshell	*Thais clavegera*	*ibonishi*
Small rollshell	*Lunella coronata coreensis*	*sugai*
Tuna	*Thunnus thynnus, T. orientalis*	*maguro*
Turtle		*umigame*
Freshwater turtle	*Clemmys japonica*	*ishigame*
Green turtle	*Chelonia mydas*	*ao umigame*
Whale	*Cetaceans sp.*	*kujira*
Yellowtail	*Seriola quinqueradiata*	*buri*
Small anadromous sweet river fish	*Plecoglossus altivelis*	*ayu*

English name	Latin name	Japanese name
Birds		
Albatross	*Diomedea albatrus*	*ahodori*
Crane	*Grus sp.*	*tancho*
Duck	*Anas sp.*	*ahiru*
Eagle	*Haliaeetus pelagicus*	*owashi*
Goose	*Anser sp.*	*gan*
Hawk	*Falcones sp.*	*taka*
Kite	*Milvus migrans*	*tobi*
Meadow bunting	*Emberiza cioides*	*hoojio*
Owl	*Strix uralsensis*	*fukuro*
Pheasant	*Phasianus colchicus*	*kiji*
Shrike	*Lanius bucephalus*	*mozu*
Sparrow	*Passer montanus*	*suzume*
Streaked shearwater	*Calonectris leucomelas*	*mizunagidori*
Swan	*Cygnus cygnus*	*hakucho*
Thrush	*Turdus naumanni*	*tsugumi*
Tit	*Parus caeruleus*	*aogara*
Insects etc		
Bee		*hachi*
Dobsonfly		*hebitonbo*
Dragonfly		*tonbo*
Gribble		*kikuimushi*
Locust		*inago*
Mayfly		*kagero*
Trees and nuts		
Acorn	*Quercus sp.*	*donguri*
Beech	*Fagus*	*buna*
Birch	*Betula*	*kabanoki*
Cedar	*Cryptomeria japonica*	*sugi*
Chestnut		
Sweet chestnut	*Castanea crenata*	*kuri*
Horse chestnut	*Aesculus turbinate*	*tochi*
Cypress	*Thuja*	*hinoki*
Elm	*Ulmus*	*nire*
Fir	*Abies*	*momi*
Hemlock	*Tsuga*	*tsuga*
Linden	*Tilia*	*shinanoki*
Maple	*Acer*	*kaede*
Oak	*Cyclobalanopsis acuta*	*akagashii*
	C. cuspidata	*tsuburajii*
	C. cuspidata var. Sieboldii	*sudajii*
	C. gilva	*ichiigashi*
	C. glauca	*arakashi*
	C. paucidentata	*tsukubanegashi*
	C. stenophylla	*urajirogashi*
	Quercus. acutissima	*kunugi*
	Quercus. dentata	*kashiwa*
	Q. Mongolica var. grosseserata	*mizunara*
	Q. phillyraeoides	*ubamegashi*
	Q. serrata	*konara*
Pine	*Pinus*	*matsu*
Red pine	*P. densiflora*	*akamatsu*
Umbrella pine	*Sciadopytis*	*koyamaki*
Spruce	*Picea*	*tohi*
Walnut	*Juglanaceae sp.*	*kurumi*
Plant foods		
Adder-tongue's lily	*Erythronium japonicum*	*katakuri*
Arrowroot	*Pueraria lobata*	*kuzu*
Bottle gourd	*Lagenaria siceraria var. gourda*	*hyotan*
Bracken	*Pteridum aquilinum*	*warabi*
Burdock	*Arctium lappa*	*gobo*
Buckwheat	*Fagopyrum sp.*	*soba*
Crimson glory vine	*Vitis coignetiae*	*yamabudo*
Elderberry	*Sambucus*	*niwatoko*
Fern	*Osmunda japonica*	*zenmai*
Green gram	*Vigna radiata*	*ryokuto*
Green soy beans	*Glycine max*	*edamame*
Lily bulbs		
Heartleaf lily	*Cardiocrinum cordatum*	*ubayuri*
Spider lily	*Lycoris radiate*	*higanbana*
Millets		
Common millet	*Panicum miliaceum*	*kibi*
Finger millet	*Eleusine coracana*	*shikokubie*
Foxtail millet	*Setaria italica*	*awa*
Japanese barnyard millet	*Echinochlo aesculenta*	*hie*
Nokanzo	*Hemerocallis fulva var.*	*no-kanzo*
Perilla	*Perilla sp.*	*shiso*
(Beefsteak plant)		
Perilla	*Perilla frutescens*	*egoma*
Taro	*Colocasia antiquorum*	*satoimo*
Vetch	*Astragalus sinicus L.*	*rengeso*
Yam	*Dioscorea japonica*	*yamanoimo*

Index

Scholars

Pottery styles and types