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*Jade, Amber, Obsidian and
Serpentinite:
the social context of exotic
stone exchange networks in
Central Japan during the
Late Middle Jômon period*

by Ilona Bausch

A thesis presented for the degree of Doctor of Philosophy

Department of East Asian Studies, University of Durham

31 December 2003



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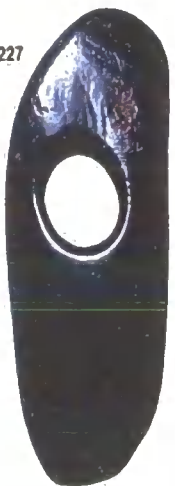
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ABSTRACT

The social context of exotic stone exchange networks in Central Japan during the Late Middle Jōmon period

Ilona Bausch

This dissertation presents a holistic, contextual approach to long-distance exchange networks in Central Japan ca. 4000BP, by focussing on the conditions behind consumption, circulation and production of exotic materials—particularly jadeite and amber, derived from unique and spatially limited source areas: the Japan Sea Coast and the Pacific Coast, respectively. Analysis is based on a sample of 175 sites located in Nagano, Yamanashi, Tokyo, Kanagawa and Chiba prefectures.

Analysis of consumption patterns shows that (compared to other artefact categories) stone ornaments, particularly jadeite and amber pendants, are far more frequently associated with ‘intentional deposition’, namely mortuary contexts. This indicates that a different value was ascribed to jadeite and amber pendants. However, other evidence of social differentiation during the Middle Jōmon is absent.

Statistical analysis of wider distribution patterns, focusing on the variability of site characteristics, supports the hypothesis that the presence of jadeite and/or amber pendants is strongly associated with ‘core’ settlements sites characterised by large house numbers, continuous habitation throughout the Middle Jōmon period, and evidence of ritual practices. Contrary to some hypotheses, evidence for related distribution between jadeite pendants and serpentinite adzes (from the same production sites) was lacking, whereas association with relatively high quantities of obsidian (used for arrowheads) proved to be strong. It is suggested that exploitation and export of nearby high-quality obsidian resources contributed to the prosperity and longevity of Japan Alps settlements. In the greater Tokyo Plains area, settlements stable and influential enough to participate in the exchange networks are located at major rivers or coastal areas.

Preliminary assessment of the conditions at production sites suggests different motives for part-time ornament production. It is hypothesised that inhabitants of the Japan Sea area—a hostile and isolated environment—may have engaged in fairly regular production and export of jadeite pendants and serpentinite ground adzes, in order to maintain interregional relations, possibly as a socio-economic safety net. Perhaps—in the absence of obvious environmental or subsistence constraints—Pacific Coast inhabitants produced amber pendants occasionally, exchanging them as hunting amulets between specialist hunters. However, further research involving subsistence patterns is essential for a deeper understanding of long-distance exchange network membership.

Finally, it is suggested that instead of being individually-owned valuables, jadeite pendants (as ‘esoteric’, inalienable items) circulated among certain settlements in an interregional exchange network, regulating relationships and creating a social context for different types of exchange. Perhaps mortuary contexts indicate exchange relations with ‘the other world’.

DECLARATION

Hereby I declare that this work is my own, and has not been previously submitted for a degree to this or any other University.

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PREFACE

Introduction

My infatuation with the Jōmon period of Japan started in 1990. During my undergraduate study of Japanese Language and Culture at Leiden University, I took one year out for work and cultural experience in Japan, working at a cultural theme-park in Nagasaki named ‘*Oranda Mura*’ (Holland Village),¹ a popular holiday destination in the Southern Island of Kyūshū. During my holiday time I had the opportunity to travel through Japan, and once I left the big cities behind I learned to appreciate its everchanging natural beauty, consisting of much pristine forest and mountains. In Tokyo, I visited the Ueno Museum, and for the first time saw *dogū* clay figurines—the museum had a special exhibition. I became so fascinated with these enigmatic and ‘artistic’-looking artefacts that I decided to do my MA dissertation on these, specifically those from a period called the Middle Jōmon, situated in a mountain valley in the Central Japan—Shakadō site in Yamanashi prefecture (Bausch unpublished.). After my return to the Netherlands, Professor W.J. Boot at Leiden University, who had been encouraging my interest in Japanese prehistory, introduced me to Professor Gina Barnes, the expert on East Asian archaeology residing in Britain. She was associated at Cambridge University at that time, so during 1992 (after receiving an Erasmus scholarship) I had an opportunity to study Japanese and East Asian Archaeology in Cambridge. After finishing my MA, I received a grant from the Japanese Ministry of Education, which gave me the opportunity to study in Japan for one-and-a-half years.

My supervisor at that time was an acquaintance of Professor Barnes, namely Professor Kobayashi Tatsuo, at Kokugakuin University in Tokyo. During this stay in Japan I had many opportunities for travel and visiting many representative or well-known sites—including the famous Sannai-Maruyama site in the northernmost tip of Honshū island, which is referred to a lot in this thesis, without actually being part of the research scope. I also took part in excavations, both for one month. This was a very enjoyable and educational experience; not only did I become more familiar with the types of structures, features and artefacts, the experience also allowed me to witness how many mistakes were actually made at the level of excavation. It was not uncommon for many smaller items like obsidian debitage or tools to be overlooked entirely. The majority of the excavating crew are not students, but middle-aged (or elderly) local farmers—this may also have something to do with the rate of unnoticed artefacts.

Since many of my travels centred around Tokyo (where my University was based) it was almost logical that my interest became focussed on this area in particular. Originally, my interest in the Middle Jōmon period and its spiritual aspects also played a part in this: this area

¹ Nowadays this themepark is much larger, and known as Project ‘Huis ten Bosch’.

covered the same distribution area as the clay figurines I appreciated so much. However, I slowly moved away from the more ritual aspects of the Jōmon, and started thinking about interaction between the various regions, which show great ecological variability. Although I was not yet familiar with the term ‘interaction spheres’, interregional exchange was what I set out to research. I decided to collect as much information about sites as possible: this area included Nagano, Yamanashi, Tokyo, Kanagawa and Chiba prefectures, as I will explain more clearly in the first chapter. In the end I selected 175 sites, and collected data from the excavation site reports to take home with me. After my return home, I was offered a PhD place with Professor Gina Barnes, who was now affiliated with the excellent East Asian Department at Durham University, and gratefully accepted.

Interregional exchange in Central Japan: the analysis scope

During my stay in Japan, I had concentrated mostly on sites, structures and artefacts from the Late Middle Jōmon period. Professor Barnes’ hypothesis about an interregional exchange system in Central Japan during the Earlier part of the Middle Jōmon was very inspiring to my research. Over time, my research topics have undergone quite some change: I started out with obsidian, then concentrated on serpentinite polished adzes, but now find myself dealing almost entirely with stone ornaments, particularly those made of two ‘exotic’ and scarce materials, namely jadeite and amber.

This dissertation concentrates on exchange as seen at the sample sites in three particular areas: (1) the Chūbu Central Mountains (modern Nagano and Yamanashi prefectures); (2) the West Kantō Plains (modern Tokyo and Kanagawa prefectures) and (3) the East Kantō Peninsula (modern Chiba prefecture) enclosed by Tokyo Bay to the west and the Pacific Coast to the south and East. Much later, after my return from Japan, my interest in a fourth area was kindled: the narrow coastal Hokuriku region along the Japan Sea (an area comprising the eastern part of modern Toyama, and western Niigata prefecture). Located to the North of the Central Mountains, and squeezed between the high Hida mountains and the deep Japan Sea, this is the source and production area of both jadeite pendants and serpentinite adzes. Amber, on the other hand, naturally occurs in a few locations at the opposite coast, along the Pacific—such as an isolated part of the Chiba Peninsula.

In these areas in Central Japan, archaeological research has discovered evidence of great activity, precisely during the Middle Jōmon. During this period, these areas flourished: population densities rapidly rose, creating larger, more stable and more sedentary settlements than before. Each of these four regions had a slightly different environment and ecosystem to exploit, and some important resources were unique to specific, spatially limited areas. However, (as **map 1** and **2** show) each of the areas under discussion is adjacent to another, facilitating mutual contact. Even in the most isolated mountain valleys, passes could be travelled in late

Spring and Summer. Indeed there is extensive archaeological evidence of contact and exchange between these four regions: although organic materials like foods seldom survive, other exchange objects like pottery style influences, as well as many materials and artefacts original to each area, have been found in all four regions.

Of course, it has to be stressed that the interaction as shown between the areas identified (Chûbu Central Mountains, West Kantô and East Kantô Pacific Coast, to some extent the Hokuriku Japan Sea coast) is not unique, but only one example of an interaction area. Moreover, from a broader perspective, this Central Japan region is merely part of a much wider exchange taking place in Eastern Jômon Japan; items from more distant areas are also encountered at many sites in the sample, and vice versa. However, incorporating the entire Eastern Japan area was beyond the scope of this research.

I mainly concentrated upon the selected areas due to:

- (1) the environmental diversity between the areas, and the uniqueness of, and general demand for, certain exchange objects—jadeite, serpentinite, obsidian, amber—that each originated in one specific Central Japan environment and were distributed widely;
- (2) the topographical proximity, whereby the most likely routes between the areas can be identified via natural geographic features;
- (3) the extensive evidence of mutual interaction between all four areas, which appears to exceed the extent of contact with other nearby regions, notably the adjacent areas to the North (the northern Kantô of modern Gunma, Saitama, Ibaragi and Tochigi prefectures);
- (4) the fact that Central Japan represented a great deal of activity during the Middle Jômon—the apex of Jômon culture in this period.

For a comparison, brief mention will be made of a distant, contemporaneous exchange network in North Japan (centring around Sannai-Maruyama site), but otherwise other potential interaction spheres, for example those in the North Kantô and Northeast Tôhoku regions, will be the subject of future research.

I acquired my primary data about excavated sites from site reports stored at the archaeological libraries of the Chiba Museum for Ethnography and History (*Rekihaku*, Sakura-town), Kokugakuin University (Tokyo), and the Yamanashi Prefectural Centre for Buried Treasures (Nakamichi-town) in particular. For background information, I attended lectures by many Jômon scholars, like Profs. Kobayashi Tatsuo, Anzai Masahito and Nishimoto Toyohiro, took part in a number of symposiums about the Middle Jômon, and read up on the latest relevant Japanese research. Furthermore, I visited various ‘active’ Jômon period excavation sites (participating in an excavation in the Yatsugadake mountains of Yamanashi prefecture, and another one in North Japan), and travelled to numerous archaeological museums and centres in Central Japan, in order to get a better idea of the Jômon world. Through these experiences, I absorbed the differing environments and landscapes, studied various Jômon artefacts and tools,

their sources and materials, their production technique and changing styles, their range of distribution and manner of use, and—perhaps most importantly—I was able to observe the degree and manner in which various prehistoric Jōmon activities have become preserved in the archaeological record.

Problems with the available data

The first major problem or bias encountered in archaeological analysis of this type is practical, namely the basis of our interpretation or reconstruction of the nature of settlement sites: the excavation sites.² More excavations are yearly carried out in Japan than anywhere else in the world, due to a combination of rapid urbanisation processes combined with laws about cultural preservation (Kobayashi 1986). However, because most excavations are rescue digs, the scale is very small and the location and shape predetermined, for example following the outline of the planned building or road construction. Particularly road and rail construction is responsible for the discovery of a great deal of exciting information, for example the pendant and polished adze production sites along the Japan Sea Coast in West Niigata and East Toyama, which play a major role in this research, or the prosperous Late Middle Jōmon sites in the Ina Valley. Nevertheless, the narrow width of such excavations usually only reveals a small part of sites, and our impressions are never complete. The irony is perhaps that, precisely because of the expansive nature of Japanese archaeology, one's expectations about results and insights into prehistoric Japan are that much higher, and it is easy to forget that despite all these efforts we still only see a glimpse: the tip of the iceberg. Therefore it is very hard to estimate a settlement's true size on the basis of an excavation, unless the excavation was very large-scale or used representative sampling strategies over a wide area.

Moreover, we do not know anything for certain about the social relations between settlements. It is highly likely that relations with nearby settlements at least were strong and friendly, due to the presence of kin and in-laws. However, it is equally likely that there were also hostilities and feuds between groups. If ethnographic or historical research about the research area in question is available, this is very fortunate for an archaeologist. For example, Hodder's 1982 research has shown that the nature of social relations cannot be reliably deduced by artefact assemblage styles. McBryde's (1979) hypothesis about Aboriginal clan feuding, (following interesting archaeological research on the distribution patterns of a wide-spread axe

² Most excavations are rescue excavations, and the construction companies involved in creating the reason for this excavation are by law required to contribute financially to the excavations. For this reason, many such companies are also named as publishers etc. on site reports. However, as their input is financial rather than academic, these construction companies have not been named in the site report bibliographies at the end of the dissertation. Moreover, in the site report bibliography, the publisher name has been omitted if the publisher is the same institution as the editor (otherwise, the publisher is mentioned separately).

type, whereby one area was conspicuously skipped), could be confirmed only thanks to the existence of ethnographic and historical information. But such information is lacking for the Jōmon.

However, an attempt has to be made. Therefore, in order to positively indicate the presence of a *relatively* large settlement, where finds of special objects could be anticipated, I decided on the number of more than 30 Jōmon houses as a significantly high number, instead of taking, for example, both excavation size and house numbers into account. Of course, some excavations revealed only part of a settlement; this is a probability that has to be recognized. Also in many cases I relied on the judgement of the excavators, wherever so stated.

The aim of the analysis

The purpose of this dissertation is to evaluate Middle Jōmon exchange networks from various perspectives: social, economical and ideological, by following the full 'biographies' of stone ornaments as far as possible, from their production to their final consumption. First, I want to examine the *background* of the exchange network, both from the point of view of the producers, and of the consumers. Furthermore, I intend to confirm whether ornaments made of the rarest minerals—jadeite and amber—were indeed precious goods, which were valued above similar stone ornaments made of alternative materials.

In examining the distribution of beadstone ornaments, I intend to focus on various matters:

- a. The conditions at the production sites at the Hokuriku 'jadeite coast' and the Chiba Pacific 'amber coast' respectively, to understand the context under which production and exchange took place;
- b. the characteristics of the settlements which imported the ornaments, to help explain why these were able to become members of this network, and to assess the exclusivity of the exchange;
- c. the contextual conditions under which the ornaments were found at the site, in order to understand their role in society, and the reasons why certain imported artefacts were in demand.

Results from the analysis of beadstone occurrences in my own database, consisting of 175 Chūbu, West and East Kantō sites will be compared with other hypotheses concerning the mechanics of long-distance exchange during the Jōmon (e.g. Andō 1995a, b). Furthermore, I shall attempt to find a more satisfying explanation for intra-regional differences in distribution density, based on the differences and similarities of site characteristics.

Circumstances behind the Middle Jōmon interregional exchange

A great deal of emphasis will be placed on the diversity of the different environments, and the access of 'successful' settlements to certain desirable resources, that could be exchanged with settlements in other regions. This argument of course implies a certain intentionality of the Jōmon people in 'planning' the location of one's settlement in advance, which is exactly what it means to suggest: the evidence of this is visible especially during the Middle Jōmon. Activities such as local production of high-demand artefacts—beadstone ornaments, serpentinite axes as well as obsidian artefacts—had already been carried for a very long time, at least since the Initial Jōmon—but on a comparatively very small scale. However, it is during the Middle Jōmon that distribution of these artefacts starts becoming more widespread, and it is at this exact same time that settlements start springing up like mushrooms at key points in between various source and production areas, as well as along strategic locations with easy access to other regions. The fact that these settlements rapidly expanded in size and population between the end of the Mid Middle Jōmon and the middle part of the Late Middle Jōmon shows that their inhabitants were doing well.

Combining a strategic 'social' location with proximity to special resources is even better. Examples of such resource exploitation are the sites with easy access to *obsidian* from the Yatsugadake mountain sources, and (to a lesser degree) *chert* from the Tama river area.³ As both materials are relatively easy to fashion into arrowheads—a skill presumably possessed by most hunters, as indicated by anthropological data (Wiessner 1983, Lee & De Vore 1968)—there is no overwhelming need to exchange such materials in the shape of finished products; indeed often the distribution of these commodities consists of raw material or half-finished arrowhead 'blanks'. Therefore, no specialised technological production skills are required; unlimited access to the source is sufficient for a settlement to acquire a commodity that can be used as a bargaining chip in cementing and maintaining long-distance relations, possibly through 'membership' of a wider exchange network. Some settlements such as Nashikubo site (site no. 16) are known to have 'hoarded' very large quantities of raw material, presumably in order to control this resource to some extent. Therefore it is hypothesised that especially those sites in the Yatsugadake and—to a lesser extent—Tama/Musashino area which combine a long-term large-scale habitation with exploitation of obsidian and chert resources respectively, are likely to be able to obtain prestige goods like beadstone ornaments.

However, in certain areas, access to a rare material alone appears to have been considered insufficient: exploitation of the source was combined with local production, using increasingly specialised technical skills to convert the resource into a desirable end-product. The best example of this is the Hokuriku coastal area between the Hime and Kurobe rivers, which

specialised in the production of both serpentinite polished adzes and pendants of jadeite (and other beadstone); the many production settlements include sites such as Sakai A and Teraji sites which will be described in Chapter Four. It is clear that the *full* production process of both items was carried out in this area: neither debitage nor half-finished products are found anywhere in the distribution area—only the finished axes and pendants. Jadeite in particular is so hard that specialist knowledge is needed for piercing a hole (Teramura 1995), which explains why no half-finished pendants are distributed— although there is a ‘parallel’ distribution of raw material pebbles, which are generally found in different types of contexts from the pendants (as will be discussed later in this chapter). There is a long history of ornament production in that general area, with specialised serpentinite and soapstone bead production already having taken place during the previous Early Jōmon (ca. 6,000BP) period, at the Shirouma mountain area approximately 25km to the south—possibly a days’ walk from Teraji site. In the opposite direction from the Hokuriku, the (admittedly much smaller-scale) production of *amber* pendants (a fossilised resin-based material with a very limited source area, which was frequently found associated at sites with jadeite pendants in the Chūbu area) was carried out at the Pacific Coast of the East Kantō, around modern Chōshi-city. A representative ‘production’ site is the Middle Jōmon settlement of Awashimadai site. These sites will be discussed in the chapter dealing with ‘production’.

Next, attention will be paid to the circumstances behind distribution. What kind of factors are most influential on whether ornaments made of rare minerals are present or absent at a site? Are differences in distribution caused by a bias in our modern perception—for instance through differences in excavation scale between sites— or is it the character and function of the site itself which is the deciding factor? Do characteristics such as location, period, habitation length or scale, and the presence of other unusual contemporaneous structures and artefacts affect the distribution, and if so, are they of equal importance? Do they apply to all beadstone occurrences equally, or are there differences according to the type of material or ornament? Furthermore, are such factors equally important in each region, or are there strong interregional differences as well? Several potential characteristics of sites will be statistically ‘tested’ to see whether certain site characteristics influence distribution— and if so, how strong the correlation is, compared to other potential factors.

It is hypothesised here that the contemporaneous site characteristics will indeed influence the distribution—more so than ‘outside’ factors such as excavation size. It is expected that rare, ‘exotic’ ornaments will be more frequently found at large-scale, permanently inhabited ‘core’ settlement sites—especially at those sites which have a longer, more stable habitation

³ As was described in the Obsidian Chapter, the distribution range of chert was generally less wide-spread

history, and have therefore proven that they can achieve an efficient balance with their environment, exploiting but not exhausting local resources and probably maintaining longer-distance relations as a back-up plan. Being core settlements, such sites will have larger numbers of houses, as well as permanent ritual structures (burials) and ritual paraphernalia (e.g. clay figurines during the Middle Jōmon period). They are also likely to possess various categories of 'exotic' commodities, which cannot be acquired easily.

Furthermore, it is hypothesised that among such 'core settlements', the most likely sites to be able to acquire the rare beadstone ornaments are those which possess or have access to desirable commodities (artefacts or goods) for use in exchange with more distant sites. In order to make the most of exchange networks, strategic location is thought to be essential. It is expected that this can be achieved in at least two ways: by being located (a) on a known exchange route or at a cross-road location which connects several areas, a tactic which is especially effective if settling in a valley or basin which is the only or most efficient route between different regions; (b) near a source area of a rare and highly useful commodity. To specialise in the local production of this material into desirable commodities (to such an extent that a surplus is created which exceeds local consumption needs) may be a further step towards being in an advantageous position vis-à-vis contacts with more distant areas. This hypothesis will be tested by taking into account the circumstances that influenced production and circulation.

It will be suggested that the sites in—for example—certain parts of the Chūbu Mountain area (the (Northern) Matsumoto Basin, the Ina Valley and the Kōfu Basin) might have taken advantage of the first type of strategic location. These areas appear to have yielded or produced few particularly rare and/or useful *artefacts* with a wide interregional distribution—at least none that have been preserved and are archaeologically visible—although it has been theorised that they may have exchanged foods (acorns, nuts; possibly dried meat) to other sites (e.g. Barnes 1993, Imamura 1996, Mizoguchi 2002). However, the Matsumoto Basin is the connection to the Hokuriku area, the Ina Valley to the Tōkai area, and the Kōfu Basin to the Kantō Plains. Above all, it is the sites around the Suwa Lake area, which is the roundabout where all these routes come together—which may have profited most directly, having links to all these distant areas like a spider in the centre of its web.

Finally, all evidence pertaining to the actual use of ornaments will be examined, by looking at the contexts in which they occur at the excavated sites. Is there evidence that ornaments made of 'rare' minerals like jadeite and amber were valued higher than ornaments made of other, more commonly available materials? Were they made and treated with more care; were they used in

than that of obsidian, indicating that there may have been a cultural preference for the latter in many areas

different circumstances, by different types of people? Does their presence present evidence of very minor differences in social status?

METHODOLOGY: Statistical analysis

In Chapter Six of this dissertation, various statistical analyses are carried out to quantify the extent of certain distributions and their characteristics. The site sample includes 175 sites from the Chûbu Mountains (Yamanashi and Nagano prefectures), West Kantô alluvial plains (Tokyo and Kanagawa prefectures) and the East Kantô Peninsula (Chiba prefecture). These sites and their characteristics are summarised in Appendix A1 and 2. The Hokuriku area is not included in the statistical analyses, but attention is paid to the circumstances behind production and exchange.

For each of the following analysis, the H1 hypothesis is mentioned in the subtitle; the H0 hypothesis means that the association is random. All chi-squared tests have one degree of freedom; the level of confidence that the association does exist (rejecting the H0 hypothesis) is expressed with increasing strength from 10% to 0.1%.

The size of the sample may differ according to the association tested; in some cases data will be unavailable for certain sites, and these will have been omitted from analysis. The total number of observed frequencies for each sample is stated in the title; for example, N= 175 (where the entire Central Japan sample is involved). If the sample is too small to be statistically valid (having expected values of less than five), this will be explained; in any case the percentages of sites WITH and WITHOUT beadstone at the H1 variable will be given in a table, as well as illustrated in a graph, to indicate whether there may be a connection.

The method of statistically testing association

Following the recommendations made by Fletcher and Lock in their 1994 manual on archaeological statistics, the association between presence and absence of various site characteristics and of beadstone (mainly jadeite) will be dealt with in two steps.

First, the Chi-squared test will determine whether there is sufficient evidence of association between two variables, or whether the distribution is random (known as the 'Null hypothesis')

The formula of the Chi-squared test is

$$\chi^2 = \sum \frac{(O-E)^2}{E}$$

Where \sum = the total number of sites in the sample;

O = the observed frequency (of each of the four possibilities);

E = their expected frequency (if there would be no association between variables).

In the case of tests carried out here, the size of the contingency tables is always two by two (eg the possibilities of YY, YN, NY and NN), which means that the degree of freedom [calculated by (row total minus 1)(column total minus 1)] is 1. The chi-squared test measures how close the observed and expected frequencies are; if they are sufficiently far apart, the 'null hypothesis' H_0 (meaning: no association) can be rejected. The evidence for this correlation is still valid up to the 10% level; evidence becomes increasingly strong at the 5%, 1% and finally 0.1% levels.

However, in cases where one of the 'Expected' values falls below 5, the sample is considered too small to be statistically valid, and has to be abandoned. Unfortunately this happens rather often, especially in cases with few examples (e.g. the amber or chalcedony pendant distribution), or in regions with a limited number of sites (e.g. the East Kantô area which only includes 33 sites).

Secondly, if it has been shown that there is strong evidence of association between variables, 'Cramer's V' tests the relative strength of this association.

$$V = \frac{\sqrt{\chi^2}}{(n)(m)}$$

Where n = the total of all observed frequencies,

m = the smallest value in the number of either rows or columns minus 1

(i.e., $m=1$ in a two-by-two contingency table).

V takes a value between zero and one; the closer to one, the stronger the measure of association.

Variables to be tested

The following characteristics will be tested to indicate a correlation with the distribution of various beadstone ornaments, both on a regional and general Central Japan scale:

- A. The size of the excavation, based on the excavated surface in m^2 as recorded or described in the site report; a distinction is made between 'small-scale' ($\leq 1,000m^2$) and 'medium to large-scale' ($> 1,000m^2$). It is expected that the likelihood of a rare beadstone artefact recovery increases to some extent with the scale of the excavation. The statistical tests will prove whether this is true, and if so, whether this factor is more influential than other contemporaneous factors—i.e. whether it is likely that we bias our modern impression about the past through the way we conduct our research.
- B. Presence of a relatively very high number of generic Jômon houses at a site (≤ 30 or > 30 houses). Especially in the case of 'prestige' objects, a higher house presence is expected, as evidence of a large settlement (following Kobayashi 1992a).

- C. Presence of a relatively very high number of Middle Jōmon houses at a site (≤ 25 or > 25 houses).
- D. Presence of a relatively very high number of Late Middle Jōmon houses at a site (≤ 20 or > 20 houses). It is expected that although the measure of association may be lower than the Jōmon house number sample, evidence of the association between high LMJ house number and presence will still be strong—especially since most beadstone ornaments among the sample are found in Late Middle Jōmon contexts.

The influence of habitation from other periods, as shown by the presence of houses from these periods.

- E. Early Jōmon houses (much earlier): expected to have a low to negligible effect, as both population density and number of sites with Zenki contexts are low (especially since the large Zenki site Tenjin C with its famous jadeite pendant has not been included in the sample).
- F. Late to Final Jōmon houses (somewhat to much later): expected to have a fairly strong effect, as Teramura, Abe and Yamamoto have all claimed that both serpentinite adze and beadstone distribution increased during this period.
- G. Earlier Middle Jōmon houses which include houses dated to the Goryogadai and/or Atamadai and Katsusaka pottery styles (somewhat earlier): are expected to have a very strong effect, due to an increasing population density and growing demand for beadstone pendants in this period. This is the period on which the Late Middle Jōmon expansion was based.
- H. Sites which were predominantly Late Middle Jōmon: where more than 50% of houses belong to the later part of the Middle Jōmon. Were most ornaments found at predominantly Late Middle Jōmon contexts, indicating that the scope of exchange also had increased very strongly since the previous period?

The length of the habitation at the site within the Late Middle Jōmon period itself: Late Middle Jōmon-only sites versus sites with longer habitation. It is expected that Late Middle Jōmon-only sites will correlate more strongly with beadstone *absence*: even though the actual ornaments may belong to Late Middle Jōmon contexts, the longer the habitation history the more experienced a settlement is likely to be in 'survival' tactics, including the maintenance of exchange networks. The length of habitation at Middle Jōmon-only sites, distinguishing between sites with longer-term or short-term habitation (only a single phase of habitation, i.e. roughly corresponding to either Kasori E 1, Kasori E 2 or Kasori E 3~4 pottery phases). It is expected that short-term habitation will generally be connected to *absence* of beadstone; even more strongly than at the former criteria. Two criteria are used:

- I. Sites that were inhabited during a shorter term of the Late Middle Jōmon, namely where occupation conforms to a single pottery stage.

- J. Sites which were inhabited throughout the Late Middle Jōmon, i.e. sites which have houses that are dated to all pottery stages of this period.

The presence of indications of ritual practices at a site:

- K. The presence of *dogū* clay figurines, a presumably ritual object. It is expected that ornaments are more frequently found at sites with figurines, as the execution of such ritual suggests a certain status of the site, especially during the Middle Jōmon period. The presence of figurines hints that the settlement was considered permanent and important enough by its inhabitants (and possibly those of neighbouring communities, if subscribing to the ‘shared communal ceremonies’ theory) to warrant ceremonial activities, for example for ensuring prosperity and renewal. The presence of ritual paraphernalia in its own way also may give us a clue to how the contemporaries viewed themselves and their community, just as the presence of ‘prestige goods’ does in an economic way.
- L. The presence of *sekibō* phallic stone rods, also a ritual object. Unlike clay figurines, which particularly occur in the Chūbu area, and at some of the West Kantō sites but barely in Chiba, these items are represented fairly evenly over the sample area. This additional indication of ‘ritual activities’ is meant to cover those areas where clay figurine practices were not carried out—particularly in the Chiba Peninsula.
- M. High quantities of obsidian, as measured in % of arrowhead total found at a site. Due to differing access to sources and distribution between regions, what constitutes a ‘high’ percentage (above the regional average) varies accordingly: In the Chūbu area, among the 43 sites with at least five recorded arrowheads and recorded arrowhead materials, the average obsidian percentage among the arrowhead total at a site is 86%. Therefore, to indicate abundant access, a slightly higher ratio is taken: all **Chūbu** sites where obsidian arrowheads occupy **90% or more** of the total recorded arrowheads, are regarded as a site with excellent access to obsidian. In the West Kantō, the average ratio of obsidian arrowheads among the arrowhead site totals is lower: among the 39 sites with at least five arrowheads and recorded materials, the average obsidian ratio is 70%. Therefore a slightly higher ratio of **75% or more** indicates a **West Kantō** site with excellent obsidian access. In the East Kantō Peninsula, arrowhead access is somewhat lower: among the 22 relevant sites, the average obsidian ratio is 46%. The ratio chosen for indicating excellent obsidian access in the **East Kantō** area is **60% or more**. In case of the East Kantō, this ratio is quite a lot higher than the average, compared to the among Chūbu and West Kantō ratios; however in the East Kantō region, sub-regional differences in obsidian ratios at sites are quite outstanding: Northern Chiba sites, near the Tone River, usually have a very low obsidian ratio, due to presence of a local chert source, whereas in other parts of Chiba the ratios are much higher. Especially in the Chiba area where obsidian sources are rather scarce, the presence of large quantities of obsidian is expected to be correlated to beadstone presence.

High quantities indicate either proximity to a source area (and thus an access to a useful commodity for barter), or—if more distant from a source area—the importance of a site (probably a core settlement) as shown in its ability to manipulate and maintain membership of long-distance networks.

The presence of other valuable commodities against the presence of beadstone:

- N. The presence of attractive polished stone adzes made of serpentinite. Such items were produced in relatively large quantities at the same production sites as the jadeite pendants, and have also been found widely distributed over Central Japan during the Middle Jōmon. Although other production loci are also likely, these have not been discovered yet. As will be explained above, because of the shared production circumstances, some archaeologists directly associate the circulation of these adzes with that of jadeite pendants

Summary: the outline of this research

The First chapter gives a concise background to the Jōmon period, and contextualises the Central Japan area during the Middle Jōmon period—the focus area in this research in long-distance exchange mechanisms—in particular. The Second chapter deals with the theoretical background on archaeology in general and exchange studies in particular. Both Western and Japanese traditions and schools of thought are included, since both have undergone their own development, and have established their working methods and paradigms. Chapters Three to Eight are part of a large case study on the exchange of jadeite and amber from all angles: consumption, circulation and production—and compare these with similar, contemporaneous ornaments made of different materials. The Third chapter deals with previous research on stone ornaments (particularly jadeite and amber pendants). Chapter Four focuses on the manufacturing process of ornaments, and the background of the source and production sites. Chapter Five deals with the spatial and temporal aspects of ornament distribution, narrating their circulation through Central Japan on the basis of the distribution site patterns. Chapter Six consists of a statistical analysis: it tests whether certain types of ornaments are found more frequently at certain types of sites (identified by a series of variables), and discusses its implications for exchange relations. Chapter Seven tests the hypothesis that jadeite and amber artefacts were particularly valued prestige objects, by taking a contextual approach to consumption of jadeite and amber, compared to ornaments made of other materials. The Eight chapter consists of a deeper discussion of the aspects of beadstone exchange—production, circulation and consumption—and possible social and economic implications. Finally, all results are summarised in the Conclusion.

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I dedicate this PhD thesis to them.

CHAPTER ONE: THE WORLD OF JÔMON JAPAN

1.1 INTRODUCTION

Archaeology in Japan often seems to be more like a national industry or pastime than a science; in 1978, no less than 300,000 sites were registered, a number that has undoubtedly doubled by now. Contrary to the West, both government and private businesses finance excavations and research. Moreover, Japan employs the highest number of professional archaeologists in the world (Pearson et al. 1986: 479-497). Media report spectacular new finds almost every other day. In short, no other country spends as much time and money on archaeology as Japan does, partly because the Japanese show much interest in their own past and cultural heritage; on the other hand because of the fast urbanisation process that leads to the destruction of many archaeological remains. Therefore, most excavations are so-called rescue or salvage excavations, to record as much information as possible.

The West has a great fascination for Japan: not only with regard to economy, but also to the 'mystique' of its culture. However, the traditional western idea of Japanese culture (rice, samurai, swords and martial arts, Zen, calligraphy, ladies in gorgeous kimonos, etc.), is almost entirely based on developments that took place in Japan from the proto-historical Yayoi period onwards.¹ During the Yayoi (circa 500 BC to 300 AD), the new technologies of rice cultivation and metallurgy were first introduced from the mainland via Kyûshû island, accompanied by a new, radically different economy, social structure and ideology. The assimilation of for example Buddhism, the Chinese writing system and silk production, between the third and seventh century, further shaped the "Japanese culture" that we know today.

In stark contrast, the West is hardly familiar with the prehistoric period, that—apart from large amounts of 'boring' stone tools, and later pottery—appears to be characterised mainly by a huge lack of reliable information. Interestingly enough, in Japan itself there is a current trend of intense interest in the Jômon period (circa 12,000-2300BP) in particular, despite (or perhaps because of) the fact that it bears no obvious resemblance to the present Japanese society and culture.

The pre- and proto-historic period of Japan is usually divided into four periods: the Preceramic or Palaeolithic period, the Jômon period (both characterised by hunter-gatherer subsistence), the above-mentioned Yayoi period, which saw the influx of immigrants and socio-technological innovations from the mainland, and the Kôfun period (300-700AD), in which a

¹ Although no written resources from this period remain in Japan, records of several small 'kingdoms' which had diplomatic relations with the Chinese empire exist in China. One of these records famously includes a reference to a small state named 'Yamatai', ruled by a shamaness/queen named Pimiko. Identifying the location of this 'Yamatai' is one of the popular topics of Yayoi archaeology.

system of strong social stratification was consolidated. The Preceramic or Palaeolithic period—which preceded the Jōmon period—probably ended around 12,000BP, with the introduction of the first pottery.² Most Japanese archaeologists regard the division of these prehistoric periods along the following criteria: a technological change from Preceramic to Jōmon (the introduction of pottery), an economical change from Jōmon to Yayoi (introduction of agriculture) and a political change from Yayoi to Kōfun (Imamura 1996: 15).

For an archaeological period, the Jōmon is exceptionally long, and far less homogeneous than often believed. Although agriculture was absent, pottery was used from a very early time; moreover, other things commonly associated with the ‘Neolithic’—like the use of polished stone adzes and a large degree of stable, sedentary settlements—already started in the first part of the Jōmon. Consequently the scope of recent Jōmon studies is extremely broad; in attempting to give an overview I have tried to limit myself to data also included in recent books and articles published in English. For further reading I refer to recent English-language books like: Aikens & Higuchi 1982, *The Japanese Prehistory*, Pearson et al. 1986, *Windows on the Japanese Past*; Katō 1987, *The Jōmon Culture*; Barnes 1993, *China, Korea and Japan—the rise of civilization in East Asia*; Imamura 1996, *Prehistoric Japan*; Takahashi et al. 1998, *Archaeological studies of Japan: current studies of the Jōmon archaeology*; and Mizoguchi 2002, *An archaeological history of Japan*.

In describing Japanese personal names, I have followed the Japanese convention, which prescribes that the surname comes first, and the personal name second. For example, in Mizoguchi Kōji, Mizoguchi is the family name, Kōji the personal name. I also maintain the Japanese names for locations and regions, after explaining their location. Japanese place and topographical names usually have suffixed words like ‘*ken*’, ‘*gun*’, ‘*shi*’, ‘*chō*’, ‘*mura*’, ‘*gawa*’, ‘*shima*’ (or ‘*jima*’); these have simply been translated by their western equivalents: ‘prefecture’, ‘county’, ‘city’, ‘town’, ‘village’, ‘river’ and ‘island’, respectively. Examples of this are Kanagawa prefecture, Kitakyōma-county, Chino-city, Asahi-town, Oizumi-village, Hime River, Kōzu Island.

First a general image of the Jōmon period is given, before contextualising the region and period that is the topic of this dissertation.

² The start of the Palaeolithic in Japan is a difficult and controversial point, especially since about two years ago, when a much-publicized case of archaeological fraud was discovered. A senior Palaeolithic scholar was caught while ‘planting’ a stone ‘artefact’ in an older cultural layer—allegedly because of extreme academic and political pressure to achieve results. As a result of his misguided actions, Palaeolithic studies in Japan have become rather tainted recently—a fate luckily escaped by Jōmon studies.

1.2 GENERAL CHARACTERISTICS OF THE JÔMON PERIOD

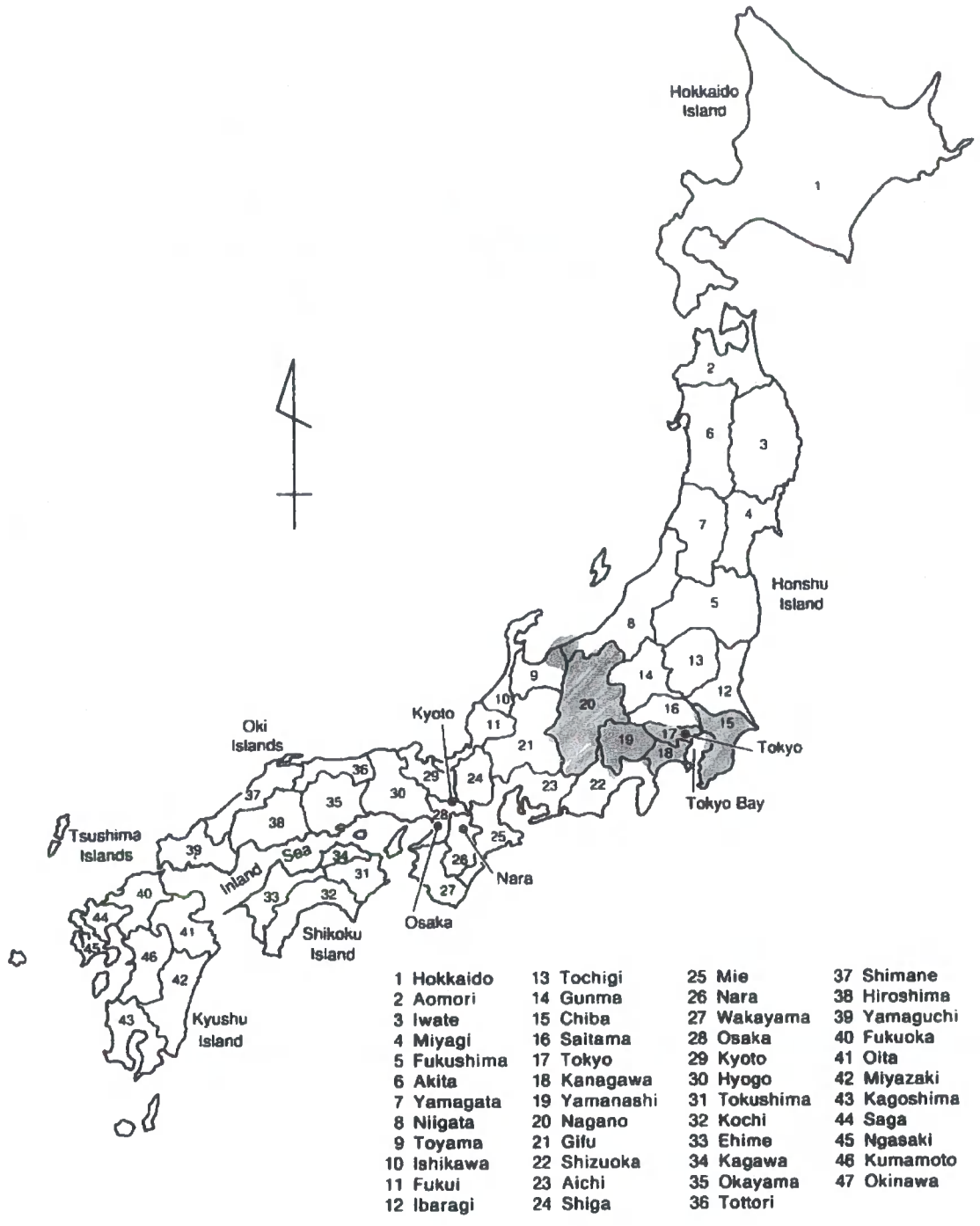
1.2.1 Japanese topography

Japan consists of four main islands: Honshû, Kyûshû, Shikoku and Hokkaidô, and many smaller ones, including the Ryûkyû islands and Okinawa; and is consequently stretched out over a 3,000km area: the northernmost tip in Hokkaidô is located at a latitude of 45° N; the southernmost tip in Okinawa at 24° N. Contact with the Continent took place via Hokkaidô and Kyûshû islands, which are most closely located to the mainland. Climates and natural environments vary between the long north-south axis of Japan, but the research in this dissertation takes place entirely on the largest island, Honshû; more specifically, in the central part of this island, which includes the area around modern Tokyo. On Honshû, the climate in western Japan is somewhat warmer than in eastern Japan, a fact reflected in the distribution of evergreen forests in the West, and deciduous broadleaf forests in the East.³ Most of Japan is covered by steep mountains; volcanic activity in the archipelago has been and is still considerable; the resulting acidic quality of the Japanese soil is the main reason for bad preservation of organic material), and Honshû is no exception.⁴ On Honshû island the climate is mostly temperate, with large amounts of precipitation coming from the Japan Sea and Pacific Ocean. The combination of a largely mountainous environment and ample precipitation has led to the existence of dense forests, to the advantage of pre-agricultural inhabitants like the Jômon.

Map 1 shows Japan and its modern division into prefectures, which are numbered. The area described in this dissertation centres around the modern prefectures of Nagano (no. 20 on map 1), Yamanashi (no. 19), Tokyo (no. 17), Kanagawa (no. 18) and Chiba (no. 15). Following Japanese standard regional names, in this dissertation the region of Nagano (including the Japan Alps) and Yamanashi is referred to as the Chûbu Mountain area; Tokyo and Kanagawa are part of the West Kantô alluvial plains, and Chiba at the Pacific Coast is referred to as the East Kantô or Chiba Peninsula. Moreover, frequent reference will be made to a number of jadeite production sites, which are located in the so-called Hokuriku region, more specifically a narrow strip of land along the Japan Sea Coast, in the eastern part of modern Toyama (no. 9) and the western part of Niigata (no. 8) prefectures. Finally, some reference is made to obsidian resources located on Kôzu Island, a tiny island that is part of the Izu Island group in the Pacific Ocean, and is located south of Tokyo Bay.

³ The deciduous forests yield a greater variety of nutritious nuts and other plant foods than the evergreen trees; this ecological difference is now generally accepted as one of the reasons for the comparatively lower population densities in the western part of Japan during the Jômon.

⁴ Because of this characteristic, even today only a relatively small area—5.3 million hectares out of Japan's total of 38 million hectares—is occupied by agriculture, which mainly consist of wet-rice cultivation (Imamura 1996: 5).



Map 1: Map of Japan including all modern prefectures (adapted from Barnes 1993:11).



Map 2: A close-up of the Central Japan area. This relief map shows the altitude contrasts between the various regions. Outlined in red is the area discussed in this dissertation; this includes the Hokuriku 'Jadeite Coast' region at the Japan Sea Coast to the North; the Central Chûbu Mountain region, the West Kantô Plains of Tokyo and Kanagawa, and the East Kantô Peninsula of Chiba prefecture, at the Pacific Ocean.

Map 2 provides a close-up of the topography of the Central Japan area under consideration (bounded by the red line), and shows the distinct differences in altitude and relief. This complex topography (involving mountains, valleys, hills, alluvial plains, rivers and coast) contributed to the existence of various microenvironments with different resources, which in turn led to a strong regionalization of Jōmon economic and social reproduction. Various Central Japan landscapes are depicted in **figure 1**. The altitude differences between the Chūbu mountain area (see **fig. 1A**) and the alluvial West Kantō (Tokyo Bay) coastal plains (**fig. 1C**) in particular are striking. The Hokuriku area, which includes the Japan Sea coast prefectures, has a very strong altitude contrast between the narrow strip of coastal plain and the steep mountains behind (**fig. 1B**). Snowfall in this area is extremely thick during winter.

1.2.2 Pottery styles and chronology of the Jōmon period

The material culture of the Jōmon is characterised by one of the oldest ceramic traditions in the world. Over time, this pottery developed into an immense variety of temporally and regionally distinct styles and shapes. Before 1930, the entire Jōmon period was regarded as a single temporal entity, until the scholars Yamanouchi Sugao, Yawata Ichiro and Kono Isamu devised an extensive pottery chronology, based on a combination of stratigraphic location of the finds and elaborate analyses of pottery forms and decorations. This work has been incredibly influential in Jōmon archaeology: extensive ceramic chronologies exist for all regions and sub-periods. Revising and elaborating these typological and chronological pottery classifications is still a favourite research topic among many Japanese archaeologists.⁵ Nowadays, a general subdivision of the Jōmon period into six stages, according to the development stages of its pottery is generally accepted in Japanese archaeology: Incipient (the transitional stage just after the Palaeolithic, with the oldest pottery, dated at circa 12,000 years ago); Initial; Early; Middle; Late and Final (see **table 1**, next page).

Finer temporal distinctions based on stylistic and stratigraphic changes are made within all these very broad classifications. It goes without saying that these dates are *very* approximate; moreover these periods were not necessarily synchronous throughout Japan. For example, after the introduction of the Yayoi cultural complex in Western Japan, Final Jōmon cultures continued to flourish in the Northeast part of Japan.

This research is aimed entirely at the Middle Jōmon period, and concentrates especially on the last stage of this period: the Late Middle Jōmon.

⁵ A good English-language summary of the history of Jomon pottery classification (including a comprehensible explanation of the highly confusing terminology) can be found in Hudson & Yamagata 1992, which forms the introduction to Kobayashi 1992b.

Table 1: Broad Chronology of the Jōmon period, based on pottery typologies (Katō 1987: 27-8).

Period	Japanese Name	Dating
<i>Incipient Jōmon</i> (first arrival of pottery)	Sōsōki	Ca. 12,000 - 10,000 BP (=Before Present) ⁶
<i>Initial (or Earliest) Jōmon</i>	Sōki	Ca. 10,000 – 7,000 BP
<i>Early Jōmon</i>	Zenki	Ca. 6,000 BP
<i>Middle Jōmon</i>	Chūki	Ca. 4,500 – 3,500 BP
<i>Late Jōmon</i>	Kōki	Ca. 3,500 – 3,000 BP
<i>Final Jōmon</i>	Banki	Ca. 3,000 – 2,400 BP

1.3 SUBSISTENCE

1.3.1 'Hunter-fisher-gatherers'

Generally, the Jōmon period is characterised by a 'hunter-fisher-gatherer' economy, although its character varied widely per region and per period. Various attempts have been made to reconstruct the Jōmon 'calendar' of seasonal food procurement, most notably by Akazawa Takeru and Kobayashi Tatsuo. This reconstruction of seasonal subsistence activities is depicted in **fig. 2**; however it is important to remember that because of the diverse character of the Jōmon living environment, not all these resources were available to all Jōmon communities.

Takahashi et al. summarise the general characteristics of the Jōmon subsistence system as follows:

- 1) A broad spectrum exploitation of food resources (no reliance on a specific resource);
- 2) A large regional variation in food resources (no basic food resources common to all areas);
- 3) Adaptation to the seasonal variation of available food resources (the development of sedentary life under the seasonal variation in available food resources (Takahashi et al. 1998: 53).

1.3.2 Marine resources

Some regions had advantageous access to marine sources, especially along the Pacific Coast, which combined the presence of spawning grounds for anadromous fish (e.g. salmon and trout) with the availability of abundant shellfish resources. The fact that from the Initial Jōmon period

⁶ 'Present' has been established at 1950.

onwards, large shell middens (*kaizuka*) are found along the Pacific Coast, shows their importance in the local diet (e.g. Koike 1986).

In accordance with various anthropological and ethnographic analogies, Yamanouchi's famous 1969 hypothesis suggested that salmon-and-trout fishing was one of the economic foundations supporting the denser Jōmon population in Eastern Japan.⁷ There is still an ongoing debate about whether salmon was a food staple, because so far relatively small amounts of salmon bones have been recovered. However it has been suggested that the small quantities of recovered salmon bones may have been due to different types of capture, processing and consumption methods during the Jōmon, and that more precise sieving techniques may compensate for this variability (Matsui 1996).

Remains of sea mammals have also been found in shell midden sites. Tools for offshore fishing and mammal hunting included fishhooks and harpoons; dugout canoes are known from the Early Jōmon onwards. Ceramic and stone net-sinkers show the use of fishing nets. During the Early Jōmon (6000 BP), meteorological changes (increased temperature) caused a marine transgression, which created many inlets and shallow bays in for example the Tokyo Bay area, and marine resources formed an even more stable food source. Sea levels rose again after this period, but the Tokyo Bay area continued to provide a stable subsistence: population levels in this area remained high until after the Late Jōmon period, when the highest population densities and cultural activities were located in the very north-eastern part, characterised by the 'Kamegaoka' pottery style.

1.3.3 Hunting

Rare finds of animal bones remains (especially well-preserved in the coastal shell-middens) show that hunting was mainly aimed at the larger mammals, like wild boar and deer. This appears to have been the case in both inland and coastal areas. The dog on the other hand, was an esteemed partner and hunting companion; several cases are known of respectful burial of dogs laid out on their side in the shell midden sites, close to the location—sometimes together with—human burials. The sites contained in the sample include several such examples, most notably Takanekido site and Shiraiōmiyadai site.

The bow and arrow were a Jōmon innovation, unknown during the Preceramic period which mainly used spear points; nevertheless, during the earlier half of the Jōmon period, hunting often still took place with the aid of pit traps (sometimes staked).⁸ During the Middle Jōmon, the majority of arrowheads were made of obsidian, a volcanic glass particularly suitable

⁷ Yamanouchi Sugao is considered by many to be the 'grandfather' of Jōmon archaeology.

⁸ Research has suggested that hunting with the use of pit traps was rare during the Middle Jōmon (Imamura 1996).

for the production of small, sharp tools (Yamamoto, K. 1990). Obsidian has a long history of use in Japan: research has shown that the obsidian sources in the Chûbu mountains ‘Japan Alps’ (so-called *Shinshû*-type obsidian) and on the tiny Pacific Coast island of Kôzu Island were already used in Central Japan during the Palaeolithic; during the Middle Jômon exploitation and circulation of these high-quality obsidian sources—particularly used for arrowheads—intensified (Suzuki 1973, 1974).

1.3.4 Plant food resources

There have been various hypotheses about incipient ‘Jômon agriculture’ based on the presence of certain tools like chipped stone ‘hoes’, which have been interpreted as digging tools for tubers. Such theories were especially proposed by Fujimori Eiichi (1970) to account for the sudden prosperity in the Central Japan area during the Middle Jômon. However, although limited evidence of cultigens of for example beafsteak herb, gourd, burdock and barnyard millet and barnyard grass were indeed discovered at some wetland sites (Ikawa-Smith 1986, Barnes 1993: 89-91, Imamura 1996: 107-9), it is clear from the relative quantities and lack of homogeneous distribution, that such ‘cultivated’ plant foods were not a staple food.

However, the deciduous broadleaf forests themselves provided a large quantity of plant foods, most notably nuts. Based on ethnographic research about traditional Japanese nut collecting and processing techniques in mountain villages, a strong case has been made that the great quantities of various types of nuts with great nutritional value, which could have been collected, processed and stored by the Jômon people, may have been an important factor in supporting larger populations—especially in the Chûbu Mountain area (Watanabe Makoto 1975, Matsuyama 1981, Koyama 1981). This theory is now widely accepted (Barnes 1993, Imamura 1996, Mizoguchi 2002). Recently, after the discovery of Sannai-Maruyama site in northeast Japan, increasing evidence of nut tree ‘management’ was gathered (e.g. chestnut pollen in river deposits; more homogeneous chestnut DNA), and it is now considered likely that the ‘controlled raising and selection of chestnut trees’ took place in East Japan from the end of the Early Jômon onwards (Takahashi et al. 1998: 59). It has been strongly suggested that the Middle Jômon population growth in Central Japan was based on similar practices (ibid; cf. Barnes 1993: 89).

In short, Jômon communities consisted of a rich blanket of regional subcultures, which exploited their own subsistence resources. However, despite relative subsistence autonomy, communication between sites and regions is also expected to have played an important part in Jômon life (Kaner 1996: 55; Mizoguchi 2002).

1.4 JÔMON SOCIAL LIFE

1.4.1 Settlements and population density

Nowadays it is generally accepted that from the Early Jômon onwards, the largely mobile lifestyle of the Jômon people changed, and became more sedentary, based on the stable seasonal exploitation of various food sources. Therefore the majority of Jômon people lived in settlements that were inhabited throughout the year, although excursions would be made to take advantage of other subsistence resources. Jômon families lived in pit dwellings (up to 50cm deep), with roof structure supported by various posts. The average pit dwelling is about four to five meters in diameter. As will be explained further in the section on Japanese theory, there are various types of Jômon settlements, ranging from very large—with a high number of contemporaneous houses and large quantities of tools and pottery—to smaller-scale villages consisting of only a few contemporaneous houses. The larger settlements are generally circular or horse shoe-shaped in outline, with dwellings surrounding a central open space. Inside this open space, burial pits were usually located. In addition to this stronger evidence of settlement history, large-scale sites also contain more evidence of community ritual practices, such as *dogû* clay figurines and *sekibô* stone phallic-shaped rods, described below.

Nevertheless, the population density always varied strongly according to regional and temporal factors. In an earlier study, based on temporal changes in site numbers, Koyama (1978) identified the rapid population increase in the Central Japan Mountain area during the Middle Jômon, and its equally rapid decline (in contrast to population increases during the Late Jômon in the Coastal area, and during the Final Jômon in the Northeast), and related the rapid Mountain area depopulation after the Middle Jômon to environmental changes—declining temperatures and increasing precipitation. More recently, the sudden population peak in Central Japan during the Middle Jômon was confirmed on the basis of pit dwelling numbers instead of site numbers. Imamura found that during the Middle Jômon, 70% of all excavated pit dwellings belonged to the Middle Jômon (see **fig. 3**). Moreover, the fact that the Late phase of the Middle Jômon accounted for no less than 50% of all excavated pit dwellings underlines the rapid population growth during this period, as does the scale of settlements, which in several cases is much larger than before, consisting of over 50 houses (Imamura 1996). These houses were not necessarily used contemporaneously, but over time, often involving rebuilding. Nevertheless, this trend shows the continuity and stability of these settlements.

1.4.2 An unusual Middle Jômon settlement: Sannai-Maruyama

One example of a recently discovered, very large-scale Middle Jômon settlement is located in seemingly rather isolated area, namely Northeast Japan, in the tip of Aomori prefecture (prefecture no. 2 in **map 1**). Sannai-Maruyama site in Aomori city (ca. 3km from the coast),

now one of the largest and best-known Middle Jōmon settlements in Japan, was discovered in 1992 during the construction of a baseball stadium and has been researched very extensively since.⁹ This huge settlement was inhabited continuously for at least 1500 years from Early Jōmon throughout the Middle Jōmon; it is estimated that 50~100 houses were used simultaneously (Okada 1995: 15). Objects found at the site include large quantities of organic remains,¹⁰ utilitarian objects, ornaments, and ritual artefacts like clay figurines and stone rods.¹¹ In addition to hundreds of pit dwellings, many pits, burials and raised-floor structures, excavators also discovered two unusual structures: (1) a three meter-high earth mound containing large quantities of pottery fragments, discarded tools, and non-utilitarian objects like clay figurines, amber and jadeite ornaments and (2) a mysterious structure consisting of six giant wooden pillars, which is believed to be either a tower-like functional building, or a spiritual monument.¹² It has been suggested that communal labour and leadership were prerequisites for the construction of both large structures (Okada et al. 1995: 89-90). Other evidence of the local importance of the settlement is seen in its effective use of very long-distance exchange networks: jade ornaments (see **fig. 4B**) were imported from the Hokuriku area, amber beads from Kuji (Iwate prefecture), obsidian from Hokkaido, natural asphalt (for attachment of arrowheads) from Akita Coast. (Okamura 1995b: 22-4). In all, the discovery of this unusual site has caused quite a stir in Jōmon archaeology, because of the temporal stability of the site, the large contemporaneous house numbers, presence of large-scale structures and long-distance exotic items. All this evidence is suggestive of the potential complexity of Middle Jōmon society—at least in some regions. Nevertheless, the socio-political implications of this

⁹ Sannai-maruyama's immense popularity can be gauged by the following facts: in August 1994, due to enormous popular response (part generated by the media after the discovery of the giant wooden pillars one month earlier), the prefecture decided to discontinue the construction of the stadium in favour of preserving the site and opening it to the public. By the end of the same year, already more than 60,000 people had visited the partially reconstructed site/research centre. Although 'only' five hectares were excavated by 1995, a further 33 hectares have been set aside for future research (Okada 1995:13). As a case where public support of archaeology proved stronger than interest in sport (baseball is very popular in Japan), this situation is probably unique! It does show the extent of the Japanese interest in 'their' past.

¹⁰ Plant opal analysis has shown the presence of several plants that may have been cultivated: deccan grass/wild rice (*inebie*), gourd (*hyotan*), and beans (*mame*); moreover there were large quantities of elderberry (*niwatoko*) which may indicate the brewing of alcohol (Okada 1995: 14).

¹¹ More than 700 Middle Jōmon clay figurines were found at Sannai-Maruyama, accounting for more than half of all clay figurines in Aomori prefecture (Okada 1995: 27). This is another indication of the important ritual role of this site; the number of Middle Jōmon figurines at one site is surpassed only at Shakadō (no. 68) in the Chūbu Mountains.

¹² The partially preserved chestnut poles have a diameter of ca. 1m; their pits are between 2~3m deep. As to its purpose, many archaeologists favor the theory of a functional building, such as a ca. 20m high look-out tower for detecting marine resources like fish shoals and whales (Okamura 1995b: 23, 26; Okada et al. 1995: 98-9); while T. Kobayashi makes a very credible case for a symbolic and ritual monument formed by (shorter) totem poles (Okada et al. 1995: 99-103). The latter interpretation is all the more likely since such structures are also known from other Jōmon sites, particularly the jadeite-producing Hokuriku site Teraji; the fact that such jadeite was found at Sannai-Maruyama is another connection which is probably not coincidental.

site, which is geographically too distant from the Central Japan sample area, are outside the scope of this dissertation.

1.4.3 Interregional Exchange

A number of studies have concentrated on interregional interaction during the Jōmon, which is generally considered an integral part of the later Jōmon period, as stated above. Several studies involve social exchange such as marriage partners. Based on the presence of a few large pottery jars from a distinct style (Karakusamon) in a domestic context outside their usual distribution area, Sasaki Fujio (1982) suggests the exchange of brides during the Middle Jōmon, based on the premise that pottery was made by women. Harunari (1986) has hypothesised the exchange of marriage partners based on the distribution of distinct patterns of dental mutilation discovered in skulls, especially during the Final Jōmon.

Moreover, as will be further explained in the section on theory, several studies have focussed on the circulation of various economic and subsistence goods. The interregional exchange of goods such as 'jade, asphalt, amber, obsidian, pottery, salt, shell fish meat, etc.' (Takahashi et al. 1998: 68-9) has been documented. However, such studies generally concentrate on one single item or material, and merely identify the source area and subsequent distribution. It has been pointed out that the 'mode of exchange systems is hardly elucidated' (ibid). For example, in an English article, Suzuki Masao (1974) recorded the distribution range of various types of obsidian throughout the Palaeolithic and Jōmon periods, and pointed out their extensive circulation. The *shinshū* type of obsidian, which is of high-quality and is derived from various sources in the Japan Alps, enjoyed the widest distribution during the Middle Jōmon period, but obsidian from the tiny island of *Kōzu* supplemented this in the Coastal areas in particular. The least popular type was *Hakone*-type obsidian, which was of somewhat inferior quality and was derived from the volcanic mountain area 'Hakone', west of Kanagawa prefecture. With the exception of Barnes (1993), little attention has been paid to interregional interaction in English-language articles dealing with the Jōmon period. No doubt the very reason for this is the general scarcity of studies that combine description of the observed distribution patterns with an interpretation about Jōmon society.

1.4.4 Ritual evidence

Religion and ritual probably played an important role in Jōmon society. This is indicated by the often very elaborately decorated pottery; it is often suggested that Mid Middle Jōmon 'Katsusaka' type pottery decorations, which show various anthropomorphic and zoomorphic representations are a particularly strong reflection of ideological ideas (cf. Naumann 1974,

2000). Moreover, there are also frequent finds of "special" artefacts, that could not have served as tools, but for which use there is no other concrete explanation.

In 1969, Mizuno Masayoshi investigated the role of ritual in a Middle Jōmon settlement. By 'dissecting' the structure of the village in combination with the arrangement of ritual objects such as clay figurines, stone staffs and standing stone altars, Mizuno showed that during the later phase of its existence this settlement at the Yosukeone site in Nagano prefecture consisted of "a community (the whole settlement), two extended families (the village sectors), and small family elements (the small clusters" (Kato 1987: 33). Furthermore, on the basis of that information, he suggested the following division of ritual activities:

1. Plaza ceremonies (borne by the community)
2. Funeral ceremonies (borne by both the community and the extended families)
3. Rituals based within the community and the extended families:
 - Standing stone rituals - to animal and ancestral spirits (performed by male community members)
 - Figurine rituals - to the spirits of the grains and of motherhood (performed by female community members)
 - Stone staff rituals [*sekibō*] - to the spirits of sexual potency and growth (performed by male community members) (Mizuno Masayoshi, in: Kato 1987: 33).

One of the most representative "ritual artefacts" is the *dogū*, an anthropomorphic clay figurine, of which more than 10,000 have been found all over Japan, and which bears strong regional and chronological style characteristics. Most (but by no means all, cf. Nagamine 1986) figurines display "female" characteristics (breasts, signs of "pregnancy") and are therefore often associated with human fertility rites and the promotion of easy childbirth. Moreover, since in many cases (especially during the Middle Jōmon) these clay artefacts were found in pieces, it has been suggested that they were involved in rituals whereby figurines were ceremonially fragmented, after they had been constructed with this purpose in mind: namely by attaching limbs and body segments in easily breakable ways before baking the clay (Ono 1985). Interpretations about the purpose of this figurine ceremony are divided. Some authors connect clay figurines with a fertility cult. The ethnographer Torii Ryūzō (1922, cited in Noguchi and Esaka 1979: 94-5; Yoneda 1987: 72) perceived them as images of a 'mother-goddess' connected with human reproduction and prosperity and worshipped by a matriarchal society. Mizuno (1974) identifies in the figurine ritual, with its stages of production, ritual breakage and dispersal, strong parallels with the human life cycles (birth, pregnancy, death) and, by extension, with the regeneration of humans and their environment. According to some scholars, the ceremonial sacrifice of a clay 'goddess' in order to stimulate the regeneration of nature in general and human well-being in particular, has counterparts in world mythology (e.g. Yoshida

1986).¹³ A second interpretation is a function as a 'vicarious substitute', whereby an injury or illness is ritually transferred from the victim to the clay figurine by a healer or shaman, as suggested by Yawata Ichirô. Alternatively, figurines were used as a 'portable charm or talisman' (Kidder 1991). The majority of archaeologists are not committed to a single interpretation, instead taking the variety in *dogû* types and distribution as indications that use and meaning may not have been continuous (e.g. Nagamine 1986).

In any case, figurine practices were carried out to some extent throughout the Middle Jômon in central Japan, although the traditions were undoubtedly strongest in the Chûbu Mountain area, judging from the frequency of occurrence (both in terms of sites and of figurine parts). Although some of the figurines have been found undamaged, most have been broken into at least two (mostly three~seven) parts, and only a small part of the 'missing' figurines pieces have been retrieved. Moreover at Shakadô site in Yamanashi prefecture, two pieces from the same item were found at separate sub-settlements, 300 meters apart. These two facts have been frequently used to propose the existence of a shared ceremony involving several villages, possibly even including members of more distant communities (Yamagata 1992, Kidder 1991, Bausch MA dissertation).

A much less common clay object that is possibly connected to ritual activities is the 'prism-shaped clay object' (see **fig. 9A**). This small, enigmatic clay object, for which the exact use is unknown, was used mostly between the later Middle Jômon and early Late Jômon. Its distribution is found more frequently at sites in the Hokuriku district along the Japan Sea coast (including Fukui, Ishikawa, Toyama and Niigata prefectures), from which this practice is assumed to originate. However, it does occasionally occur at sites in the Chûbu and Kantô regions; it was found at nine sites within this sample.¹⁴ The prism-shaped clay objects are usually decorated with some dotted patterns (although unlike the usual pottery or clay figurine patterns), and are generally pierced length-wise (Harada 1988: 167).

Another well-known indicator of presumed ritual practice is the occurrence, from the second half of the Middle Jômon until the end of the Final Jômon, of *sekibô* (stone rods that are often interpreted as phallic symbols, i.e. the "male" part of the fertility rituals), stone structures (often circular) that are sometimes found in the vicinity of (probable) graveyards. Activities with phallic stone rod attributes are sometimes assumed to have been complementary to those involving clay figurines (see Mizuno's theory, above). The size of the phallic-shaped stone rods varies; some men-sized examples are known from the Middle Jômon in the Chûbu Mountain

¹³ Fujimori (1970) and Yoshida (1986, 1993) use the Hainuwele myth motif, found in other parts of Southwest Asia, as well as a later Japanese myth, to suggest that Middle Jômon figurine ritual may be linked to incipient Middle Jômon cultivation through the enactment of the sacrifice of a female deity to ensure a bountiful harvest.

¹⁴ Namely at sample site numbers 27, 54, 58, 90, 91, 115, 149, 159 and 175.

area (see **fig. 9B to D**). These artefacts are quite common at settlement sites, and are frequently found at those where clay figurines also occur.

1.4.5 Burial Practices

Frequently associated with a domestic context are *umegame*, large, usually ornamental jars that are usually found buried under the threshold or floor of pit dwellings. Sometimes the *umegame* (lit. 'burial jar') is interpreted as a way of interment for infants or stillborn babies, since in a few—very rare—cases, children's bones have been found in such a context, or at least nearby. Especially the fact that the *umegame* is often found buried exactly under the entrance of the dwelling pit has given rise to the idea that the soul of a deceased or stillborn infant will enter and be reborn into the womb of the childless woman stepping over the threshold (Watanabe M. 1983).¹⁵

An example of ritual bodily decoration is the dental mutilation, that is evident on some skulls: the deliberate pulling or carving of certain teeth, which resulted in a dental 'pattern'. Some have interpreted this practice as a rite of passage; the resulting patterns seem to reflect differences in gender and 'clan', as well as differences per region and period. In some regions, dental mutilation was already carried out in the Early Jōmon, but most known cases date from the Final Jōmon, when the practice apparently had spread over all Japan (Harunari 1986). However, at this point, there is still no conclusive evidence to support this theory. There are relatively few examples, because well-preserved bone material from the Jōmon is very scarce; moreover, the available examples suggest that this practice was limited to certain periods and regions.

Although during the Early and Middle Jōmon the mortuary context was found in or very close to the domestic context, with burial pits in the central open space of the settlement, mortuary customs changed in the Late and Final Jōmon. Stone-lined coffins were used in North Japan, and burials were located in circular earth embankments that were apart from settlements. A few of the graves contained various grave goods, including stone and shell ornaments (Okamura 1993, Nakamura 2000), as well as 'ritual' artefacts like sekibō, and red ochre was applied to the bodies (Takahashi et al. 1998). Evidence of secondary burial also became prevalent during the Final Jōmon; bones of multiple individuals were buried collectively. Other monumental locales with an association to the mortuary contexts are the stone circles, which first appeared at the start of the Late Jōmon. Underneath the stone alignments, evidence of burials were found; even in the case of the famous *Oyū* stone circle site in Akita prefecture,

¹⁵ Another, closely related theory concerns its possible use in the ritual burying of the umbilical cord and afterbirth, as a good-luck charm and to safeguard the future of the newborn baby. I have been told that a

which consists of two concentric stone circles (ca. 45m and 15m in diameter) and a 'sundial' made up by one large standing stone and several horizontal stones radiating out from it.

The Final Jōmon population concentration in North Japan is thought to have subsisted largely on hunting large sea and land mammals, and exploiting horse chestnuts, while the concentration in South Japan (Kyūshū) may have had contacts with the mainland, and used some cultivated plants like rice before the entry of the Yayoi people and their culture (Imamura 1996). During the Final Jōmon, the so-called *Kamegaoka* culture (another name for their pottery is *Obora*) flourished in the Tōhoku Northeast region. Imamura Keiji infers their prosperity on the basis of 'achievements in craftsmanship and the prevalence of ritual objects, rather than on the number of settlements and quantity of material as was the case with the Middle Jōmon' (Imamura 1996: 113), and suggests that the increase of both can be explained by 'the increasingly strict normative social order generated in response to the deteriorating natural environment' (ibid: 120). Similarly, in another study, the increase in quantity and circulation scope of exchange items as jadeite pendants, serpentinite polished adzes and asphalt was regarded as a Final Jōmon approach to widen the exchange networks and 'maintain the balance of these resources distributed in eastern Japan' (Abe in press).

On the whole, signs of minor social differentiation (for example differential burial goods: Okamura 1993, Nakamura 2000) are more obvious during the Late and Final Jōmon periods than before.

similar custom persisted in some parts of Japan until very recently, and therefore this theory is also widely accepted by Japanese archaeologists.

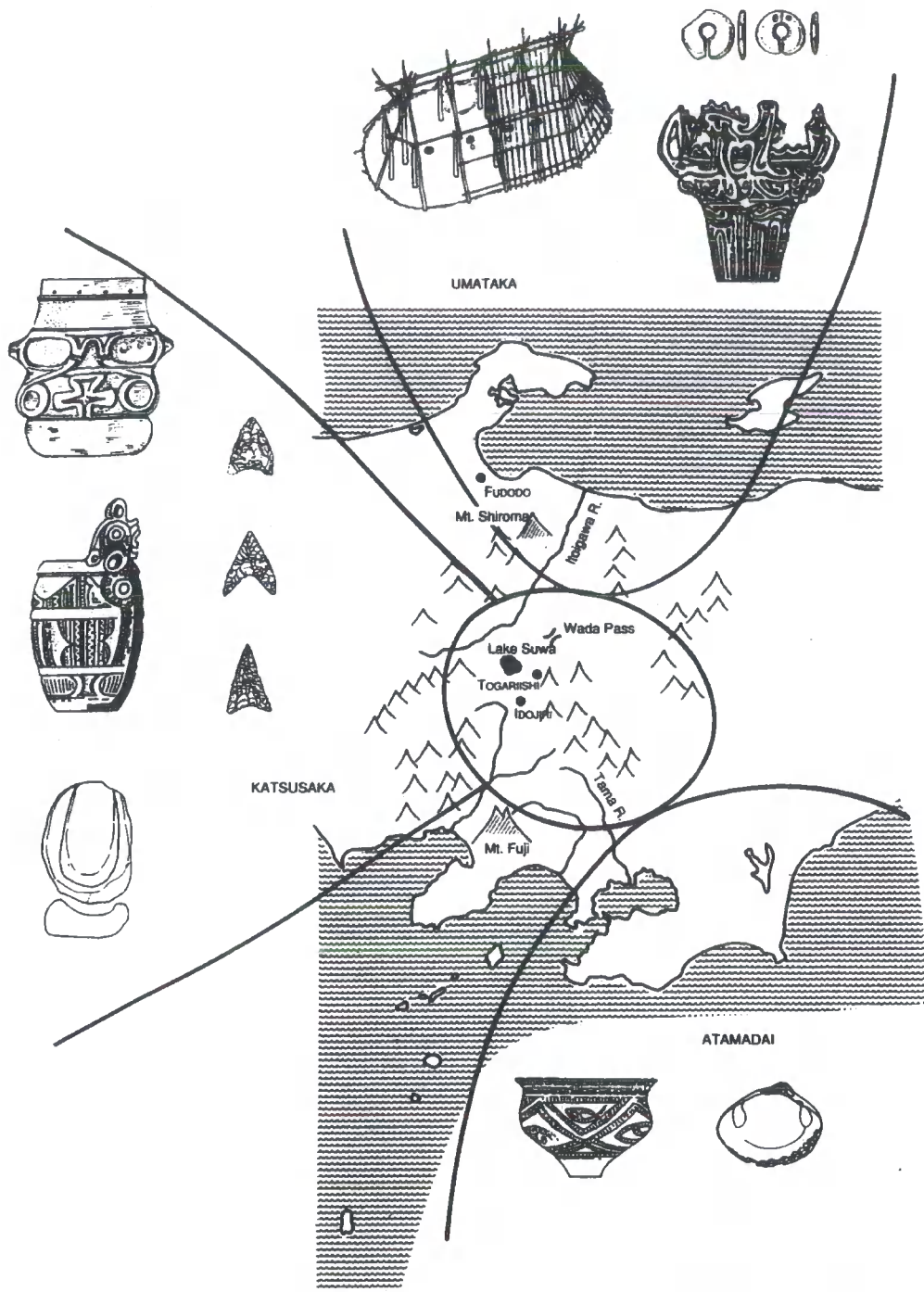
1.5 CONTEXTUALIZING THE STUDY AREA AND PERIOD

1.5.1 Central Japan

The differences in topography and environment within Central Japan area—particularly the contrast between the extremely rugged, mountainous and forest-covered areas of the Japan Alps in Nagano, and the ‘flat’ alluvial plains around Tokyo Bay in modern Tokyo and Kanagawa—are striking. As has been quantified by Koyama and Imamura, the population in both areas rose drastically during the Middle Jōmon. Now the Middle Jōmon period is thought to have lasted ca. 1,000 years (see **table 1** above), and is generally divided into three broad phases: the Early phase, the Mid phase and the Late phase, each characterised by their own distinctive pottery styles. Population densities during the Early phase (generally represented by the *Goryogadai* pottery style and some local variations) were still relatively low; relatively few houses have been discovered. It is likely that this was the shortest of the sub-periods, whereas the Mid phase and Late phase probably each lasted 350~400 years.

1.5.2 The Mid versus the Late Middle Jōmon phase

The population growth started properly during the Mid Middle Jōmon phase. In the Mountain area and West Kantō regions, this period was represented by the wide-spread ‘Katsusaka’ pottery style, which was very ornamental, and consisted of a great variety of shapes and forms, frequently displaying zoomorphic or anthropomorphic designs, which probably reflected ideological and religious norms (Barnes 1993, Imamura 1996, Naumann 1974, 2000). Due to stylistic changes in the pottery, circa four sub-phases have been identified (which in some areas are referred to as *Mujinazawa*, *Aramichi*, *Tōnai* and *Idojiri*). In addition to ornamental pottery, the *Katsusaka* ‘culture’ area is also known for its high quantities of portable ritual objects, the *dogū* clay figurines, for example at Shakadō site in the Kōfu Basin of modern Yamanashi. Particularly in the Mountain area, the Katsusaka people also had relatively easy access to high-quality obsidian, and to plant foods like nuts. In the East Kantō Peninsula at the Pacific Coast, the *Atamadai* pottery style was more common, although frequent contact with Katsusaka is clear due to many Katsusaka occurrences in the Coastal area. Far to the North, along the Japan Sea Coast, the first permanent settlements were formed, which participated in the production of jadeite pendants and serpentinite polished adzes. Based on different resources available to these groups (beadstone to the Hokuriku Coast, obsidian and plant foods to the Katsusaka, and marine food resources to the Atamadai people), Gina Barnes (1993: 89-91) has hypothesised a long-distance exchange network in which such items were exchanged during this ‘Mid’ phase of the Middle Jōmon (see **map 3**, next page).



Map 3: The (Early to Mid) Middle Jōmon Exchange Network between three Central Japan regions—each characterised by their own resources and pottery styles—as hypothesised by Gina Barnes (1993: 80,89; illustration from p. 90), involving the *Atamadai* pottery group at the Pacific Coast, the *Katsusaka* pottery group in the Chūbu and West Kantō regions and the *Umataka* pottery group at the Japan Sea Coast. During the Late Middle Jōmon, there is stronger tendency towards regionalisation (more diversity in pottery styles), but the interregional networks are maintained.

During the Late phase of the Middle Jōmon, some aspects had changed and some remained the same. Various characteristics of the previous period remained or increased: populations continued to increase exponentially, swelling the existing settlements that were formed during the Mid phase; the same types of artefacts and resources continued to be used. The scope of circulation of exchange items also increased in tandem with the population; moreover, especially in the Mountain areas, ritual paraphernalia such as clay figurines were still used, even if the styles of the pottery vessels themselves had become less ostentatious and ornamental.

However, during the Late Middle Jōmon, there was greater differentiation among pottery styles, and their spatial division was somewhat different from before. Two distinct ceramic styles were found in the Mountain area: the *Karakusamon* style was representative in the Valleys of Nagano, the *Sori* style more in the large Kōfu Basin of Yamanashi prefecture. In the Yatsugadake mountains and at the northeast side of the Suwa Lake, both styles were found, although *Sori* was slightly more predominant. The *Kasori E* style was the predominant pottery style in both the West and East Kantō areas; however in the West Kantō plains, the *Sori* style was also commonly present. At many sites in this alluvial area, a 'mix' form with both *Sori* and *Kasori E* characteristics was found, usually referred to as the *Renkōmon*-style. Representative examples of these three pottery styles, together with some contemporaneous styles from the Hokuriku Japan Sea area, are shown in **fig. 5-8**, together with the associated clay figurines.

Ceremonies involving clay figurine practices remained strongest in the Mountain Area, both in the *Karakusamon* and *Sori* distribution areas, where most sites contained at least a few broken figurine parts. The fact that only a small number of unbroken figurines was discovered, shows that they were made to be freestanding, with considerable attention to detail, and were ca. 25cm high. In contrast, the distribution of *Kasori E* figurines at Kantō Plain settlements is less dense; moreover, the figurines themselves are much smaller, and far more crudely made. In the East Kantō Peninsula of Chiba, the former distribution area of *Atamadai*, *Kasori E*-type clay figurines remained a rare occurrence.

In addition to clay figurines, the 'phallic' stone rods (see **fig. 9B-D**) also played an important part in the social and ritual life during the Late Middle Jōmon. The size of these items was variable; most were no longer than one's underarm—and thinner in diameter—but some were men-high, as the illustration shows. Unlike clay figurines, *sekibō* stone rods are also frequently distributed at sites in the East Kantō region. I have included the presence of clay figurines and phallic stone rods in particular in my research, as indicators of ritual practices.

Although the 'prism-shaped' clay objects (**fig. 9A**)—most frequently found in the Japan Sea Coast area—are relatively rare in Central Japan, and their exact use is unknown, their distribution in the sample has also been recorded, as a potential indicator of the wide-ranging contacts of the settlements where they have been found.

1.5.3 Periodization of the Late Middle Jōmon

The Late Middle Jōmon is usually divided into four to five sub-periods based on pottery style developments; the number of phases depends on the pottery styles. The Kasori E style in the Kantō areas has four sub-periods; Sori and Karakusamon are both usually divided into five sub-periods. Some attempts at more fine-tuned and elaborate local chronology schedules based on pottery sequences have been made in the 1990s, particularly in the Kantō region around Tokyo (for example in report nos. 86, 87 and 88). Unfortunately it soon became clear that these new schedules made interregional comparisons practically impossible, and most site reports still adhere to the ‘established’ sub-periods, even though these are rough and cover a very long period.

For the purposes of the dissertation, I have artificially conflated these four to five sub-periods even further, into three periods, that can be more easily compared between the three regions: (1) the start, (2) the middle and (3) the end. At the start of the Late Middle Jōmon period, the number of houses increased sharply, a tendency that began during the final part of the ‘Katsusaka’ Mid Middle Jōmon, and continued even stronger after the early Late Middle Jōmon. At almost all sites in the study, the second, ‘middle’ sub-period was by far the most prosperous, and showed the greatest expansion of house numbers and artefacts at sites. During the final phase of the Late Middle Jōmon, the number of houses began to decline at many sites, and towards the very end of this phase, house numbers are low or absent—unless the site continued during the Late Jōmon period.

My first sub-period (the ‘start’) involves Kasori E 1, Sori I and Karakusamon I, as well as transitional periods, in which the pottery style still shows some characteristics of the final moments of the Katsusaka style. My second sub-period (‘middle’) includes Kasori E 2, Sori 2 and 3 and Karakusamon 2 and 3. The final sub-period covers Kasori E 3 and 4, Sori 4 and 5 and Karakusamon 4 and 5. Covering the very final stages of the Late Middle Jōmon, there are some transitional sites, which show characteristics of both Kasori E 4 and the very start of the Late Jōmon, which is characterised by the transitional *Shomyodera* pottery style.

1.5.4 Sites, settlements and subsistence

As described above, the Chūbu Mountains, West Kantō and East Kantō all consisted of different microenvironments and had access to different combinations of food resources. The mountain people relied on hunting, collecting forest plant foods, and riverine fishing. The West Kantō people in the alluvial plains had access to similar resources, but may have placed more emphasis on the collection of roots than on nut-collecting (Imamura 1996): in this area, the majority of the subsistence toolkit at almost all sites consisted of chipped stone hoes, probably used for digging tubers. Furthermore, the Kantō Plains people lived in closer proximity of the sea, and could take

advantage of all kinds of marine resources. For those settlements in the West Kantô (East Tokyo, South and East Kanagawa) and the majority of sites on the Chiba Peninsula that were located next to the coastline, subsistence was even more stable.

In any case, during the Middle Jômon this area prospered. All three regions contain a mixture of site types: some sites yield only a few houses, others more than a hundred. Larger settlements are found in the mountain area and the alluvial plains of the West Kantô, as well as in the East Kantô. Along the coast of the East Kantô peninsula, where marine resources played an important part in subsistence, many large-scale *kaizuka* shell midden sites with high house numbers were found. At large coastal settlement sites like Kusakari with *kaizuka*, burials often took place in deserted house pits, and because of the progressive movement of the shell midden contents into the settlement, the calcium deposits often helped preserve organic materials, including human remains. In the Mountain area, human (or other organic) remains usually don't survive due to the acidic soil; however in the case of Kitamura site (a largely Late Jômon site, no. 3 in the sample), the site was protected by a thick clay layer (probably caused by a later river flooding), and yielded surprisingly well-preserved Late Jômon burials.

With the further increase of population in Central Japan during the Late phase of the Middle Jômon, pressure on the environment is likely to have increased considerably, leading to potential subsistence shortages. Therefore, the existence of long-distance networks as hypothesised by Barnes 1993, may have been even more pertinent to the welfare (or even survival) of the Late Middle Jômon people than before. Therefore the aim of this dissertation is to investigate the evidence for Late Middle Jômon long distance exchange networks, and their place in society.

1.5.5 A Late Middle Jômon interregional interaction sphere

My specific interest is in the interaction between these very different environments, characterised by different styles of pottery and clay figurines. There was clearly interaction between these different regions: pottery vessels are frequently found (often in small numbers) in areas outside their normal distribution sphere; moreover stone resources are also distributed at great distances from their source areas. So far, the circulation of exchange items has only been described with reference to a single type of material or artefact: jadeite, or obsidian, or chert, or pottery—but seldom has their possible connection with other goods been taken into account, let alone their role in Jômon social structure. Only Barnes' 1993 theory has suggested the existence of a complex exchange sphere, which included material resources (obsidian, beadstone) as well as exchange of subsistence goods like plant foods and (dried) marine shellfish.

Unfortunately there is no scope in this dissertation for research on food resources, because this is an elaborate research topic in its own: very specialised faunal and botanical

techniques are necessary to identify these, due to the problems inherent in organic material preservation (or lack of it). Therefore this research will concentrate on the exchange of various 'stone' materials during the Late Middle Jōmon, for which most data are available: jadeite, amber, serpentinite and obsidian, and determine how these items were exchanged, and whether their circulation was connected and part of a wider social exchange system. I have deliberately chosen items with different kinds of functions, which would have had a different role in society. Such differences may have reflected strongly on the way in which they were exchanged.

1.5.6 Jadeite, amber, serpentinite and obsidian

This study focuses on jadeite and amber, rare minerals that were used for the production of pendant ornaments. These ornaments were both produced exclusively at distinct source areas (each at opposite coasts of Central Japan), and were distributed throughout Central Japan—and beyond. Exchange of these items was clearly very widespread; in order to understand this network better, their consumption (on the base of find contexts), their circulation (looking at variable characteristics of distribution sites) and their production sites (under which circumstances production started and finished)—as well as their relation to other exchange objects that circulated over long distances, will be investigated. A comparison is also made with other stone ornaments of different, less scarce materials, to see whether jadeite and amber were truly regarded as more valued objects.

One of the hypotheses underlying this research involves the close relation between the exchange of such rare mineral ornaments, and the presence and exchange of other minerals used in exchange mechanisms, such as obsidian and serpentinite.

Obsidian (see **fig. 10**) is a black, volcanic glass, extremely suitable for the production of small, sharp-edged tools, and was mainly derived from three source areas (*Shinshū* in the Chūbu Mountains, *Kōzu Island* ca. 170km from modern Tokyo prefecture, and 54km from Kanagawa prefecture coast, and *Hakone* in the mountain area south-west of the West Kantō Plains); throughout Central Japan material from these sources was used for arrowheads. The importance of obsidian for Middle Jōmon hunters can be easily demonstrated: in the sample of 175 sites in Central Japan, there are only very few sites where obsidian arrowheads are entirely absent; at most sites, at least a majority of arrowheads was made of obsidian.

Serpentinite is a greenish stone—with a smooth, marbled surface that is very attractive when polished—that was mainly used for the production of polished stone adzes (used for lumbering or woodworking). These adzes are considered quite attractive (e.g. Yamamoto: personal communication 2002; see **fig. 11** to make up one's own mind). Such adzes are also found throughout Central Japan, although their origin is somewhat more controversial. Evidence of serpentinite production so far only has been found at the jadeite ornament production sites, in

the narrow Hokuriku area along the Japan Sea Coast. However, it is possible that some other sources were used as well; for example, serpentinite is also located in the *Sambagawa* Metamorphic belt, just to the north of Tokyo. Nevertheless, so far the extent of serpentinite sources that were exploited during the Middle Jōmon is unknown; the Hokuriku production area is the only factual evidence.

Unlike jadeite and amber ornaments, obsidian for arrowheads and serpentinite polished adzes are materials used for every-day, utilitarian tools, and are therefore likely to have been categorised differently in the minds of Jōmon people. As such, it will be interesting to further compare the mechanisms behind their exchange and circulation with those of the ornaments, and determine the extent to which these exchanges were related to each other. Nevertheless, the main focus in this dissertation is on jadeite and amber.

CHAPTER TWO: THEORETICAL APPROACHES TOWARDS EXCHANGE AND INTERACTION

2.1 INTRODUCTION

As previously mentioned in the introduction, the topic of this research is interregional interaction as carried out by hunter-gatherer communities in central Japan, ca. 4000BP, with a particular focus on the social context in which the exchange of various objects originating from different areas took place. I am mainly concentrating on stone ornaments, particularly those made of the rare materials jade and amber, but am supplementing my findings with a minor analysis of serpentinite adzes and obsidian arrowheads.

Although the main temporal orientation of this dissertation is on the Late phase of the Middle Jōmon period, this research topic was inspired by a hypothesis concerning ‘interaction spheres in Central Japan’ during the preceding period, the Mid Middle Jōmon. Gina Barnes (1993: 80, 89-91) has postulated a long-distance exchange system (similar to the Hopewellian Interaction Sphere, cf. Braun 1986) during the first of the Middle Jōmon, whereby the people from the Chūbu Central Mountain area with their Katsusaka-style pottery, ritual traditions, obsidian and nut resources¹⁶ played a pivotal role, obtaining jadeite from the people with representative *Umataka*-style pottery from the Japan Sea coast Hokuriku area¹⁷ and partially passing these on to the *Atamadai*-style people at the Tokyo Bay (see **map 3** in previous chapter). In this she focussed especially on the relationship between Chūbu and Tokyo Bay, suggesting that the *Katsusaka* people traded obsidian and nuts for dried shellfish and marine products with the *Otamadai* people and beadstone from the *Umataka*, whereby *Katsusaka* ritual facilities are seen to ‘regulate both the extraction of local resources and their actual exchange’ (Barnes 1993: 89).

Compared to the earlier Middle Jōmon, several changes had taken place during the Late Middle Jōmon: population densities in Central Japan had increased at a surprising rate. Moreover, there was a tendency towards greater regionalization with regard to pottery style: *Katsusaka* pottery style was replaced by the *Karakusamon* and *Sori* styles in the Mountain area; *Sori* and *Kasori E* styles in the West Kantō area, whereas in the former Tokyo Bay area, *Atamadai* was replaced by the *Kasori E* style. However, there is a strong sense of continuity in other aspects: for example, activities like figurine ritual and interregional exchange—including

¹⁶ Many tools for plant food processes are found at Idojiri and Togariishi sites; moreover the piedmont area is said to be ‘favourable’ for deciduous acorn, chestnut and walnut (p. 80).

¹⁷ A focus is placed on large pitdwellings with multiple hearths such as found at Fudodo site; it is suggested that these were ‘community gathering or work places, especially during the long snow-bound winters of the northwest Honshū coast, which receives all the precipitation of the winter winds from Siberia sweeping across the Japan Sea’ (p. 80).

archaeologically visible goods made of jadeite and obsidian—still took place unabated, and evidence of greater social differentiation as seen in particularly rich burials (Barnes 1993: 89) was still absent.

During my stay in Japan from 1995 to 1997 (sponsored by the *Monbushō*, the Japanese Ministry of Education) I had wonderful opportunities to visit many Middle Jōmon excavation sites, and see the material culture in the many—often extremely local—archaeological museums throughout the Central Japan region. In addition to this, I could collect many articles on Middle Jōmon Japan, and—perhaps most importantly—was able to collect extensive data on 175 sites from site reports stored by the various research centres and university libraries. I deliberately collected a broad variety of data from these excavation reports, including information on the size of the excavation, the extent of the house number and habitation history of the settlement; the presence of various tool and artefact categories, the materials of which they were made and the contexts (temporal and spatial) in which they were found. Armed with this varied data, a more holistic examination of the phenomenon of ‘long-distance exchange network’ during the Middle Jōmon period will be carried out.

However first this study has to be placed in its theoretical context, seeking a balance between western and Japanese approaches.

2.2 WESTERN THEORY

2.2.1 Developments in Western archaeological thought

The great frustration and great inspiration of archaeology both lie in the fact that it tries to reconstruct the distant past by means of very fragmentary clues (i.e. excavated data like ecofacts, artefacts, structures)—a process that might be compared to trying to finish a jigsaw-puzzle that is missing most of its pieces. As a well-known archaeologist said, ‘We are seeking reliable cognitive devices; we are looking for "Rosetta Stones" that permit the accurate conversion from observation on statics to statement about dynamics.’ (Binford 1981: 25). However, unsurprisingly there has been considerable disagreement on how to convert the static, silent archaeological record into a dynamic reconstruction of the past, and particularly during the 20th century, western theoretical thinking has undergone some radical changes. The following section presents a generalised overview of some of the focuses of different schools of archaeological thought—mainly because of the effect these have on approaches in (western) exchange studies.

However, a caveat must be made: most of these later schools of theory are strongly associated with western (and particularly Anglo-Saxon) perspectives; naturally, due to the worldwide distribution of the English-speaking academia, much theoretical discourse takes place in English. However due to language problems most theoretical developments are (still) inaccessible to

archaeologists in non-western countries, who are neither influenced by these ideas nor are in a position to participate in the debates. This is a pity; I believe that current archaeological theory eventually is in danger of becoming too opinionated, and that non-western cultural perspectives would have a great deal to contribute. Rather than lamenting differences in theoretical standard or dismissing non-western archaeological interpretations because of differences in approach and particularly frame of reference, it is important to come to a mutual understanding of these different perspectives. (e.g. Mizoguchi 2002 as example of synthesis between East and West?)

Before the onslaught of the New Archaeology criticism in the 1960s, 'traditional' archaeological theory attempted to reconstruct the past by concentrating mainly on descriptions and classifications of artefacts, with the intention to identify past human populations. Gordon Childe represented this view as such:

'We find certain types of remains—pots, implements, ornaments, burial rites, and house forms—constantly recurring together. Such a complex of associated traits we shall term a 'cultural group' or just a "culture". We assume that such a complex is the material expression of what today would be called a "people" (Childe 1929: v-vi; cited from Johnson 1999: 16).

There are various problems inherent in this "normative" perspective on culture, which holds that artefacts represent cultural norms, and that these norms represent a particular culture. For example, it encourages the tendencies to concentrate to such a degree on typology, that wider similarities are overlooked ("particularizing"), and to have a static perception of the nature of cultures: change is explained always in external factors (migration of people, or diffusion of ideas between peoples). Another, potentially very serious, problem concerns the temptation to equate Childe's "cultures" with (the ancestors of existing) ethnic groups, which has been frequently abused in political and nationalistic contexts (Shennan 1994, Jones 1997). There is little doubt that intellectual developments in archaeology since the 1960s have progressed a great deal and contributed much towards greater understanding of the prehistoric past. Nevertheless, it is important to remember that although 'traditional' ideas have been severely criticised by post-1960s archaeological theorists (most notably of Anglo-Saxon origin), this perspective is still extremely influential (if not predominant) in the archaeology of most countries—including Japan, as will be shown later.

The New Archaeology movement—spearheaded by Americans like Lewis Binford who came from a different tradition from most European archaeologists (i.e. an academic association of archaeology with anthropology instead of history)—distanced themselves from such thinking, and introduced methods and theory from other disciplines, particularly the natural and social sciences, in order to make archaeology more 'scientific' and dynamic. These 'scientific' methodologies propagated by the New Archaeology (also known as Processual Archaeology,

due to a concern with underlying 'processes' to explain change) also generated various new theoretical foci, including strong belief in:

(a) clear problem orientation and avoidance of "biases"; as Binford puts it, recommending the methodological use of experimental, historical or ethno-archaeological data:

'Since we construct the past *inferentially* we cannot use our construction to test the accuracy of the premises that provided the basis for the characteristics constructed.... Therefore our methods for constructing the past must be intellectually *independent* of our theories for explaining the past' (Binford 1981: 29, emphasis added by me)....

- (b) "systems" thinking, which subdivides culture into interrelated sub-systems (e.g. economic, social, ritual, trade, cf. Binford 1962), and the idea of underlying cultural 'processes';
- (c) ecological adaptationism, which stresses the importance of changes in subsistence and environment in explaining change);
- (d) the explanatory powers of statistics, sampling strategies etc. to analyse patterns of variability, and reconstruct social change (e.g. Renfrew 1975, 1977);
- (e) a strong belief in cultural evolution whereby societies are expected to evolve in a natural sequence from 'bands' to 'tribes' to 'chiefdoms' to 'states' (e.g. Service 1962, Carneiro 1962).

A strong counter-reaction on New Archaeology followed in the 1980s, led by disenchanted ex-Processualists like Ian Hodder. 'Post-Processual' (also known as 'Interpretative') Archaeology distances itself more from the predominantly economic and materialist focuses of the New Archaeology, and its blind reliance on scientific analysis, and is generally more interested in social and ideological aspects of the past, particularly involving context and meaning. With regard to exchange studies, Hodder aptly summarises the dialectical relations between both approaches:

'Formal mathematical approaches to the study of prehistoric exchange are of value in that they allow better description of functional relationships. But understanding exchange processes depends on an adequate description of the social context within which exchange occurs. The substantivist [i.e. Processual] model has all the limitations of a functionalist and evolutionary focus in which society is analysed as a synchronic set of roles and obligations striving to maintain comfortable equilibrium with the environment.... There is more to exchange than economic advantage—even if social advantage is included in that term. Exchange involves the transfer of items that have symbolical and categorical associations. Within any strategy of legitimation, the symbolism of objects is manipulated in the construction of relations of dominance. The exchange of appropriate items forms social obligations, status and power, but it also legitimates as it forms. A fully contextual approach to exchange must incorporate the symbolism of the objects exchanged' (Hodder 1982b: 209).

Many recent archaeological studies (e.g. Barrett 1994, Lucy 1999, Chapman 2002)—including Hodder, as the previous quote shows—are strongly influenced by sociological ideas on the nature of human 'agency', most notably from Anthony Giddens (1979, 1981) and Pierre

Bourdieu (1977). Giddens' 'structuration' theory is the counterpart of Systems theory: individuals are considered to be active and knowledgeable participants ('agents') in society, who—although confined by their social environment—can manipulate and bend the rules, sometimes to the effect that the social structure itself is transformed.¹⁸ Consequently, compared to New Archaeology, Post-processual theory is also far more individualistic in nature; both with regard to the prehistoric subjects, who are no longer considered hapless drones, and introspective tendencies of the archaeologist, who examines his/her own hermeneutic biases in terms of personal background, for example gender, ethnicity, and age.

2.2.2 Approaches to interaction and exchange studies

Archaeological studies on exchange of course owe a great deal to studies from other disciplines in Social Sciences—especially to Anthropology, Sociology and Social Economy.

Of particular influence in understanding the types of exchange present in non-monetary economies, and their strong socio-political nature, have been the 1920s fieldwork and seminal studies of anthropologists Bronislaw Malinowski and Marcel Mauss. In *Argonauts of the Western Pacific* (1922), Malinowski described the 'Kula', the Melanesian 'gift' exchange system whereby valuables circulated among certain inhabitants of the Trobriand Islands, forming the basis of relationships that also allowed the exchange of everyday commodities.¹⁹ In answer to this, Marcel Mauss' *The Gift* (1970; first published in 1925; referring to the Kula and other Oceanic forms of exchange, but also to the American North West Coast *powlatch* and many other pre-Capitalist societies), enlarged upon the political nature of the 'gift', the purpose of which was to create strong social obligations and relations between groups. Importantly, these studies demonstrated that in non-capitalist economies, the system of gift exchange is not merely economical: there exists a political, social and moral obligation to give, receive, and (after the proper amount of time has lapsed), repay gifts—failure to do so results in social degradation or even war. These studies have formed the basis for a whole range of research on the nature of the gift.

For example, an early but very influential archaeological study by Grahame Clark (1965) on the exchange of British Neolithic polished stone axes drew heavily on ethnographic sources (Australia, Melanesia and New Zealand), in order to explain the reciprocal exchange distribution patterns of Neolithic polished stone axes in Britain as a system of gift exchange

¹⁸ In a similar vein, Bourdieu's "habitus" (a kind of implicit knowledge held by people with a shared background) is part of such a social environment, which shapes and is shaped by individual members.

¹⁹ Much later feminist anthropological research like that of Marilyn Strathern (1988) and Annette Weiner (e.g. 1992) has sophisticated these findings, and pointed out the importance of gender-related biases inherent in Malinowski's work.

Very formative for the “Processual” studies on exchange have been several ideas borrowed from social economy and anthropology, which defined the nature of exchange and distinguished between different types of exchange. These definitions of social interaction formed the basis of archaeological interpretations concerned with distribution patterns and spatial analysis.

Karl Polanyi, a social economist of the school of *Substantivism*,²⁰ defined the nature of exchange as the ‘mutual appropriative movement of goods between hands (Polanyi 1957: 266), and distinguished three patterns to empirical economy, the first two of which usually occur together in non-market societies: (a) reciprocity: movements between correlative points of “symmetrical” [e.g. kinship] groupings; (b) redistribution: appropriational movements toward an allocative centre and out of it again; (market) exchange: vice-versa movements taking place under a market system, requiring system of price-making markets (ibid: 250-3).

This concept of ‘reciprocity’, particularly in the context of prehistoric long-distance exchange, was further analysed in Marshall Sahlins’ *Stone Age Economics*, first published in 1972. Using extensive ethnological accounts of reciprocal exchange in ‘primitive cultures’,²¹ Sahlins proposes a useful classification of various forms of reciprocal exchange:

- A. Generalised reciprocity (better known as ‘positive reciprocity’) e.g. food-sharing among family, Malinowski idea of ‘pure gift’; hospitality, kinship dues, chiefly dues and ‘noblesse oblige’, in other words all exchange whereby a direct material return is not required. Ultimately, there may be a counter-obligation, but this is not stipulated by time, quantity or quality, and will depend on the needs of both donor and recipient (Sahlins 1974: 194)
- B. Balanced reciprocity: direct exchange within a social context, whereby the reciprocation is of equivalent worth as what is received and will be fulfilled within a finite and narrow period, e.g. marital contracts, formal kin or friendships, alliances and peace agreements. This covers a great deal of gift-exchange and exchange with ‘primitive money’ (ibid: 194-5).
- C. Negative reciprocity: self-interested form of exchange whereby both parties attempt to get the better deal at the expense of the other, using acts such as haggling, barter, gambling, bullying or theft.

The critical variable towards the extent of any form of reciprocity (economic, social and moral) is kinship distance, often literally in a spatial sense, whereby social distance is represented by sectors (see **fig. 12**). The tendency to share altruistically is strongest within immediate family, followed by lineage or village sector (i.e. the people with whom one has to coexist peacefully), whereas balanced reciprocity is often carried out with more distant kin, or members of the same tribe or larger social unit. In contrast, the concept of non-kin—especially in unrelated groups like other tribes—is often synonymous with strangers or even enemies, who may be swindled

²⁰ In contrast to the Formalist school of economic theory, the Substantivists deny that our modern, Capitalist ideas of economic rationality can be applied to other non-western cultures (Johnson 1999:191, 194)

²¹ Defined as ‘those lacking a political state’ (Sahlins 1974: 188).

(or worse) with impunity.²² In this light, it is easier to grasp why complicated transactions like the *Kula* and other mechanisms of long-distance gift exchange are carried out: to negate the possibility of negative reciprocity, and to create and maintain mutually useful, peaceful alliances which are more or less equivalent to the idea of kinship.

Published in the influential *Exchange systems in Prehistory* (Earle & Ericson, eds. 1977), George Dalton identified different forms of transactions, each involving different of exchange commodities (see **table 2**), the ‘spheres of exchange’. Moreover, he emphasised the importance of the creation of social alliances and peace—which set the stage for other mutually advantageous activities like the trade of ordinary goods and emergency access to food and shelter—and the essential role of the ceremonial exchange of ‘primitive valuables’ between groups in creating those relationships. At the same time as building alliances, ceremonial exchange provided a stage for friendly [i.e. non-lethal] rivalry, in which leaders would try to outdo each other in ‘generosity’, acquire valuables, but especially enhance their status and power within and between the communities.

Table 2: Four occasions for exchange in stateless societies (after Dalton 1977: 203)

<i>Women and things transacted between allies</i>	<i>Alliances</i>
Valuables; Women	Warfare; raiding; revenge; peacemaking; death compensation
Women; Valuables; Ordinary Goods	Marriage; bridewealth; life-long transactions with affinally related groups (inlaws) etc
Valuables; Food Stuffs	Ceremonial exchanges: <i>Kula</i> ; Potlatch; Moka + Feasting
Anything moveable not locally available/ allies visit to use natural resources	Ordinary external trade (reciprocity or market exchange); allies come to fish in host’s waters, quarry stone etc.

What did these anthropological models mean to archaeology? The New Archaeology approach to exchange is succinctly summarised by Timothy Earle: ‘To describe exchange, the

²² Other useful criteria for understanding reciprocity proposed by Sahlins are vertical in nature: kinship rank and wealth. These conditions appear to closely approach Polanyi’s category of redistribution: kinship ranking, unlike feudalism, implies dues and duties for both sides. Indeed generally primitive chieftainship are said to be paternalistic in nature, providing generously for his followers: *noblesse oblige*—although conversely, they have to assist him in mass-accumulations for political grandeur. In the case of wealth, the rule of thumb in primitive societies is generally: the fortunate have a moral obligation to help the poor.

prehistorian has three interrelated jobs: (a) to source the commodities of exchange, (b) to describe the spatial patterning of the commodities, and (c) to reconstruct the organization of the prehistoric society' (Earle 1982: 3). The first is done by chemical analysis; the second by regional point scatters, regression analysis and trend-surface analysis, but the third step presented some problems. As the previous section showed, Processual archaeologists were particularly strong on ecological and materialist explanations.

However, Colin Renfrew (a New Archaeologist with a strong interest in social and ideological contexts) contributed the most influential approach towards exchange studies in 1960s and 1970s by bridging the gap between these scientific methods of spatial analysis, and the anthropological insights on the social context of exchange (Renfrew 1975, 1977, 1993, Renfrew & Bahn 1991).²³ Renfrew proposes that if a certain object is traced to a particular source area, its distribution can be analysed in spatial analysis, whereby plotting quantity against distance from source area would result in various types fall-off curves, which represent different exchange mechanisms—and distinguish different types of social structures. Four distinctions of exchange types identified through Renfrew's 'Linear Distance Regression' analyses that are relevant to prehistoric exchange are (see **fig. 13**):

- (1) Reciprocal relations are represented by the 'down-the-line' model, which consists of a large number of exchanges, whereby the quantity of the exchange item gradually decreases because consecutively individual exchange partners keep something and pass on the remainder. Therefore the curve is expected to show exponential fall-off in abundance of commodity with distance from source. Close to the 'contact zone' (i.e. source), distribution quantities remain high, but after a certain point distance, these quantities decline, showing rapid fall-off). 'A regular spacing of villages or exchanges is not a necessary part of the theory; the crux... is a long series of successive exchanges of material from a point source' (Renfrew 1975: 47-8).
- (2) Central place (re)distribution (directional trade) can be recognised when the fall-off symmetry of the plotted curve is broken by one (spatially distant) point at which a peak is seen (as shown on the second diagram in **fig. 13**).
- (3) Freelance trade is characterised by a much less rapid fall-off curve within the range of activities of a middleman trader, followed by very rapid fall-off outside of it.

²³ As Robin Torrence said 'it was the first time that an archaeologist had described the link between an anthropological model of primitive exchange, and the material consequences of it which were potentially recoverable archaeologically (exponential fall-off curve)' (Torrence 1986:14-15) ; in other words, this method enabled the *quantification* of prehistoric exchange.

(4) Prestige chain trade takes place between specific notable persons, who will live at great distance from each other. This type is also potentially used in subsequent exchanges (e.g. the Kula), and results in a much more gradual fall-off curve. Unlike the goods exchanged in reciprocal relations, these prestige items are not available to everyone: only to the 'elite' members of the same socio-political network.

Similar approaches have been applied successfully by other archaeologists, e.g. on Mayan obsidian (Sydris 1977); Formative Mesoamerican obsidian (Pires-Ferreira 1976), Australian Aboriginal stone axes (McBryde & Harrison 1981); Baltic amber (Beck & Shennan 1991), etc. Nevertheless, there are some serious problems with this methodology, for example the fact that in quantitative computer modelling, different types of distribution can produce the same fall-off curve: the problem of *equifinality* (Hodder and Orton 1976), a problem that Renfrew himself acknowledged (Renfrew 1977). Such problems eventually caused some archaeologists to become disenchanted with this approach (Earle 1982: 7); consequently, they decided to concentrate more on social and symbolic contexts (i.e. Hodder 1982b).

From the end of the 1980s onwards, many studies on exchange—whilst often still incorporating aspects of Renfrew's distance regression analysis—also tend to be more 'post-processual' in orientation, taking social and symbolic contexts in account. Very strong influences, in addition to those of Giddens and Bourdieu mentioned above, are again exercised by anthropological writers such as Gregory, Weiner, Appadurai and Helms, who concentrate much on the distinctions between commodities and valuables, how value is constituted symbolically, and the flexibility of such value.

C.A. Gregory distinguishes between the exchange of 'ordinary' commodities, which are alienable and have no symbolic or special value, and of gifts, which are inalienable, require personal relations between people and can only be exchanged within certain social contexts. In other words,

'In a commodity exchange, the reciprocal independence of the transactors, and the alienability of the objects transacted, means that the exchange relation established is between the objects rather than the subjects. Thus commodity exchanges objectify social relations between people and they appear as a quantitative relation between the objects exchanged' (Gregory 1982: 45).

In contrast to commodities, inalienable objects are said to contain a subjective value that far surpasses exchange value; their possession creates social difference, the resulting tension ultimately causes change (Weiner 1992). Things that are inalienable²⁴ authenticate

²⁴ Weiner points out that the aspect of inalienability may include goods, but also land (e.g. European nobility), and knowledge (e.g. Aboriginal 'Dreamtime')

'cosmological origins, kinship and political histories' of an individual and his community (ibid: 9), and the mere possession of them increases and enhances power, status and wealth and general well-being, while their loss diminishes the self, and by extension the group to which the person belongs (ibid: 7). Annette Weiner's concept of 'keeping-while-giving' in reciprocal gift exchange [such as the Kula or the Potlatch] indicates the paradoxical strategies in using exchange systems to attempt acquiring—even temporarily—a famed inalienable item from an exchange partner (simultaneously adding to the item's own prestigious history, and enhancing one's own status with someone else's glory) while trying to hold back those valuables most closely connected to one's own history and identity.

A slightly different approach to the perceived dichotomy of commodity and gift exchange is taken by Arjun Appadurai (1986), who suggests that these concepts need not be diametrically opposed, since the political nature of exchange ensures that every exchanged object goes through different phases of value during its use life, creating a 'biography'. In other words, Appadurai points out that the relative status of an exchange object is always context-dependent: influenced by temporal, cultural and/or social factors. He argues that

'Economic exchange creates value. Value is embodied in commodities that are exchanged. Focusing on the things that are exchanged, rather than simply on the forms or functions of exchange, makes it possible to argue that what creates the link between exchange and value is politics, construed broadly. This argument ... justifies the conceit that commodities, like persons, have social lives' (Appadurai 1986: 3).

Moreover, Appadurai emphasised the considerable social and political manipulation and scheming engaged in by both 'haves' and 'have-nots' in order to monopolize or obtain valued goods, as well as 'secret' knowledge about their production or consumption.

In any case, the appeal of the 'exotic' has always been a constant in the zeal for participating in long-distance exchange—and the underlying motives need not be concentrated just on material objects. Drawing upon a wide-ranging and long-standing corpus of anthropological data, Mary Helms explores the socio-political and political-ideological aspects of long-distance contacts in traditional societies, where space is not a neutral concept, but socially, ideologically and politically constructed. In this respect, objects, people and information from distant places are not only exotic, but also imbued with esoteric knowledge.

Thus both exotic goods and knowledge contain great ideological as well as economic value; for whoever acquires these also controls the inherent 'magical' powers. Moreover, the acquisition of esoteric knowledge or skills can also be manipulated for political purposes, because control of special forms of knowledge confers special status in any society.

'To the extent (and it varies greatly among societies) that geographically distant places, peoples and experiences are perceived (either at first hand or by some manner of extrapolation) within essentially supernatural or cosmological contexts, then knowledge of, or acquaintance with, geographically distant places, peoples,

and things rightfully falls within the domain of political-religious specialists whose job it is to deal with “mysteries”.’ (Helms 1988: 5).

Such knowledge is vital for leaders in traditional societies; for example, both a American Northwest Coast *Tlingit* chief and an Australian Aboriginal elder (in addition to ‘practical knowledge about curing, weather, animal and plant resources), need to have an extensive knowledge of ‘traditional songs, histories, stories, language and ceremonial details *not only of his own people but of as many outside groups as he could learn about or personally visit*’ (Helms 1988: 11-12, her emphasis). High-status esoteric knowledge is not only restricted to political leaders: other examples of those with special skills or crafts are Polynesian navigators, African smiths, American metallurgists, Chinese and Mayan astronomers and astrologers (ibid).

In other words, Helms introduced the insight that motivations for long-distance trade may not only be materialistic but also ideological and political in nature; its potential usefulness for research on exchange in prehistoric societies is demonstrated in the following quote:

‘.. in traditional societies goods derived from a distance or transported a long way will probably be high in value and low in bulk. There can be little quarrel with any of these points of generalities, particularly if we recognise that one of the most frequently exchanged types of long-distance goods is esoteric knowledge which is, by definition, rare, strange, in a sense cunning, *can be very durable especially in oral societies, and represents the highest degree of portability and lowest possible bulk of any transported good*’ (ibid: 118-9, emphasis added by me).

Unsurprisingly, it was particularly ‘post-processual’ archaeologists (e.g. Chapman 2002; Edmonds 1993, Bradley and Edmonds 1993, Barrett 1994) who embraced such approaches dealing mainly with social context and meaning within exchange practices. Of course, in the end both ‘processual’ and ‘post-processual’ approaches have significant contributions to make for an understanding of prehistoric exchange, most is to be gained from a combination of both perspectives: a focus on social and symbolic context, without ignoring the methodological grounding and focus on ecological factors of the New Archaeology.

2.2.3 Relevance of western approaches to Jômon exchange

Archaeological approaches like Renfrew’s are very interesting; they are still used by a great many archaeologists. However, most studies on exchange focus on sites from the Neolithic onwards, and therefore deal with societies of a different nature from the Jômon in the manner of subsistence (agricultural) and social and ideological organisation (stronger social differentiation and more ‘complexity’) and this can be seen in every aspect of the archaeological record.

Throughout the Jômon, society was more or less egalitarian; at least there is little convincing evidence of pronounced social differentiation between individual members. Within the sampled period and region there are few large structures built by the Jômon that can be used

as status indicators. The only way to distinguish social status is location, size and content of burials, the size of individual houses and other surviving structures. Because of the nature of Middle Jômon houses (pit-dwellings), the content of houses is usually unreliable: only items found on the house *floor* indicate activities of the inhabitants, but these are usually extremely rare, since useful items would have been taken along or handed to others (unless a disaster like fire took place and the 'pristine' context was preserved). Moreover, after a house was abandoned, it started collecting artefacts in its secondary fill, either by natural site formation processes, or because items were deliberately discarded into the pit by later inhabitants of the village. With the increasing population of the Late Middle Jômon there were likely to be some changes in the exchange system. Therefore, although differences in distribution are expected to exist, these are expected to be far less pronounced than at most other archaeological studies, which deal with societies with a greater deal of social differentiation.

Renfrew's ideas on distributional variability in order to interpret the socio-economic context of exchange are important in that these can reveal a great deal about different types of social exchange relations; (1) 'egalitarian' reciprocal exchange (usually involving foods and utilitarian goods) produces a different distribution pattern than (2) the more limited exchange of prestige goods between elites (or respected elders), which involves much smaller quantities but extends over wider (social and spatial) distances. (3) In societies with a stronger central organisation (chiefdoms and more social complex societies), redistribution takes place, whereby the imported commodity is pooled at a central place, and distributed within the community. This is apparent in increased quantities at the central space and small but homogeneous distribution at surrounding sites (e.g. Pires-Ferreira 1976). With regard to the Middle Jômon, it is expected to see variability in distribution of the resources under analysis according to regions; moreover it is also hypothesised that there will be also variability between individual sites, not only through time but based on differences between factors like length of habitation, size and function, which are perhaps not always taken into account (but see Sidrys 1977 and Pires-Ferreira 1976).

Renfrew's spatial analyses are very interesting in that distributional variability may reveal a difference in exchange type. However, a similar rigorous mathematical analysis, even incorporating the amendments is not within the scope of this research. First, for quantitative modelling, data from a large number of sites is necessary—as wide-ranging and comprehensive as possible (e.g. Shennan & Beck 1991 made use of an entire 'corpus' of data on amber finds in Britain). Secondly, very careful control has to be exercised over the type of data used in this type of quantitative modelling, preferably by obtaining the data first-hand at an excavation. For example, how does one define 'quantity'? Sydris (1977) solved the problem by using relative

weight and amounts of obsidian as compared to other variables;²⁵ McBryde used the mass of Aboriginal stone axes (McBryde and Harrison 1981).²⁶ The type of data, used as variables, needs to be very reliable, as well as homogeneous in nature. As Torrence points out:

‘...quantity of pieces is not always an adequate measure of quantity of resource use. Obtaining accurate estimates of how much obsidian was consumed at any one site is not a straightforward, simple task. In addition, research on a regional level requires data from a large number of sites. In some cases the relevant information may be gleaned from site reports, but such data *are unlikely to be strictly comparable since rarely are two sites excavated in the same manner with similar goals in mind*’ (Torrence 1986: 36, emphasis mine).

Within my sample, this required homogeneity of data proved to be a problem—not so much with regard to ‘exotic’ ornaments like jadeite and amber, which are likely to be identified and recorded properly, but all the more so in the case of ‘ordinary’ tools. The quality and reliability of obsidian arrowhead and serpentine adze data contained in my collected excavation site reports tends to vary a great deal—for example, not all sites include a material analysis, or even record all their finds; some reports apparently only record the items found in datable house fills. Therefore instead I will represent distribution variability within the available sample area, *without being concerned with the greater network from source to tail*, but instead concentrating on variability between the three regions, and between the individual sites. My analytic tools in demonstrating pattern variability between areas, sites and between different artefact types will be visible representation with distribution maps, and simple statistics.

Although most exchange studies deal with more complex societies than the Middle Jōmon, several of these contain ideas, methodologies, results and cautions that are potentially relevant to the Middle Jōmon society. In a well-known study on variability in the “efficiency” of production and supply of obsidian in the Greek Neolithic, Robin Torrence (1986) proposes various cost-control devices²⁷ ensuring production efficiency, in a bid to get away from traditional exchange studies.²⁸ These include (1) control over access to resources and monopoly over production (which may cost a lot of energy); (2) technological cost-control behaviour (sophistication, simplification, standardization and specialization). Using ethnographic and

²⁵ In the Maya case, (1) Obsidian Density=total mass of obsidian divided by volume of excavated earth and (2) Obsidian Scarcity=number of obsidian artefacts divided by number of pottery sherds, both per sample site (Sidrys 1977).

²⁶ Since artefact weight was often an unknown variable, instead the values of length, breadth and thickness were multiplied (Mc Bryde & Harrison 1981).

²⁷ I.e.: methods which decrease time, energy and material inputs while at the same time increase the numbers and range of the distribution of the commodities’ (Torrence 1986: 40)

²⁸ In Torrence’s opinion, many ‘processual’ exchange studies concentrate overmuch on (a) consumption at the expense of production and supply; and (b) regional studies instead of single site studies (Torrence 1986:);

historical data of various kinds, she suggests various ways in which such social control over production could be visible in the archaeological record, for example in the shape of identifiable structures, relative quantities of tools and debitage, homogeneity in shape of finished products, etc. With regard to the Jômon period, which was relatively lacking in social complexity compared to most of her examples, Torrence's hypothesis of resource monopolies, as held by certain members of specific Aboriginal kinship groups (also described by McBryde 1979, 1981) is perhaps most applicable. However, Torrence's general approach has also been criticised as being too formalist (i.e. the ethnocentric assumption that western industrial economic ideas also apply to prehistory) by various post-processual archaeologists (e.g. Bradley & Edmonds 1993).

An example of research on exchange among hunter-gatherer societies, is Isabel McBryde's (1979) analysis of ground stone axe distribution in Australia, tracing greenstone 'tomahawk' axes from distribution sites to source—or quarry, which (importantly) was historically owned and exclusively exploited by a certain tribe—and vice versa. McBryde's petrological source analysis and spatial analyses are complemented by ethnographical data that demonstrate the social context of Australian exchange networks. Exchange took place in a ceremonial setting, and economic aspects were often subordinated to ritual and social factors. The results from her research highlight the potentially complex nature of hunter-gatherer exchange systems and the importance of social relations: tribal hostilities and alliances were found to play a crucial role in the circulation of axes from various sources. McBryde theorises that these exchange networks probably incorporated many kinds of items, not just ground stone axes (*ibid*: 122). In a study similar to that of Hodder & Lane (1982), McBryde (McBryde & Harrison 1981) tests the hypothesis that a certain type of axe from Mt Williams was regarded as a 'valued good' and used for ceremonial purposes as well as practical ones. An application of Renfrew's down-the-line model is used to test whether (a) valued goods travel further [i.e. the prestige-good chain], and (b) value is reflected by longer use-life involving resharpening and re-use (ultimately resulting in smaller items), whereas less valued objects will have been discarded at an earlier stage. Therefore the variables chosen are: size (mass) against frequency, and mass against source distance (in kilometres). The fall-off curves more or less supported this theory: as expected, the greenstone Mt Williams axes were usually smaller than greenstone axes from another source and axes from non-greenstone materials; moreover these Mt Williams axes were found at greater distances than axes from the other sources.

Most exchange studies concentrate on one exchange item (i.e. obsidian; polished stone adzes), but there are a number of interesting studies that—by incorporating various categories of exchange artefacts—provide a wider perspective on interregional exchange networks. Many of these studies seem to focus on the New World (cf. Pires-Ferreria 1976, Braun 1986, Muller 1987). For example, a relatively early but interesting 'formalist' work on interregional exchange

in Mesoamerica during the Early and Middle Formative periods (1500-500BC) by Janet Pires-Ferreira examines a variety of exchange items from different 'spheres of conveyance' (particularly obsidian, shell for ornaments and iron ore for prestigious mirrors). The use of established 'formalist' techniques like sourcing and analysis of distribution patterns (including Renfrew's linear distance regression) through time, is combined with the application of anthropological insights on exchange; Pires-Ferreira (et al.) identify the existence of different exchange networks or 'spheres', and suggest six different types of primitive exchange involving different classes of commodities.²⁹ Moreover, temporal 'realignments' in exchange networks (e.g. a change from reciprocity to redistribution)³⁰ are related to socio-political changes (Pires-Ferreira 1976a, b, Pires-Ferreira & Flannery 1976, Winter & Pires-Ferreira 1976).

Usually, an exotic artefact that is recovered from burials is interpreted as a 'prestige good' (e.g. Shennan 1982, Beck & Shennan 1991). This also seems to apply to jadeite and amber found during the Middle Jômon, which are frequently found in burial contexts. However, as Muller (1987) rightfully cautions, one should beware of circular argumentation. Frequently when archaeologists discover exotic goods in graves, this is seen as a sign of prestige good, and a token of social differentiation. However, the same discovery is used to suggest that high status was created by (and continued to depend on) the ability to acquire this prestige good, therefore inferring both character and role of exchange from the same premise. For this reason, this study intends not to take the frequent burial context of 'exotic' ornaments like jadeite and amber for granted, but will compare the ratios of context occurrences with those of ornaments made of different materials. If certain goods are discovered more frequently in grave goods, whereas others are not, these may indeed represent goods with an added social and economic value. Moreover, presence or absence other features of the grave context (special size, location, presence and quantity of other grave goods) will also be taken into account before drawing hasty conclusions about the social and symbolic meaning of exotic items.

²⁹ Based on their findings, Pires-Ferreira and Flannery (1976:287-9) formulated six types of primitive exchange, involving (1) subsistence (food) items between villages (=reciprocal); (2) non-food stuff utilitarian items (e.g. obsidian), carried out by individuals villagers (=reciprocal, patterns influenced by population density and distance to source); (3) certain utilitarian items (e.g. obsidian blade), pooled by central agency within village (=redistribution); (4) imported raw materials (e.g. shell), locally processed by part-time specialists, who made the end product available to most villagers (=reciprocal); (5) prestigious items (e.g. small magnetite mirrors) locally made of exotic raw material, exchanged between elites (=prestigious gift exchange, point-to-point); (6) rare ceremonial items (e.g. turtleshell drums; conch-shell trumpets) imported from lowlands (exact exchange type unknown).

³⁰ An example which is also relevant to the present research concerns temporal changes in obsidian distribution, analysed at two Mesoamerican villages. Houses from the Earlier Formative contained greater variation in both source area and quantity, indicating a reciprocal system (i.e. differential access due to different kin group memberships or trade alliances), whereas obsidian quantities in later Middle Formative houses were far more homogeneous, demonstrating a system of redistribution by a central agency in the village (Winter & Pires-Ferreira 1976).

The theoretical and methodological orientation of exchange studies appears to be changing very slowly (cf. Chapman 2002)³¹ There appear to be still relatively few exchange studies that concentrate strongly on social and ideological context, although there are exceptions (e.g. Chapman 2002, Edmonds 1993, Bradley & Edmonds 1993, Nash 1998).

The ideas of Appadurai, Weiner, Gregory and Helms on the changing 'regimes of value', on valuables versus commodities and on the import of exotic objects and/or esoteric knowledge have been successfully applied to recent archaeological studies of long-distance export of exotic valuables (e.g. Beck & Shennan 1991, Chapman 2002), to explain the social contexts of imported exotic valuables, and social changes in the importing societies. Explaining the association of Baltic amber with the elite, Beck & Shennan suggest twice that 'amber was a highly prestigious material because of its strange qualities and mysterious origins' (Beck & Shennan 1991: 137; 139). However, unlike Helms,³² Beck and Shennan declined to suggest possible ways in which such characteristics could have been symbolically appropriated and manipulated by the elites in the *prehistoric* societies under discussion. Their dismissal of such attempts as speculation is to some extent justifiable, because of the lack of confirmation in the form of written resources; they suggest that future research of amber folklore may yield interesting results in this field (*ibid.*).

As John Chapman has pointed out, the long-distance import of an exotic item (which may have unknown, potentially dangerous powers) into one's society has various consequences—and applies this to archaeological contexts. First, from an ideological perspective it may entail certain risks, especially in the beginning. In many cases, 'distance also brings danger through the *numen* of alien cultural values and artefact biographical associations with strangers, if not enemies. It is the paradox of the desirability yet inherent dangers of the exotic which provoke the response of particular social practices' (Chapman 2002: 78); therefore such valuables need to be 'domesticated', namely, ceremonially introducing the exotic into the *habitus* of the group. This could be achieved by, for example, initiating the exotic item through

³¹ John Chapman (200x), comparing the developments made in exchange studies between two seminal publications: *Ranking, Resources and Exchange* (Renfrew & Shennan 1982) and *Trade and Exchange in Prehistoric Europe* (Scarre and Healy 1993), has pointed out a significant problem with the majority of exchange studies: the general lack of a context-dependent approach.

'Since the outset, exchange studies have informed us about the voyage of the exotic from source to site, with copious attempts at relating the mechanisms of exchange to various social correlates (e.g. with special attention paid to the spatial dimension: Renfrew 1975).

What exchange studies are not so strong on is the voyage itself, nor on whatever happens to the exotic object or material before its final deposition' (Chapman 2002:76).

³² Helms (who dedicated a footnote to the possibly mystical symbolism of amber during the Roman period, referring also to Shennan's earlier (1982) research) suggests that factors such as (a) its import from geographically distant areas, (b) its mystically symbolic 'oceanic context' (amber beds are located underwater and pieces are usually washed ashore after storms) and (c) its wide-spread distribution during the European Bronze Age, may have contributed to the popularity of amber during the Roman period (Helms 1988:129, footnote 34).

rites of passage in liminal places, or by storytelling: contextualising the object within the ideology and mythology, until the exotic has become socially and ritually acceptable. Chapman suggests that spatially, such 'domestication' behaviour may correspond to the placement of exotic valuables into specific contexts, such as exotic depots on the settlement outskirts, or particular contexts (e.g. structured deposition) inside or outside the settlement, respectively (ibid). Such studies underline the importance of taking the find contexts accurately into account in interpreting past societies.

Furthermore, the need for 'a more integrated approach to the circulation of artefacts in prehistory, following their cultural biography from creation through to consumption' (Bradley & Edmonds 1993: 58) has been pointed out. Focusing on the exchange of polished stone adzes in Neolithic Britain, which may have played an important part in social reproduction, Bradley & Edmonds have sought to compare three basic areas of the archaeological record which have all been dealt with in isolation from another, namely the character, context and chronology of stone axe production; the character and organisation of their distribution through time, and the changing conditions under which they were deposited—whilst stressing the importance of a well-documented cultural sequence, in order to place the findings in their broader context (ibid: 17). These suggestions are all very pertinent to the Middle Jōmon exchange situation—not least because of the wealth of data, and the prevalence of Middle Jōmon artefacts and structures, leading to fairly well-established temporal sequences.

As a final example of contextual research, a recent hunter-gatherer exchange study underlined the importance of waterways in forming exchange relations: a comparison was made between the Polynesian 'Kula' exchange system as described by Malinowski, and the circulation of Mesolithic Danish 'portable art', decorated objects of bone, antler and amber. Nash (1998) has argued that the inscription of these motifs—which cost a great deal of time and effort—added power and prestige, and transformed these items into inalienable valuables like the kula shells, to be exchanged among men in the Danish coastal area. Interestingly, there is evidence that newer (abstract) patterns were added to older (more representative) ones, which adds to the theory of inalienable valuables with their own 'biography' which gained in power and prestige through time. These changes also reflect new socio-political ideologies, including transition from a hunter-gatherer economy to domestication. As will be discussed in more detail in the fourth chapter, the general social and symbolic context of these Scandinavian Mesolithic items may have implications for the Jōmon amber exchange, which also took place within a similar 'egalitarian' economy of hunter-fisher-gatherers.

2.2.4 Implications for Middle Jōmon exchange

Interregional exchange in Middle Jōmon Japan probably also involved various exchange spheres; exchange probably included (1) practical knowledge, news and gossip, (2) marriage partners, (3) foods, (4) utilitarian tools and materials (5) various types of exotic goods or ornaments, with varying levels of exclusivity, including prestige goods that served to smooth relations between community leaders, and (6) ritual objects and esoteric knowledge. Although possibly the most eagerly anticipated exchange items by the Jōmon people themselves, the first three points lie outside the scope of this research exchange, mainly because of invisibility in the archaeological record.³³ The sixth point is possibly exemplified by the clay figurines practices, which involved rituals whereby figurines were ceremonially fragmented. This practice was carried out to some extent throughout the Middle Jōmon in central Japan, although the traditions were undoubtedly strongest in the Chūbu Mountain area, judging from the frequency of occurrence (both in terms of sites and of figurine parts). Although some of the figurines have been found undamaged, most have been broken into at least two (mostly between three and seven) parts, and only a small number of the 'missing' figurines pieces have been retrieved. Moreover at Shakadō two pieces from the same item were found at separate sub-settlements, 300 meters apart. These two facts have been frequently used to propose the existence of a shared ceremony involving several villages, possibly even including members of more distant communities (Yamagata 1992, Kidder 1991, Bausch n.d.; Bausch MA dissertation). It has been suggested that during the Mid Middle Jōmon, Katsusaka ritual facilities may have functioned as regulators of resource extraction and subsequent exchange (Barnes 1993: 89). In this context, it seems highly likely that clay figurine practices may have played an important role in creating a social context for different types of interaction, including exchange. Unfortunately, the data available to me at this time are too few to dedicate an entire chapter to this exchange, but recently I have found references to two examples of identifiably Mountain area style (Sori) figurine parts which were found at sites in the Tokyo Tama hills—ca. 90-100km from Shakadō site. Of course, there is no way to find out where these figurines came from exactly, but these finds strongly suggest that clay figurines may have indeed been used in the formation or maintenance of longer-distance social and/or ideological networks. More information is eagerly anticipated; however in the meantime, this dissertation will concentrate on the exchange of 'exotic' artefacts of a non-perishable nature that can be traced to a certain source area, concentrating on jadeite and amber, but with some reference to obsidian and serpentinite.

³³ Future research using extensive botanical analyses in pan-prefectural research may come up with more fascinating results on food exchange; the movements of marriage partners on the basis of 'displaced' umegame jar styles (which are large and elaborately decorated) and tooth extraction patterns have been dealt with by Sasaki 1982, and Harunari 1986 respectively.

In the case of Middle Jōmon exchange, it is expected that **obsidian**, limited to distinct source areas but widely distributed at Central Japan sites, was a utilitarian commodity, without a special socially ascribed value—although based on the widespread distribution it is assumed that there is a greater demand for obsidian arrowheads than for those of a different material like chert, possibly based on cultural preference. Therefore, if Jōmon society were entirely equal, it would be expected that distance from the source area is a major factor influencing the distribution pattern, with density differences particularly strong between regions according to distance, but relatively homogeneous between settlements within. However, it is also expected that minor differences occur between settlements of different scale. Based on Kobayashi's distinction between settlement types (1992a, to be described in the next section), it is hypothesised that the largest sites would have the relatively largest ratios of obsidian arrowheads in the recorded arrowhead total.

Stone ornaments are expected to be tokens of social distinction; although **jadeite** and **amber** pendants (based on exotic scarcity value as well as unique properties, which will be described in the fourth chapter) are hypothesised to have had far greater value as a prestige (and possibly ceremonial) good than pendants made of other materials. The prestige factor of amber and jadeite is expected to be visible at different contextual levels: (1) distribution at fewer sites, but over greater distances, indicating Renfrew's prestige chain. (2) stronger association with relatively large-scale, stable settlements, as identified by a combination of site characteristics; (3) occurrence as burial goods for specific individuals. Further information about the possible owner (or safekeeper) of these items and their ideological meaning for the community will be sought within specific contexts of the distribution sites.

In the case of the first point (restricted distribution), it is likely that the size of the sample is too limited to demonstrate Renfrew's fall-off curve convincingly (a corpus of data on all recorded Middle Jōmon items would have been most informative, cf. Beck and Shennan 1991). However, in the case of jadeite, this theory can be supported with some data from outside of the scope of analysis. It is a fact that large quantities have been found at the contemporaneous settlement site of Sannai-Maruyama site in Aomori prefecture, northeast Japan, ca. 600km from the source area—despite the scarcity of jadeite pendants in this Tohoku region during the Middle Jōmon. The Tohoku region falls outside the scope of this study, but if it were added it would be a good indication of Renfrew's idea of the prestige chain.

2.3 ARCHAEOLOGICAL THEORY IN JAPAN

2.3.1 General developments in Japanese archaeological theory

As mentioned before in the introduction, with regard to public interest and government funding, archaeology in Japan is probably in a better position than in any other place. However, unlike Anglo-American archaeology, Japanese archaeology is generally less strong on the application of theory than on high-tech methodological research (e.g. Barnes & Okita 1999, Tsude 1995, Mizoguchi 2002). One of the reasons for this is the predominance of rescue archaeology; excavators have little time to synthesize their extensive excavation data (Tsude 1995: 299).

Barnes and Okita have lamented ‘the lack of an informative framework that makes certain questions relevant to larger problems. Methodological sophistication cannot make up for the lack of a problem-oriented framework in which analyses are carried out’ (Barnes & Okita 1999: 353). They have pointed out that it is not exactly the case that theory is entirely lacking within Japanese archaeology, but the most ardent Japanese supporters of theory (e.g. Mizoguchi, Tsude, Hosoya, Habu)—most of whom have studied abroad—are few and their influence has not been strong enough to bring about an overall change in the way archaeology is carried out (ibid: 377-8). According to Hosoya, Japanese archaeological interpretation aims at reviewing all kinds of data equally, and favours demonstration over explanation, while Okita points out that strict adherence to a single theoretical paradigm does not agree with the traditional Japanese mindset which tends towards pluralism and tolerance (Barnes & Okita 1999: 378).

The Japanese public have an enormous and genuine interest in Jōmon and Yayoi culture, possibly at first stimulated by the intense attention that questions of past identity received just after the war (Okita & Barnes 1999: 377). Recently, concerns of ethnicity have resurfaced in Japanese archaeology (Tsude 1995, Fawcett 1996, Kaner 1996, Ogawa 2002), which is frequently associated with the phenomenon of *nihonjinron*, the ideology of a unique and homogeneous Japanese past and culture. This is constructed on various levels: national and local. The role of archaeology in constructing changing images of national identity has been pertinent since 1868, when Japan rejoined the international community: identity can only be created with reference to the ‘other’. For example, the image of the Jōmon hunter-gatherers has been actively manipulated in the creation of national myths and definition of Japanese ethnicity, usually cast in the role of the ‘other’: varying from the pre-war image of ‘cruel savage’ (non-agricultural equals non-civilized), to a ‘natural conservator and noble savage’,³⁴ until, very recently—and only after the discovery of Sannai-Maruyama site in the 1990s—the Jōmon were promoted to ‘fore-runners of Japanese civilization’ (Ogawa 2002). ‘Whatever image is

³⁴ Probably strongly influenced by Lee and De Vore’s seminal 1968 work ‘Man the Hunter’, which placed hunter-gatherers in an entirely new light.

represented, the Jōmon people are always a battle ground for Japanese archaeologists holding ambivalent attitudes toward their [own] origin' (ibid: 187).

On a smaller scale, local governments are actively persuading the general public to take an interest in local excavations and re-enactments of the prehistoric past, in order to provide a local identity for urban Japanese (Fawcett 1996). However, even at this level, broader ethnical concerns are promoted; a process that can be very insidious, as Fawcett's experience demonstrates: at an archaeological slide presentation aimed at the general public, an archaeologist emphatically described Yayoi people as 'having had clean lifestyles'—a significant choice of words, since 'clean' (*kirei*) is an important cultural concept for the Japanese (ibid: 70-1).³⁵

Such unchallenged assumptions about historical continuity are often encouraged by the government, as a positive self-image based on the reflection of current ideals onto the past is created for people in an increasingly rootless society (Kaner 1996, Mizoguchi 2002). There have been accusations of a re-emergence of '*nihonjinron*', the theory that propagates the homogeneity (and inherent superiority) of Japanese society and culture, which was also used to support nationalist ideology during the War, and has been used since the unification of Japan under one ruler in the 17th century. As Mizoguchi has pointed out, the creation of such an ideology of homogeneity and national identity was necessary to unify the nation, and withstand the onslaught of western colonial powers, which at the time were dividing up Asia among themselves (Mizoguchi 2002). Nevertheless, among all the accusations of nationalist overtones in Japanese archaeology, it has to be remembered that misuse of archaeology for political and nationalistic purposes is hardly unique to Japan but a universal problem (cf. Shennan 1989; Jones 1997).

According to theoretician Tsude Hiroshi (1995), approaches to archaeological theory in Japan traditionally tended towards the culture-historical model of evolution (influenced by G. Childe), coupled with Marxist dominance in history. After ideological restrictions were imposed by government before and during World War II, many archaeologists turned away from theory and concentrated on empirical data—such as the formation of pottery classification. The new ideas of New Archaeology and Structural anthropology did take hold in Japan, but were applied to methodology instead of interpretation, and spawned various scientific and analytical studies on Jōmon *subsistence* in particular. Nowadays, there is a resurgence of popularity of subjects reflective of current social concerns and interests, such as trade and interaction, social and kinship relations (Tsude 1995).

³⁵ Of course such a statement automatically implies an ethnic contrast—namely with the Jōmon.

2.3.2 Influential empirical research

Examples of such scientifically structured archaeological analyses that were very influential to the Jōmon research are manifold; examples relevant to this dissertation (also published in English) are the demographical studies of Koyama Shuzo (1978), which demonstrated the sudden explosive growth of the population in Central Japan during the Middle Jōmon, and its equally sudden decline in the Late and Final Jōmon; the Jōmon settlement system studies of Kobayashi Tatsuo (e.g. 1992a) and seasonality in subsistence gathering in general (e.g. Akazawa 1986, Koike 1986). Based on the theoretical exploitation of various ecological resources throughout the year, Akazawa Takeru famously formulated the 'Jōmon Calendar' (see fig. 2). However, it has to be remembered that the Jōmon consisted of a variety of very regionalised groups, who exploited different ecological niches. Therefore, the resources on this calendar were by no means directly available to all Jōmon people.

Use of ethnological data was made with regard to the reconstruction of Jōmon period plant food acquisition and preparation, especially concentrating on various kinds of nuts, which also remain in the archaeological record if carbonised; examples are Watanabe Makoto 1975, Matsuyama 1981, and Koyama 1981. Watanabe Hitoshi, unusually, made use of anthropological studies—especially using data on North West Coast Indians in America—to interpret Jōmon society (1986, 1990). In Watanabe's footsteps, parallels between Jōmon society and North American cultures and subsistence systems—especially based on the exploitation of marine resources and anadrome salmon—are drawn by various archaeologists (e.g. Aikens and Dumond 1986; Kobayashi 1992a: 95).

Suzuki Masao contributed a great deal towards the knowledge of obsidian sourcing; due to his research, it became clear that three source areas in Central Japan—the *Shinshū* in the Mountain area, the *Hakone* source in the Western Kantō area and the *Kōzujima* source located on a tiny island ca. 150km south of Tokyo—supplied most of this area during the Jōmon. Suzuki's research (1973, 1974) demonstrated that the *Shinshū* source—which provided very good-quality obsidian—from the mountain area had the widest distribution during the Middle Jōmon, but was followed by the *Kōzujima* source and lastly the *Hakone* source, which provided rather inferior quality. This important role of the *Shinshū* obsidian source, which is divided over a couple of smaller sources (the Wada Pass, Kirigamine and Hoshigato/Yatsugadake sources) in the mountain area, is very relevant to my own research. It will be demonstrated in this dissertation that access to this superior source of obsidian was of great advantage to the inhabitants of the Yatsugadake Mountains, in engaging in long-distance exchange networks and acquiring relatively large quantities of valuable 'exotic' ornaments.

2.3.3 Interpretations concerning Jōmon society

Social studies are relatively few in number; usually the only people who engage in actual interpretation of archaeological patterning are senior professors, who are highly respected and have their own devoted followers. Japanese archaeology can be highly political in nature, when different senior supervisors do not get along, the archaeological career of a junior archaeologist with the wrong affiliation can be broken very easily. Therefore, the following interpretations — often including strong generalisations without providing very extensive data or quantification as proof—are usually carried out by respected professors.

Harunari Hideji (1986) devised a scheme of identifying social relations and kinship patterns based on patterns of ritual tooth extraction; however, these patterns apply to only a small group of people towards the end of the Jōmon period, and is therefore not applicable to most of the Jōmon period or area. As mentioned in the introduction, Sasaki Fujio traced kinship groups on the basis of the distribution of form and style of the *umegame* burial jar. Kobayashi Tatsuo (1992b) is one of the most prominent Japanese supporters of the idea that distribution patterns of stylistic variability (as seen in pottery style distributions) indicate distinct social groups, complete with own dialects and 'mental template'.

These ideas are highly interesting, but the identification of distinct social entities strictly on the basis of material culture characteristics cannot always succeed, as the research of Hodder (1982) shows. Moreover, he is strongly opposed by Hayashi Kensaku (e.g. 1993-5),³⁶ who disagrees with Kobayashi's large 'social' units sharing a mental template, in favour of smaller groups inhabiting and exploiting microenvironments, and interacting or negotiating with each other on a freer basis. The same Hayashi has also identified various ranges in which exchange items travel; he suggests that less than 50km is a close distance (between neighbouring regions); 50~100km distance is middle distance, and >100km is long-distance. Moreover, he finds that subsistence and utility goods tend to be exchanged within the close distance range whereas valuables were acquired from further away (Hayashi 1993).

On the other hand, Kobayashi (1992a) has also proposed a system in differentiating various types of settlements in Jōmon Japan, which is very useful as a base line. According to Kobayashi (1992a: 91), the following types are most relevant:

- A. "Large sites on level plateaux containing ≥ 100 houses and an abundance of every kind of primary (working) and secondary (social and/or ritual) tool, every kind of cultural feature, and pottery of several styles. These characteristics indicate a considerable duration for settlements of pattern A. these are the most complex settlements and the type I call the 'model Jōmon village'" [temporal continuity];
- B. "Smaller sites on terraces in hilly localities; containing ≥ 20 houses, some other kinds of features, primary tools, and considerable pottery all of a single type;
- C. "Small sites on gentle slopes in hilly or mountainous localities containing only

³⁶ This criticism is expressed most directly in *Kikan Kōkōgaku* 41: 89-96.

- one or two dwelling pits and small quantities of primary tools and pottery”;
- D. “Sites located in a variety of terrains, including relatively rugged localities, lacking dwelling pits and most other features, and containing only a small number of tools and pots”;
- E. “Single-purpose sites, such as burials, caches, stone tool factories, and so on”;
- F. “Small sites that do not fit the other five categories”.

This aspect of Kobayashi’s theory is particularly useful, since many studies on exotic ornament exchange assume the presence of a ‘core’ settlement, which is implicitly assumed by most to conform to Kobayashi’s type ‘A’ settlement. However, no quantification of this data ever took place. For this reason, I will use a combination of variables, which is regarded as representative of Kobayashi’s largest settlement type, and determine the statistical relationship between the exchange item distribution and the presence of these site characteristics. Kobayashi also believes in some small extent of social differentiation, presumably partially based on more intensive co-operation within his large ‘mental template’ social units. However he does not explain how this exactly works, and what the extent of social differentiation is.

Hayashi believes in a fundamentally egalitarian Jōmon society, in which various groups inhabiting different ecological niches interacted on a reciprocal basis. In contrast, Watanabe Hitoshi (1986, 1990), based on parallels with the North West Coast Indians, has suggested that Jōmon society was not egalitarian, not just slightly socially differentiated but actually stratified, due to the growing influence of a specific group, the specialist large mammal hunter, who grew in prestige and started to acquire various prestige objects. His ideas are interesting, but quite loosely based on various different examples in slightly different contexts, and therefore in my opinion rather unreliable as an interpretation of a longer stretch of the Jōmon period—and definitely not applicable to the Middle Jōmon period in Japan. However, as indicator of social change during the Final Jōmon period in Northern Japan, his hypothesis may be very relevant.

One very recent and rare ‘post-processual’ study has been carried out by Mizoguchi Kōji (2002). His viewpoint towards Japanese archaeology is unique; he regards Jōmon culture with strong theoretical influences from Giddens, Bourdieu, Barrett and Tilley, adopting a very contextual (and sometimes loosely interpretative) perspective. With regard to the Middle Jōmon and beyond, he regards the stability of year-round settlements and seasonal exploitation of micro-environments as an important part of the identity of the Jōmon people: their expectations of their own actions, their expectations of the actions of the ‘other’ and their expectation of the ‘other’s’ expectation of their own behaviour. Mizoguchi gives an interesting interpretation of Jōmon interaction, which like Hayashi he believes to be fundamentally egalitarian, with face-to-face contacts and interaction, as well as cooperation in the seasonal exploitation of resources. According to Mizoguchi, authority would be temporary and entirely context-dependent:

‘A different skill and labour organization would have been required from one event to the next in the annual cycle of resource procurement events.... In other

words, various tasks were undertaken and accomplished one by one in a temporal sequence instead of being accomplished by different segments of society; this is the temporalized or diachronized division of labour. The synchronic division of labour needs a person or institution to coordinate the concurrent working of separated semi-autonomous units. In contrast, the technology of accomplishing a number of tasks by arranging them into segments in a temporal sequence does not necessitate the existence of a co-ordinator' (Mizoguchi 2002: 113).

Recently, social archaeological topics, like interaction and exchange, and social and kinship studies, are said to be gaining in popularity in recent years (Tsude 1995). Nevertheless, the general poverty of theoretical frameworks in Japanese archaeology also applies to the study of exchange, which includes items such as jade, asphalt, amber, obsidian, pottery, salt, shellfish meat, etc:

'In spite of the cumulative evidence for the prevalence of exchange in the Jōmon period, the mode of the exchange systems is hardly elucidated; it is not known if the exchange of each item was reciprocal or redistributive, let alone more specific exchange systems. It is urgently required to go beyond the simple identification and sourcing of exotic items' (Takahashi et al. 1998: 69).

Theories on the exchange of exotic items like jadeite and amber will be discussed more fully in Chapter Three. The general tendency in Japanese archaeology, namely to either generalise and not support these generalisations with quantified data, or not commit oneself to interpretations of social structure one way or the other, is also inherent in views of exotic stone exchange, as will be demonstrated next. However, the contrasting ideas on social structure of Hayashi and Mizoguchi on the one hand, and Kobayashi and Watanabe on the other hand also have repercussions for the study of Middle Jōmon exchange, and these will be discussed later.

CHAPTER THREE: TRADITIONS IN JÔMON ORNAMENT STUDIES

3.1. PREVIOUS RESEARCH ON MIDDLE JÔMON BEADSTONE ORNAMENTS

3.1.1 Stone ornament traditions

The occurrence and circulation of jadeite pendants in Jômon Japan is a topic that has long been of interest to Japanese archaeologists. Until the 1940s, when a domestic source in Niigata was discovered, most scholars (e.g. Hamada Shosaku and Yawata Ichirô), believed that during the Jômon and Kôfun periods, jade had been imported through long-distance networks from the mainland, where jade is found in China, Tibet and Burma (Andô 1982a: 181-3; Teramura 1995: 9-19). During the 1950s the famous Chôjagahara production site was excavated, and later the sources along the Hime river area were recognized as important cultural properties (Andô 1995a: 183).

The source area of jade referred to as Itoigawa is located in Niigata prefecture around Himegawa: one outcrop at the Odaki River area; the other at the Oomi River area. Large quantities of small jade pebbles from these outcrops are also carried by the rivers to the coast of Niigata and Tôyama. In recent years, several other potential sources of jadeite and nephrite have been discovered in Japan,³⁷ nevertheless no evidence has been found that these sources were used during the Jômon period (Suzuki 1994: 169-70) Chemical analysis has confirmed that all Middle Jômon pendants were derived from this Itoigawa source (Warashina 1995).

The best-known and largest-scale jade production sites discovered so far are Itoigawa-city Chôjagahara site, Oomi-town Teraji site in Niigata, and Sakai A site in Tôyama. At these settlement sites not only large quantities of finished and half-finished beads, but also of raw material and processing tools (such as whetstones for polishing) were found. The production area and sites will be treated in detail in chapter four. In addition to jadeite, other available minerals like soapstone and serpentinite were also used for the production of ornaments at these sites. As it happens, this area between modern Niigata, Toyama and Nagano prefectures not only yields jade, but also other materials such as soapstone, alabaster and serpentine. Softer and easier to process than jade, these materials were already used during the Initial and Early Jômon periods, mainly to fashion split earrings and small beads (see fig. 14). These objects already had a wider distribution, showing that they were not just made for internal use, but were 'exported'

³⁷ Jadeite may also be found at several places in western Japan: Nagasaki (Kyûshû: 2 different types, including one with a different chemical composition), Oosa (Okayama) and Wakasa (Tottori). The nearest alternative sources in Central Japan are the 'nishikuroda' jadeite from Inasa (Shizuoka) and Hida jadeite (Gifu). In Hokkaido, nephrite is found at Hidaka, and jadeite at Kamuikotan (Warashina 1995, 1999).

to other areas. Serpentine was often used for the production of a certain kind of polished axe—which also was a popular commodity— during the Middle Jōmon.

As mentioned above (Teramura 1995: 180-7), soapstone (Japanese name: *kasseki*) is found—together with jade, serpentine and alabaster— in the corner where west Niigata, east Tōyama and north Nagano come together. Soapstone was already used for earring and bead production during the earlier part of the Jōmon, and also continued to be very popular during the Late and Final Jōmon when smaller beads were produced (Esaka & Watanabe 1988: 11-8; Harada 1988: 122-4; 131-3).

The colour of talc stone varies from milk-white to green or red-brown. Although it is much softer than jade (1~2 on the hardness scale devised by Moh,³⁸ as opposed to 7 for jade— Kobayashi 1996: 192), when properly polished, talc stone may look quite attractive; not unlike jade. This may fit in with the popular idea—mentioned above—that Jōmon people may have had a preference for green bead stones, speculating that such stones may have been a substitute when jade was unavailable.

Remarkably, references to agate (Japanese name: *menō*) are extremely rare in the literature on Middle Jōmon bead stone exchange. It appears that agate originates from the same general area as the other green stones in the Shirouma/Jadeite Coast area (Andō 1985: 186-7). Both Jasper and agate are chalcedony-based beadstone ornaments. Especially jasper was commonly used for bead production from the Yayoi period onwards; after the 5th century AD when Japan may have been unified under single rule, jasper from Kasenzan (Shimane) was even transported 600km to the West Kantō (Warashina 1992: 372). Other potential sources are Saruhachi (Sado island), Toki (Gifu), Futamata (Ishikawa), and Hosoiri (Tōyama) (*ibid.*: 358-9); one of these sources may have supplied the West Kantō sites—quite possibly Hosoiri, as it is located relatively close to the well-known Itoigawa area.

Serpentine (Japanese name: *jamongan*) is best-known for its use in a prestigious kind of polished stone adze produced at the same production areas as jade, and supposedly very popular in exchange (Teramura 1995: 128-9; Kaneyama 1992: 81).

3.1.2 Properties of beadstone used in the Hokuriku area

Jadeite (mineral composition: $\text{NaAlSi}_2\text{O}_6$) has a very granular structure and great hardness: it

³⁸ Moh's Scale of Hardness, devised by the 19th century German mineralogist Friedrich Moh, is a simple but crudely effective method that compares the relative hardness of minerals by testing their 'scratch hardness'. Ten minerals were thus compiled in a table according to their relative hardness, with talc as the softest (1) and diamond (10) as the hardest. (Information taken from the internet: www.24carat.co.uk/hardnessmohssscaleframe.html)

measures 6 on Moh's Scale and has a prismatic cleavage.³⁹ Its colour is white to green; it has a translucent quality. Because of its beauty, this mineral is generally used as an ornamental stone. Jadeite is a very rare mineral of the 'pyroxene' type; it is formed in some regional metamorphic schists (blueschists) under conditions of low temperature coupled with high pressure (Gribble 1988: 382). Its parent rock is usually basic or ultrabasic igneous rock; often it occurs as a fibrous mass in serpentine (Suzuki 1994: 169, Teramura 1995: 33-4). The generic term jade rather confusingly includes jadeite as well as nephrite, an amphibole that has a different composition and hardness. In Japanese, this is also the case: the generic term for jade (*hisui*) may refer to either 'jadeite' (*kôgyoku*) or 'nephrite' (*nangyoku*). However, according to Warashina's (1995) research, the former was more commonly used during the Jômon. Pendant specialist Teramura Mitsuharu concurs: for discussing archaeological artefacts, he feels a distinction must be made between 'jadeite' and the chemically different 'nephrite'; in the case of Jômon jade pendants, he refers exclusively to the former (Teramura 1995: 2).

Jadeite sources can be found at several other places in the world, including Myanmar, Mexico, New Zealand and various parts of the former Soviet Republic. Due to its bright, translucent beauty, jadeite has enjoyed great popularity as a precious stone in these parts since prehistoric times, and has often been used for the production of sacred paraphernalia. For example, China has imported large quantities of high-grade jadeite from Myanmar since at least the *Shang* dynasty; while the Maori have mined both jadeite and nephrite for the production of religious artefacts since their colonisation of New Zealand (for examples of such Chinese and Maori artefacts, see fig. 15, A-D). Although jadeite also occurs in parts of the European Alps, it seemingly never became popular in Europe for the use of precious items like ornaments or sacred artefacts (Clark 1988).⁴⁰

The metamorphic rock types serpentinite, jadeite and soapstone (steatite), which are the materials for the production of 'exotic' polished adzes and ornaments, are all made up of a single mineral type—serpentine, jade, and talc respectively. The properties of minerals are universal; the properties of these rock types can therefore be described more easily and accurately than those of multi-mineral rocks. One of the most important properties is the *hardness* of a mineral, as indicated by Moh's hardness scale; talc is extremely soft, whereas jade is one of the hardest minerals available to Jômon people. All are *silicate* minerals.

Talc (composition: $Mg_6[Si_8O_{20}](OH)_4$) is the softest mineral on Moh's scale of hardness, with a hardness of 1.0; it is formed during low-grade metamorphism of silicaceous dolomites

³⁹ Recent research has suggested that jadeite is even harder: 6.5~7.0 on Moh's scale of hardness (Abe: in press; Barnes: in press).

⁴⁰ Nevertheless, Alpine jadeite was used during the Neolithic for the production of polished stone celts, which apparently were distributed over quite wide distances in Europe (e.g. Ricq-de Bouard 1993). The

and hydrothermal alteration of ultrabasic rocks. It is closely related to serpentine, which has a very similar composition and sometimes breaks down into talc (plus magnetite) with the addition of CO₂. Soapstone has a greasy or soapy feel; its colours are usually white or grey, but sometimes greenish or reddish (Gribble 1988: 405-6). The soapstone used in Japan for ornaments is often greenish in colour. Considering the close relation between serpentine and talc, it is likely that serpentinite and soapstone are found in each others' vicinity.

Serpentinite (mineral composition: Mg₆[Si₄O₁₀](OH)₈) measures 2.0~3.5 on Moh's scale; it is therefore relatively soft, and can be cut. Like obsidian, serpentine has a conchoidal fracture pattern: it breaks with a curved concave or convex fracture, making it easy to form into tools. The colour ranges from various shades of green to almost black. Sometimes it is veined with soapstone. Serpentine is formed from alteration⁴¹ of ultramafic rocks rich in magnesium, containing olivine, pyroxene or amphiboles, and in igneous serpentinites in ophiolite complexes; it is found in many places throughout the world (Gribble 1988: 407-9).

3.1.3 Amber

Amber is a fossil resin, more specifically consisting of fossilised *pine* sap, and occurs as irregular nodules in recent sediments, deposited under estuarine (shallow water) conditions. Generally speaking, its hardness on Moh's Scale is ca. 2.0~2.5, and it has a Specific Gravity ('density') of ca. 1.1 (Gribble 1988: 463).⁴² This means that (in contrast to for example jadeite) the material is relatively very soft, and light enough to be transported by water. Moreover, the thermal and electrical conductivity of amber is very low, resulting in a relatively warm feeling when touched, and a negative charge ('static electricity')⁴³ when rubbed, so that it can attract (very light) things (Fraquet 1987: 1-2). As for its appearance, the material can be either cloudy (opaque) or clear; amber colours range from almost colourless, a variety of yellow, gold-brown and reddish-brown shades, to deep red and even (almost) black. Golden- and reddish-brown shades are most common. Sometimes amber contains inclusions: flora and fauna (e.g. the famous insects), or inorganic matter: minerals, liquids and gasses. In all, its properties are very distinctive.

The use of amber for personal ornaments was by no means confined to Japan: it was very popular in prehistoric Europe, where it was used exclusively for ornaments, usually

possibility that jadeite polished axes were used as prestige items in long-distance Neolithic exchange networks certainly warrants more research...

⁴¹ This alteration can result through either metamorphism or by late-stage hydrothermal action, at temperatures below 400° C (ibid).

⁴² The Specific Gravity is described as 'the ratio of weight of a body to that of an equal volume of water. Japanese amber is possibly even lighter than European amber; it is said to have a Specific Gravity of 1.05~1.09 (Matsushita 1995:193).

⁴³ Its Greek name 'electron' is the origin of our term 'electricity'.

recovered from grave contexts (Shennan 1982: 38). Derived from the Baltic, amber beads and pendants—often carved into zoomorphic forms (elk, bear, water bird etc) and/or decorated with incised patterns, see fig. 16—already circulated as prestige goods in Scandinavia and North-western Europe from the Mesolithic onwards (Clark 1988: 29; Nash 1998). However, long-distance amber circulation in Europe expanded during the Neolithic and especially Bronze Age when it reached Mycenaean Greece and was valued as highly as gold (Clark 1988: 28-9, Shennan 1982; DuGardin 1993).⁴⁴ Of course, in historic times the trade in amber prestige items continued, and the wealth of surviving myths about the origin of amber clearly attests to world-wide, long-term and persisting fascination with this material.⁴⁵ As for prehistoric consumption of amber outside of Europe and Japan, documentation is unfortunately scarce. Nevertheless, in China, the import of amber (probably from Burma, and perhaps from Japan, prior to European contacts) goes back to at least the Han period; in the Americas, amber from Mexico and Alaska was used and traded by Aztec and Mayan cultures, and Inuit and British Columbian Indians respectively (Fraquet 1987: 170, Clark 1988: 29-30).

The universal appeal of amber has been described as resting on 'its smoothness, its ease of handling and its colour, ranging from a varnish-like effect to a deep brown or cloudy yellow colour' (Clark 1988: 28). More to the point, with reference to European Palaeolithic and Mesolithic hunter-gatherers, it has been suggested that due to its specific properties—like colour, lightness, warmth and static electricity—amber was well suited for use as a hunting amulet (Fraquet 1987: 5). Unfortunately, due to its organic composition, amber does not always preserve as well as other ornament minerals: it is 'a fragile material which will oxidise and disintegrate in many archaeological contexts' (Shennan 1982: 34). The implication of this is that a large ratio of the ancient amber artefacts may not show up in the archaeological record.

In Japan, there are several possible sources of amber: Atsuta in Hokkaido, Kuji in Iwate, Chôshi in Chiba, Mizunami in Gifu and Kôbe in Hyogo. Since 1974, 'infrared absorption

⁴⁴ Particularly during the Late Neolithic and Early Bronze Age, Baltic amber was very popular in Britain; relatively high concentrations were found in Southern England, particularly associated with the 'Wessex Culture' known for its ceremonial monuments. Although earlier Mesolithic and Neolithic amber in Britain was scarce, consisting of unprocessed lumps or crude beads, during this time distribution and technological skills increased considerably: amber objects—recovered almost exclusively from high-status burials— included various types of beads, as well as unusual items, e.g. spacer plates (used in multi-string necklaces) and beaker-shaped cups. During the Later Bronze Age, British amber finds declined (in contrast to Irish finds), and were generally found in hoard- or settlement contexts instead (e.g. Beck & Shennan 1991, Fraquet 1987).

⁴⁵ For example, according to Greco-Roman mythology, a nymph transformed into a tree and 'wept' amber tears after Phaeton, her son with the sun god Apollo, perished (the boy had demanded the privilege of driving his father's solar chariot across the skies for one day, and—being mortal—failed miserably, scorching parts of the earth in the process). Another legend refers to the sacrifice in Egypt of Berenice's golden hair, in order to ensure her royal husband's safe return from war; these locks disappeared overnight from the altar to form a stellar constellation but occasionally rained back on earth in the form of amber. Chinese folklore claims that the soul of a tiger enters the earth upon death and turns to stone; hence their name for amber literally means 'Tiger's Soul'.

spectrum' techniques can be used to determine the origin of excavated amber. Compared to the Kôfun period, the use of amber artefacts in Honshû appears to have been very scarce in Japan (Matsushita 1982: 193-4); Kôfun amber distribution apparently was so expansive that Yawata Ichirô coined the term 'Amber Road' (Ohba 1952: 54). However, it seems that during the Jômon period, the only amber sources in use were the Chôshi source in Chiba, Eastern Kantô, and the Kuji source in Iwate prefecture, Tôhoku (Harada 1988: 131).⁴⁶ Considering the distance and general lack of evidence for Tôhoku influences during the Middle Jômon,⁴⁷ it will probably be safe to assume that the amber distributed in the Kantô and Chûbu regions will have originated in Chiba. The scarcity of this material is reflected by the limited data on amber bead manufacture available; so far only a single production site with amber in all stages of production has been reported: Awashimadai site, a settlement near the Chôshi source which flourished between the end of the Early Jômon and the middle of the Middle Jômon period, and was a specialized production site where amber in different production stages (from half-finished to end-product) have been found (Harada 1988: 131; Kaneyama 1992: 81, Naumann 2000: 54). This site will be introduced with more detail in Chapter Four. Amber is a very brittle material which is hard to process and pierce for pendants; even at Awashimadai the rarity of material was apparently such that spoilt pieces were reused and only discarded after a second attempt had failed (Naumann 2000: 54.). According to this reference, amber pendant production seems to have taken place largely *before* the Late Middle Jômon.

3.1.4 Jadeite pendants

Due to the hardness of the material, the production of jadeite pendants in particular required specialized techniques, which people in other areas probably were unfamiliar with. This explains why production was largely limited to settlements located close to the source area. Thanks to the discovery of large-scale beadstone production sites such as Sakai A (Tôyama prefecture), Teraji and Chôjagahara (Niigata prefecture), the production process of pendants and beads can be largely reconstructed. Although in contrast to Middle Jômon site Chôjagahara, the beadstone and adze production activities at Sakai A and Teraji sites extended to far beyond the Middle Jômon, it is assumed that Jômon production processes have not changed very much through time (Teramura 1987: 326). The techniques and tools used for the production of jadeite beads will be described in section 4.1.3. The acquired (and most prevalent, therefore probably the most demanded) shape is more or less oval, and is said to resemble that of a 'dried bonito'

⁴⁶ Although possibly the Atsuta source in Hokkaidô may also have been used: at the Late Palaeolithic site Yunosato in Hokkaidô, the oldest amber object so far was found (Naumann 2000:54).

⁴⁷ For example, although Daigi pottery style influences—the pottery style of the northern Kantô and southern Tôhoku areas—are sometimes mentioned in reports for larger sites, there is no record of Entô style occurrences, which was the contemporaneous pottery style in the northern Tôhoku.

(*katsuobushi* in Japanese).⁴⁸ The beadstone pioneers Yawata Ichiro and Hamada Shosaku who carried out much research on jadeite pendants in particular during the late 1930s, classified the Middle Jōmon pendant shapes into the following types: (a) ‘bonito’ shape, (b) the short, cylindrical ‘pouch string fastener’ shape (*ojime* in Japanese),⁴⁹ (c) the ‘stone adze’ shape and (d) the irregular shape (Andō 1995b: 221). The bonito type is by far the most prevalent, and is mostly oval or ellipse-shaped. Small adze-shaped *beads* are very rare, although jadeite polished adzes are found more frequently at sites. The cylindrical shape is often larger, and usually also thicker—although flat round types also exist. Figure 4B demonstrates the *ojime* and bonito type; moreover figure 4A shows the oldest-known jadeite pendant in Japan.

Figure 17 shows a variety of jadeite, serpentinite and amber pendants found in Central Japan. The two dark-green pendants are made of serpentinite; the central red-brown pendant is made of amber. The remaining pendants are jadeite. Most jadeite pendants are ellipse-shaped, or show a variation (the triangular form). However no. 224 is an adze-shaped pendant.

The earliest jade pendant (see **fig. 4A**) found thus far dates from the late Early Jōmon, and has been found in a grave—in association with Moroiso C pottery—at the large settlement of Tenjin site, in Oizumi, Yamanashi. However, the large-scale exploitation and production of jade objects did not start until the early phase of the Middle Jōmon.

In contrast to Kobayashi Tatsuo who prefers to look at the larger picture, suggesting that full-scale production did not start until the early Middle Jōmon (Kobayashi 1996: 192), Teramura feels that the peak of jade production lay between the final part of the Early Jōmon and the first part of the Middle Jōmon. He proposes that jadeite production in Niigata already started in the Final Early Jōmon, because of the combination of the following conditions:

- (1) A pre-existing bead-stone producing tradition already in place;
- (2) The introduction of the surikiri stone-sawing technique (which originated in Siberia during the final Palaeolithic and entered Japan via Hokkaidō) in this area around this phase, where it was also used for polished serpentine axes;
- (3) The introduction of an efficient tool to drill holes in hard material: the *kudagiri* pipe drill), based on a technology used on Moroiso pottery during the late Early Jōmon;
- (4) The evidence of a jade bead found in an Early Jōmon context at Tenjin site (Teramura 1995: 128-132).

⁴⁸ This dried fish is a common ingredient in the traditional Japanese cuisine; Yawata cleverly used this recognisable household item as a descriptive term to convey an image to the Japanese public.

⁴⁹ The *ojime* is a traditional accessory for men, this large cylindrical counter-weight (made of ivory or other precious material) hung at the end of the purse string, in order to balance the burse over the cloth belt during Feudal times.

3.2 MIDDLE JÔMON JADEITE CIRCULATION AND DISTRIBUTION THEORIES

3.2.1 Distribution and trade routes

During the early Middle Jômon, the large-scale production and circulation of large jade beads rapidly developed. These pendant beads (*taishu*) are often more than 10 cm long, quite heavy, and often regarded as having the shape of a large dried bonito (fish).

More than 200 Middle Jômon pendants are known from all over Japan. The distribution of jade beads is especially dense in the areas of Niigata and Tôyama, but is also found in very large quantities in the Chûbu and Kantô areas; moreover as far north as Aomori and even Hokkaidô, showing that wide-spread circulation took place. One recent example of this is the large quantity of jade found at the Sannai-Maruyama site (**fig. 4B**) in Aomori Okamura 1995: 23, 26).⁵⁰ This circulation is usually regarded as being in the form of exchange or barter, i.e. exchanging one commodity for another. However, as Harada observed, not only finished products but also raw stones were exported, as can be seen from the discovery of three pendants and several pebbles inside graves at Nashikubo site in Nagano (Harada 1988: 130-1),

There are various theories as to the nature and mechanics of exchange; however most archaeologists agree that exchange far exceeded the borders of pottery culture zones and ecological zones (e.g. Kaneyama 1992: 78).

Esaka and Teramura both suggest the use of certain fixed trade routes to take jade products to other parts in Japan. Esaka Teruya regards Chôjagahara and surrounding sites as the central production site, from which jade was distributed in 'concentric' circles in a 300 km radius to the rest of Japan; first to Hokuriku and Chûbu areas, then to Kantô (cited in Teramura 1995: 122-3). Teramura modifies these ideas, disagreeing with a homogeneous spread, which would be diverted by natural conditions such as topography and climate, and may have been influenced by [culturally based] human reasons and decisions. According to Teramura, it is possible to identify fixed trade routes when looking at the map (going as far as to suggest that modern routes may have been influenced by Jômon ones). Teramura's trade routes include: (1) a coastal Japan route into Fukui and Ishikawa ('Hokuriku route'), (2) along the Shôgawa river into the south ('Hida route'); (3) along the Himegawa river to the south, into the Matsumoto Basin, then splitting up into (a) a route into the Ina valley ('Kotôsandô route') and (b) into the Yatsugadake range, on to the Kôfu Basin, Tama area and into south Kantô ('Shinshû route'); (4) from Niigata Kashiwaki-city to Tôkamachi-city, then north into southern Tôhoku ('Higashiyama route') (5) the southern Kantô route from Tokyo Bay into Chiba and up north

⁵⁰ Apart from a number of ubiquitous ellips-shaped pendants and unprocessed stones, this site also yielded some unique items: three huge pierced and polished blocks of jade (diameter 5.5~6.5 cm) were unearthed together at the northern earth-mound structure at Sannai Maruyama (Okamura 1995: 26).

(‘Tokaidô route’); (6) since distribution in Aomori and Hokkaidô is remarkable but more southern distribution is negligible, he explains these as ‘travel by sea’ (Teramura 1995: 122-5). These trade routes would be very interesting to assess; one possible flaw is that Teramura does not seem to have a distinct temporal framework in mind; this distribution pattern ranges from Middle to Final Jômon. It stands to reason that there would be differences between periods, since jade commodities have changed in appearance also.

Alternatively, Kurishima suggests that beads were not transported via a ‘bead’ route from Niigata to the rest of Japan, but were instead transported to certain ‘core areas’ from which they were taken [i.e. redistributed?] to surrounding, smaller places. As an example he mentions the large settlement of Uwamuki site in Suwa, Nagano, a so-called core centre where beads and pottery from Chôjagahara are found (Kurishima 1985: 41).⁵¹ However he does not mention the evidence for supplying smaller surrounding sites, or whether import included raw material or finished product.

Point-to-point distribution is also suggested by Kobayashi Tatsuo:

“The fact that the distribution of jade was well-controlled socially, economically and politically, is demonstrated by the fact that that distribution does not simply reflect a dense distribution in the source area and progressive decrease according to distance away from it. From the Middle to Final Jômon, it isn’t necessarily so that sites next to or close to the source area have large amounts of jade. Rather it is exactly in the more distant Shinano river area where they are frequently maintained, or in Yamagata area or (skipping Akita) Aomori where they are found in large numbers” (Kobayashi 1996: 194).

This statement is particularly interesting, because it is a bolder interpretation of the social role of jadeite than most (cf. Kurishima, who does not explain the type of relation between the ‘core’ sites and the smaller sites), stressing the political aspect of jadeite exchange in supporting a restricted-access prestige good chain. This hypothesis explicitly suggests that already during the Middle Jômon, some level of social differentiation existed, and that distant communities which were part of a larger cultural complex were involved. No doubt this refers again to the example of Sannai-Maruyama site in North Japan. Unfortunately it does not make entirely clear whether the socio-political control was exercised by individuals or the community in general, and how the control over the network was achieved from so far away.

⁵¹ A minority view (e.g. A. Naitô, cited in Teramura 1995: 121-2) rejects the idea of production sites close to the source area (like Chôjagahara site) and suggests other production sites from which distribution spread out—for example from Shizuoka Shijimizuka site. Unfortunately the evidence and reasoning for this suggestion is not clarified; moreover temporal considerations are also unclear.

3.2.2 Post Middle Jōmon jade exchange

After the Middle Jōmon, the size and number of jade objects grew much smaller. This has usually been interpreted as the halting of exchange networks, following Yawata 1940 (cited in Teramura 1995: 120-1). However, during the Final Jōmon, jade production increased again, and included a great variety of bead shapes including ‘comma-shaped’ ones (*magatama*, see **fig. 18A**), while the Middle Jōmon large ‘bonito’-shaped pendants had disappeared. Distribution became very dense in distant areas such as Yamagata, Aomori and Hokkaidō, showing a strong demand for jade in these areas. There is evidence that during the Final Jōmon, production sites deliberately hoarded jade to keep it scarce and valuable; huge amounts of jade pebbles have been found in Niigata Teraji site. It is believed that this market manipulation was carried out to achieve more power and prestige. This ploy appears to have worked at Teraji site in Niigata, considering the size of the settlement and presence of ritual structures (see **fig. 27**) which must have cost considerable man-power: huge stone structures and large wooden pillar structures (Kobayashi 1996: 194-6).

According to Andō Norikazu, the distribution of jadeite pendants during the Middle Jōmon centres on the Hokuriku and Chūbu areas—the ‘jadeite production culture sphere’ and ‘primary distribution sphere’, respectively—and spreads from there to the Kantō, Tōhoku, Tōkai, Kinki and Hokkaidō areas—the peripheral distribution sphere (Andō 1995b: 222). Within the main distribution areas, there are also differences: in the Chūbu mountain area, jadeite pendant distribution is densest in the Ina Valley,⁵² from which it is dispersed into the Matsumoto Basin, Suwa Lake and Chikuma River areas; paradoxically, it rarely occurs in more northern areas which are closer to the source area—a trait which is merely explained as ‘a “reality” of the pendant exchange’ (ibid: 222, 224).

3.2.3 The social significance of green beadstone ornaments

As for explaining the widespread demand for jadeite beads in particular, most scholars believe that they were either prestige objects (Watanabe 1990: 99-103) or objects imbued with a magical significance, or both (Harada 1988: 136; Kurishima 1985: 41-2).

Moreover, the criteria of hardness and especially green colour (usually seized upon as a symbol of the universal values of nature, ecology, fertility, revival etc.), are generally seen as the ‘ritual’ reason why the use of jade was so widespread, exceeding individual pottery culture zones (Teramura 1995: 137-9; Kobayashi 1996: 192, Kaneyama 1992: 78; Kurishima 1985: 42).

⁵² Andō states there are more than 20 cases in the Ina Valley, accounting for more than half the jadeite pendants of Nagano prefecture (Andō 1995b: 222). However, it is important to remember that these numbers may be obsolete.

It has been pointed out that jade has often been found in a burial context; moreover in only a very small percentage, suggesting that not everyone had access to them.⁵³ However, recent studies of burial goods have suggested that such social differentiation involving beadstone ornaments only becomes obvious during the final stages of the Jōmon period (Nakamura 2000: 23). For example, the richly ornamented Final Jōmon female burial at Yamaga Kaizuka, Fukuoka, which also included shell bracelets,⁵⁴ (see **fig. 18C**) has been usually interpreted as representing a shamaness (Harada 1988: 136; Esaka 1988: 19); following this evidence, most scholars have linked jade with important individuals that played a magical role. Equally, the discovery at Shijimizuka site, Shizuoka, of a rich Late Jōmon burial of a man with jade pendant plus arrowheads has led to many interpretations of prestige based on hunting skills (Kurishima 1985: 41; Harada 1988: 136).

Moreover, Teramura has pointed out that the weight of the large pendants would have precluded its constant wear, because of possible damage to the neck. Therefore he suggests that it would have been used only at special occasions, for example during public ceremonies, where only a 'magic' -related person and/or village elder would have been allowed to wear the jadeite. This hypothesis also explains the rarity inside graves (Teramura 1995: 138). Interestingly, Kurishima suggested that as these symbolic objects were actually found in burial and thus taken out of public circulation, magical position might not have been hereditary (Kurishima 1985: 42).

As examples of extensive Middle Jōmon long-distance exchange, the wide-spread distribution of jadeite and/or amber pendants is frequently referred to in Japanese articles in the same breath as that of obsidian arrowheads (Tokyo Centre for Buried Cultural Properties et al. 1993: 28d), albeit rarely acknowledged as belonging to different types of exchange (but see Kaneyama 1998). Sometimes it is even hinted that there may be a link between obsidian exploitation (**fig. 10**) and the distribution of jadeite (Kobayashi Y. et al. 1995: 154), but to my knowledge there has been no detailed research into the exact dynamics between the exchange of the two valuable resources.

Several archaeologists have looked at the link between the production and distribution spheres of jadeite pendants and serpentinite adzes (**fig. 11**). Especially archaeologists who themselves have dealt with excavations in the Hokuriku areas such as Abe Asaei (Abe 1987: 368-9) and Yamamoto Masatoshi consider a linked distribution network likely. However they either are not very specific about the extent during the Middle Jōmon period, or they disagree; Abe (in press) argues that the linked distribution did come into being during the Middle Jōmon,

⁵³ Although at least one archaeologist disagrees, denying that Middle Jōmon beads have been found in burials (Esaka 1988: 19).

⁵⁴ In addition to the large jadeite pendant, the burial goods of this middle-aged female included 26 shell bracelets (15 on the left, 11 on the right arm), a pierced animal tooth—and a hooked antler object which is normally a male accessory! (Harada 1988: 135-6).

but to a very limited extent, not extending much beyond the coastal district itself. (Yamamoto M., personal communication 2002) The most extreme theory is from Andô Norikazu, who regards the relationship between large (jadeite) pendants and serpentinite adzes as the key to the distribution of the former. Not only are both materials exploited and processed in the same area using the same production techniques, the distribution areas are also said to overlap completely. However, according to Andô, the jadeite exchange is a mere by-product in the 'essential' and 'profitable' trade in the serpentinite adzes, a tool he regards as 'indispensable as a part of economic activities in Jômon society'. The role of jadeite pendants is to smooth the way for this important trade by 'serving as metaphysical symbols for the exchange of serpentinite adzes' (Andô 1995b: 227). In this view, the jadeite pendants are not primarily imbued with magical or ritual meaning; moreover, even their potential as status object appears to be considered as secondary to that of the economically important and functional adzes. Interestingly, Yamamoto Masatoshi (personal communication 2002) believes the opposite: noting that jadeite ornaments are frequently distributed at the same sites as the adzes, he wonders whether serpentinite adzes were distributed using jadeite exchange routes.

In summary, a linked distribution network for both jadeite pendants and serpentinite adzes produced in the Hokuriku area has previously been assumed, but its extent during the Middle Jômon has never been made clear, or quantified in any way. Therefore the connection between ornaments and polished adzes made of beadstone will be further explored in this chapter. Both artefacts are indeed largely produced at the same sites in the Japan Sea coastal area; the distribution spheres appear to be the same—at least when looking from a macroscopic perspective involving larger regions. However, will this link also hold up under closer inspection: are beadstone ornaments and adzes found at the same sites as a rule, or do the distributions occasionally diverge? Therefore, the site sample of 175 Central Japan sites will be used to compare the distribution at individual sites between and within the larger regions.

3.2.4 Amber circulation and theories

Despite the limited amber sources and scarcity of finds (possibly also due to bad conservation properties), it is recognised that circulation of amber ornaments was quite wide-spread: from the Early Jômon or start of the Middle Jômon onwards amber was transported over a wide area stretching from Tôhoku to Chûbu, and although the extent and scale of amber circulation are perceived as inferior to that of jadeite ornaments, a surprisingly stable Jômon 'amber network' existed (Harada 1988: 131).

The site sample of 175 sites in Nagano, Yamanashi, Tokyo, Kanagawa and Chiba included eight sites with amber: six in the Chûbu mountain area, and two in Chiba. Additional references to Middle Jômon amber finds within the sample area are indeed rather rare. One

amber ornament was found at Fukusawa-Nakappara site (Chino-shi Togariishi Kôkokan 1996: 28, 61);⁵⁵ two amber pendants were found at Ariyoshikita Kaizuka in Chiba, along the Tokyo Bay (Okamura 1993: 83), and some amber was said to be found at Aranodai, like Awashimadai relatively close to the source area (1973, site report 180b). Although my sample does not include examples of Middle Jômon amber finds in the West Kantô, amber is not entirely absent here: already in the 1970s, a few Tokyo sites were known: Narahara and Inume sites (Noguchi 1973: 10). More recently, an amber pendant was discovered at the Mid to Late Middle Jômon settlement at Mukaigô site in Tachikawa, Tokyo (Wada et al. 1995: 57; Tokyo Centre of Buried Cultural Properties et al. 1993: 24) and a jadeite and an amber pendant were each found in Mid Middle Jômon contexts at Higashikaitô in Hadano-city, Kanagawa (Kanagawa Prefectural Centre of Buried Cultural Properties 1997: 4).

The scope and length of the Chôshi amber route can also be seen from discoveries at a number of sites, which lie just beyond the regional scope of this analysis. Amber believed to be from the Chôshi source was also found on Kurawa site on Hachijô Island (Naumann 2000: 54, Gomi 1993: 15), one of the more distant Izu Islands—ca. 300km from Chôshi-city area. This amber consists of small beads, and was found in burial pits belonging to the final part of the Early Jômon until the start of the Middle Jômon (Gomi 1993: 15)—therefore contemporaneous with the earlier phase of habitation at Awashimadai site. Further to the north of Chôshi-city, and actually outside the scope of this analysis, amber was also found at Ishiyamakami site in Ibaragi prefecture (in a very early context: Initial~Early Jômon), and in a Mid Middle Jômon context at southern Fukushima prefecture at Minamihorikiri site, Shirakawa-city (Okamura 1993: 86); considering the distance, it is likelier that the Chôshi outcrop (rather than the one in Iwate) is the source in these cases.

The general rarity of amber finds is also supported by Nakamura's research on funerary rites and goods: according to his findings, the Central Japan distribution clearly peaked during the Middle Jômon: he discovered one Early Jômon site in the Central Japan area, against seven Middle Jômon sites. No amber was reported in the Central Japan area from Late Jômon and Final Jômon contexts, while in Northern Japan (Hokkaidô and Tôhoku) there are four Middle Jômon period sites, one Late Jômon and three Final Jômon sites containing amber (Nakamura 2000: 22). These later, Northern Japanese cases were presumably all derived from the local source at Kuji in Iwate prefecture, the only other known Jômon source of amber in Japan.

Despite the relatively widespread occurrences of Jômon amber, and scientific interest which goes back at least as far as the 1950s (e.g. Noguchi 1952; Ohba 1952), there are

⁵⁵ Another reference, to a Nakahara site in Chino-city, may well refer to the very same site; however the spelling is somewhat different, and the site is said to contain one jadeite and *two* amber pendants, each found in burial pits (Okamura 1993: 75).

surprisingly few interpretations about the deeper meaning and social role of amber within Jōmon society. In one case the demand for amber was explained by aesthetic reasons, stating that ‘the beauty of amber was equal to that of jadeite’ (Harada 1988: 131). However, there is one exception. An interesting hypothesis on the socio-economic conditions of amber production was recently proposed in the MA dissertation of Uchiyama Junzo. Having participated in the 1990 excavation of amber production site Awashimadai, he noticed the association of amber flakes and fragments with large quantities of animal bones at a waste disposal area. Based on the quantity and types of animal bones (particularly *shika* deer), this well-preserved lowland part of the Awashimadai site complex was interpreted as a special activity, seasonal hunting site. Uchiyama suggested that this site represented the activities of a small group of rather prestigious, specialised game hunters, who also engaged in part-time amber production, trading amber pendants in exchanges with other hunter groups (or like-minded groups). Interestingly, despite close proximity to the coast, evidence of marine products consumption at Awashimadai appears relatively sparse compared with that for large game hunting; as Uchiyama surmises about these socially complex deer hunters: ‘fishing was not their business’ (Uchiyama 1996).

This hypothesis is potentially very interesting; in order to assess it, the contexts and circumstances at the distribution sites will be investigated—particularly with regard to the presence of evidence relating to arrowheads and hunting. Moreover, at Awashimadai site itself, the presence of exchange items from other regions will be assessed; it is likely that there may be some evidence of counter-gifts. If amber represented ‘gift’ exchange revolving around hunting, the type of counter-gift most likely to have been valued would consist of hunting tools. In other words, arrowheads, or material to make them, particularly high quality but locally unavailable material like *obsidian* must have made a very welcome counter gift or exchange commodity. Therefore I expect a certain quantity of high quality obsidian at amber distribution sites—especially since high-quality obsidian is the primary exchange commodity of the Mountain area which appears to have been the chief client of amber exchange. Since the amber producers at Awashimadai had access to various potential food resources, but—judging from the ecological evidence—chose to concentrate on hunting, it is not likely that there was a pressing need for food materials from other regions. On the other hand, ceremonial or celebratory food contributions are always welcome, and it is likely that some pottery from the Chūbu and West Kantō is present.

3.2.5 Purpose of study

Summarising the research on jadeite and amber outlined above, it is clear that Japanese archaeologists have taken note of the wide distribution area of both ornament materials. Particularly jadeite (due to the triple qualities of scarcity, hardness and mysterious beauty) has

been identified as a special valuable, which may have played a role as ideological accessory in Middle Jōmon society. It has been universally accepted that the distribution of jadeite was not homogeneous; some suggest that the exchange involved a limited-access prestige-good chain, whereas others believe that jadeite was pooled at certain core sites and then redistributed to smaller sites. Moreover, it has been suggested that polished stone adzes (made at the same production sites as the jadeites) also played a role in this exchange network. So far so good.

However, the social background of these exchange relations is not clear: some archaeologists have suggested that differential access to items like beadstone indicates the existence of (very moderate) social differentiation (Kobayashi 1992a, 1996; Watanabe 1986, 1990); whereas a few (notably Mizoguchi 2002) have made a strong case in favour of the fundamentally egalitarian nature of Jōmon inter- and intra-regional exchange. Most studies, however, manage to avoid the issue altogether. What were the exact qualifications for membership of this exchange network, and if items were redistributed to other sites, what was the nature of the relationship with these sites? In the case of amber, there are far fewer interpretations on its potential meaning and social role, but it is nonetheless assumed to have been a valuable. Only one theory about the socio-economic background of amber exchange has suggested a link with a prestigious hunting group.

Chapters Five and Six will take a closer look at the conditions surrounding the circulation of artefacts. Chapter Five describes the distribution areas and sites in the context of each region and sub-region, and seeks to understand the topography of the distribution: the physical locations of the distribution sites, and their relation with each other. Chapter six uses statistical methods in order to establish whether certain factors are associated with the presence of ornaments. These factors include site characteristics such as excavated size, number of houses and length of habitation, but also the presence of other artefacts that could indicate long-distance relations, such as high quantities of obsidian and serpentinite adzes, and the presence of ritual artefacts. These variables have been described in the Preface (p. x-xiii). In this analysis Andō's interesting theory about the secondary role of jadeite pendants in serpentinite adze distribution will also be taken into account; by comparing the distributions in the site sample to see if both artefact types are indeed found in association, and by examining treatment of both artefact classes. It would be reasonable to assume that if (1) serpentinite adzes indeed played such an socio-economically important role, and (2) jadeite ornament distribution was linked or even subservient to the procurement of serpentinite adzes, both may have been regarded as important or even status objects, which may be reflected in their differential treatment and the context in which they are found, as described above. These expectations will be tested among the site sample, which will be further supported with relevant data from secondary sources.

In Chapter Seven, the assumed ‘preciousness’ of jadeite and amber will be evaluated from a contextual perspective. As we have seen, there are various theories on the role of pendants; especially in the case of jadeite, it is usually considered to confer a ‘magical’ status on the wearer. Of course, in the absence of written records there is no way of testing such an assumption. However, much about the general regard in which an object was held can be inferred from the context in which an object is found, and the treatment it received during its use-life. It is hypothesised here that

- A socially important object—especially one with a non-utilitarian function—will have been cherished and protected. Such treatment may be reflected in a relatively well-preserved state compared to utilitarian or less rare objects; if such an object has been damaged, attempts will have been made to repair or recycle the object. Moreover
- Unless it has incurred irreparable damage, it is more likely than ‘ordinary’ objects to have been intentionally deposited under special conditions—such as in burials of influential persons, ritual settings, or caches—instead of just being discarded.

Jadeite in particular is very useful in testing these hypotheses, because its very hardness prevents it from disintegrating under natural circumstances (as unfortunately happens frequently to amber); any heavy damage found is likely to have been incurred during its use.

However, the next chapter, Chapter Four, will deal with the conditions surrounding the production of ornaments. Although production techniques have often been reconstructed and described in great detail by experimental archaeologists, very little has actually been written about the circumstances behind the production, and the environment in which it took place.

CHAPTER FOUR: THE CONDITIONS SURROUNDING BEADSTONE PRODUCTION

In this chapter, a brief description of the production sites of jadeite and amber pendants will be given. As described in Chapter Three, both minerals are extremely rare and can be traced back to a limited source area, which happen to be located at opposite ends of Central Japan: the Japan Sea Coast and the Pacific Coast. Research has shown that during the Middle Jōmon phase of the Jōmon, jadeite was derived exclusively from the 'Jadeite Coast' between Kurobe and Oomi rivers in the Hokuriku district (Warashina 1995), whereas a small amber outcrop was located in the vicinity of Chōshi, at the Pacific Coast, is the most likely supplier of Middle Jōmon sites in Central Japan (e.g. Harada 1988: 131). Moreover, as has been recognised in Jōmon archaeology, both minerals were used in the manufacture of ornaments with wide but restricted distribution patterns. The subject of socio-economic implications surrounding circulation will be dealt with in Chapters Five and Six. The assumption that the amber and jadeite were highly-valued items will be further tested in Chapter Seven, which discusses the immediate contexts and circumstances in which these artefacts are found at the distribution sites, and the implications for the consumption patterns.

However, supply and demand are interconnected, and the study of exchange mechanisms would be incomplete without a better understanding of the background of production sites, and their motivation for a productivity that during the Middle Jōmon began to far exceed private consumption. Therefore, this section attempts to describe the circumstances behind jadeite and amber production sites respectively: the nature of the surrounding environment, site characteristics and occupation history as recovered, the composition of the local toolkit and presence of certain types of tools and artefacts, and the presence of artefacts or material from other regions, indicating the reverse side of the exchange.

4.1 JADEITE PENDANT PRODUCTION ON THE JAPAN SEA COAST

4.1.1 The production sites

The inhabitants of a small coastal area between East Toyama and West Niigata took full advantage of the presence of two rare stone resources, locally making them into valuable and highly desired objects, which were circulated over East Japan. *Serpentine* was made into teikaku-style polished stone adzes, and *jadeite* (and to a lesser extent, other available beadstone, e.g. *alabaster* and *soapstone*) were made into beautiful pendants. The scope of this source and production area is quite limited: it covers ca. 50 km along the coast, roughly extending between the Kurobe and Hime Rivers, and consists of a very narrow strip of land between the Sea and the high mountains of the Hida range. This area is often referred to as the 'Jadeite Coast' (see

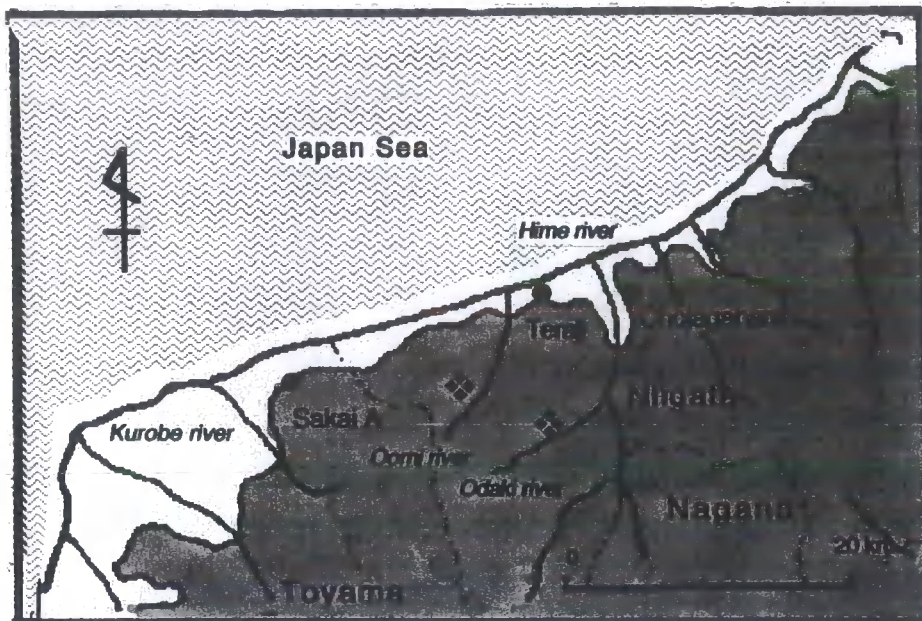
resource distribution **map 4**, next page). Despite the limited size of this area, it came to play a very important role in Jōmon society. From the Middle Jōmon period onwards, the circulation of jadeite pendants and serpentinite adzes started to expand beyond the Hokuriku area itself, first into the Chūbu and Kantō areas and widening over East Japan. During the Late Jōmon and Final Jōmon the scope of the distribution became even wider; during the Final Jōmon, jadeite pendants from the Jadeite Coast were found in all of Japan: from Kyūshū to Hokkaidō.

The construction of the Hokuriku Express Way in the 1980s led to the discovery of many settlements involved with production in the Japan Sea area, all located close to the coast or river mouths, with immediate access to the necessary materials: raw materials like jadeite and serpentinite; and sandstone. Evidence of local large-scale production includes huge quantities of jadeite and serpentinite raw material, unfinished and finished objects (see **fig. 19**), fragments, and tools such as jadeite hammer stones and sandstone whetstones (see **fig. 20**) were found at all these sites. The best known of sites are Babayama and Sakai A sites in Asahi-town, Toyama prefecture, and in Niigata prefecture, Chōjagahara in Itoigawa-city and Teraji site in Oomi-town, Niigata.

Most of these sites include Middle Jōmon settlements, which—on the basis of the additional presence of pit dwellings, burials, storage pits, and large quantities of pottery, subsistence and ritual tools—are believed to have been *continually* inhabited, with production activities as a *part-time* occupation next to subsistence activities (Yamamoto Masatoshi: personal communication; Toyama Board of Education 1987: 137, Chōjagahara Site Museum 2000). Moreover, many of these sites also show continuation of use into the Late and/or Final Jōmon, like Sakai A and Teraji sites. The most famous of these production sites are briefly described below.

At Asahi in Toyama prefecture, Babayama site group was occupied only during the earlier stage of the production settlements. An excavated surface of 17,600m² divided over four subsites yielded only 13 Early Middle Jōmon dwellings in total.¹ The production evidence at this site mainly included serpentinite adzes; although a few soapstone and agate pendants were found, jadeite finds are limited to one nodule of unprocessed material (Toyama Board of Education 1987). This suggests that jadeite pendant production was not yet very intensive.

¹ Babayama B section consisted of 6000m² of excavated surface and yielded four houses, F section of 3000m² and one house, G section of 5000m² and six houses, and H section of 3600m² and two houses. At sections B and G the relatively largest quantities of production evidence (both of adzes and ornaments) were discovered. Especially ornament production evidence was found only at sections with multiple houses.



- | | | | |
|---|-------------|---|---------------------------|
|  | Plain |  | Jadeite source |
|  | Mountainous |  | Important production site |

Map 4: The Jadeite Coast area: location of the most important jadeite pendant and serpentinite adze production sites at the Japan Sea Coast JADEITE COAST (after Teramura 1995: fig. 59)



Map 5: Location of Awashimadai site, in the tip of Chôshi Peninsula, ca. 2km from the Pacific Coast 'Amber Coast' (amber sources are distributed near the coastline to the right of the Peninsula) and Tone River (from Ohba 1952).

Sakai A site, located only a few km away from Babayama, was investigated quite extensively: a 12,100m² area was excavated during 1984-5. The site was occupied from the early Middle Jōmon until the Final Jōmon, and included a settlement of 35 Middle Jōmon~Late Jōmon houses, large numbers of pits ranging from early Middle Jōmon to Final Jōmon, and large quantities of pottery, tools, evidence of beadstone production and ritual objects. As evidence of the extensive adze and pendant production, the site yielded 1,031 *finished* serpentinite polished adzes, 35,137 unfinished adzes, 912 (mostly jadeite) beads, 10,196 unfinished and raw material pebbles. In addition, large quantities of tools (percussion tools, anvils and whetstones) and stone flakes and fragments were found (Yamamoto 1991). Ordinary subsistence tools and ritual artefacts from various periods (including clay figurines and stone rods) are also well represented.² The majority of pendants—mostly jadeite, but also including soapstone, serpentinite, nephrite and ‘ordinary’ stone like shale and tuff—consisted of small round beads and comma-shaped beads that almost certainly belonged to post-Middle Jōmon periods. However, from a stylistic perspective, nine large jadeite pendants of the ‘bonito’ type very probably belonged to the Middle Jōmon period (see **fig. 19A**). Seven of these bonito pendants were only partially finished and found in house fills or scattered over the settlement, but two well-made finished pendants remained at the site, in (burial) pit contexts. Because of the scarcity of finished and whole bonito-type pendants, it was concluded that ‘almost all finished items had been exported to other regions, leaving only two for local consumption’ (report 176a: 72).

Chōjagahara site in Itoigawa, Niigata prefecture, was located at 3km distance of the Himegawa River-mouth is considered as a prosperous long-term Middle Jōmon core settlement which produced jadeite ornaments and serpentinite adzes and exported them to other regions. Only a small percentage of the site has been excavated; so far 24 Middle Jōmon houses, and many structures including burials and storage pits have been found. This site also contains many ritual objects such as sekibō and dogū (Chōjagahara Site Museum 2000; Maeyama 1985)

Nearby, Teraji site in Oomi was in use during the Middle Jōmon and the Final Jōmon periods. On the basis of stylistic properties, a typological distinction was made between Middle Jōmon and Final Jōmon adzes; the majority of adzes at this site belonged to the Final Jōmon period (Abe 1987). Most Middle Jōmon adzes were found near the Middle Jōmon section,

² Examples of subsistence tools at Sakai A are: 737 arrowheads, 428 chipped stone hoes, 33 saddlequerns, ca. 1000 pitted stones for shelling nuts etc, 339 net sinkers (Yamamoto 1991: 55). Various Late~Final Jōmon stone artefacts were also present in large numbers: for example 166 sekibō, 107 sekito, 24 sekkan (ibid.). Middle Jōmon clay figurine ritual was represented by eleven dogū, including at least one from the early and mid phase each, and at least two from the late Middle Jōmon phase (Clay Figurine Research Group 1996: 290).

which consisted of a small settlement, with only one or two houses in use simultaneously.³ One well-preserved Late Middle Jōmon house, containing *both* serpentinite and jadeite raw material, rough-outs and tools stored away in pits in the floor; was reconstructed as a dwelling which also functioned as a workplace (Teramura 1987: 323-6; 1995: 90-5; see illustration 26). On the other hand, the Final Jōmon section of the site was of a very ritual nature: it had a large stone structure, which consisted of various features, including a large fireplace with human remains and four giant wooden pillars in a square arrangement, and contained many ritual objects such as standing stones (*tateishi*) and stone rods (*sekibō*). The eleven human remains had probably undergone secondary funerary rites; Teramura interpreted the structure with the wooden poles as 'a place to beckon the gods' (Teramura et al. 1987: 483-4; Teramura 1995: 96-114, reconstruction visible in illustration 27).

At all these sites, from the Middle Jōmon onwards, some evidence of mutual contacts with distant regions is present in the form of imported objects like small amounts of 'alien' pottery (from the Chūbu, Kantō and Tohoku regions) and stone materials. Some of these imports were for utilitarian purposes, such as obsidian for arrowheads and other small sharp tools. For example, at Sakai A site, a proportion of the obsidian arrowheads and cores was tentatively identified as *Shinshū-type* obsidian located in the Chūbu area (Toyama Board of Education 1990: 65). This obsidian, from for example Wada Pass or the Kirigamine Mountains in Nagano, is of high quality, and during the Middle Jōmon it had a wider distribution sphere in Central Japan than obsidian from *Kōzu Island* or *Hakone* (Suzuki Masao 1974). Pottery style influences from the Chūbu and Kantō areas suggest that the interaction was not just on a purely economic level. It is very likely that the exchange was also social—in the form of information, or marriage partners. Some ritual traditions were also believed to be influenced, for example the clay figurines from Chōjagahara by Chūbu traditions (Maeyama 1985: 478), and during the Late Jōmon, ritual stone tools such as *sekibō*, *sekito* and *sekkān* were probably also imported from Nagano (Toyama Board of Education 1990: 71-2). In short, relations with the neighbouring Chūbu Mountain area were strong during the Jōmon. However, in all, it appears that tangible evidence of *imported* goods from distant regions does not occur in very large quantities; this was also the impression of the excavators (Yamamoto Masatoshi: personal communication 2002).

4.1.2 Traditions of pendant production at the Jadeite coast

Before the Middle Jōmon, the location and usefulness of these beadstone materials appears to have been well-known; serpentinite was already used for primitive *kyokubu*-type adzes during

³ Of the seven houses at the Middle Jōmon section B, one belonged to the Final Jōmon; the remaining six were dated to various phases of the Middle Jōmon according to the styles of their pottery.

the Palaeolithic, moreover, there was a precedent for ornament production at the nearby Shirouma/Hakuba area near the border with Nagano, where serpentinite and soapstone earrings (fig. 14) were made and distributed during the Initial Jōmon and Early Jōmon (Harada 1988: 122-4, Fujita 1983: 30-3). Serpentinite adzes of the regular *teikaku*-style started to be used in the Hokuriku area from the end of the Initial Jōmon period onwards (Yamamoto 1991: 55), and the very first jadeite pendant dates from the final Early Jōmon period (Kaneyama 1998). However, it is significant that this use consisted of temporary visits, with small taskforces collecting the material for private consumption. These short visits are visible in the archaeological record only by the presence of small quantities of pottery and tools. An important change in this behaviour took place from the early Middle Jōmon onwards: house remains, burial pits and large quantities of pottery, subsistence tools and artefacts at sites like Babayama and Sakai A (both in Asahi-town) indicate that people started to settle down in this area on a more permanent basis. During the Mid and Late phases of the Middle Jōmon, the number and size of the Jadeite Coast settlements grew. Furthermore, evidence of increasingly elaborate adze and ornament production showed that the inhabitants (in addition to their ordinary, subsistence activities like fishing, hunting and collecting plant foods) started specialising in the production of serpentinite and jadeite goods—not only for their own consumption, but for the express purpose of exchange to other sites and regions.

The minerals jadeite and serpentinite are usually found together; jadeite exists vein-like within serpentinite (Suzuki Michinosuke 1994: 169). Hokuriku jadeite outcrops are located at the Odaki River (a tributary of Hime River) and the Hashidate area at Omi River (Teramura 1995: 31). Due to the eroding powers of the fast-flowing rivers, nodules of both jadeite and serpentinite were loosened, polished and carried along the streams, finally to be deposited as pebbles on the Japan Sea Beach.⁴ Therefore, in addition to the outcrops, jadeite and serpentinite can both be easily picked up in the shape of pebbles from the river beds and along the beach in an area between Kurobe River in East Toyama and Himegawa River in West Niigata; because sandstone cobbles are also easily available, all elements for production are present for the 'Jadeite Coast' production sites (Abe in press). Smaller jadeite pebbles may have been particularly easy to spot when wet or under water, because of the conspicuous nature of jadeite with its translucent, bright green colouring. Ethnographic sources report that such was definitely

⁴ Due to the hardness of the material, pieces of larger jadeite outcrops can only be dislodged through labour-intensive percussion and by taking advantage of natural cracks and veins; detachment by alternately heating and cooling the rock would merely cause irreversible damage to the jadeite (Teramura 1995: 194). Therefore, collecting alluvial pebbles was a far easier option. Jadeite expert Teramura distinguishes between two types of pebbles: 'rolling stones' which can be as large as a child's head and is usually found in river beds, and the smaller 'floating stone' type which varies between fist- and pink nail size, and is usually washed up on the beach (Teramura 1995: 193). Mr. Koji Takahashi of Toyama University very kindly sent me a small specimen of the latter type.

the case in New Zealand,⁵ and in historical sources, including a 17th century text, mention is made of similar search techniques in China (Clark 1988: 37).

4.1.3 Jadeite production tools and technology

The first steps of the production of the large 'bonito'-shaped jadeite pendants resembled those of the polished adze, at least with regard to selection of a pebble of raw material which approximated the required shape, and techniques of general shaping (which required a hard percussion tool, like the polyhedral jadeite hammers) and polishing through whetstones, possibly with the help of abrasive materials (like sand) and water.

At Sakai A site, many jadeite nodules as well as nine bonito-shaped large pendants in various production stages were present (see **fig. 19**); based on these, the production process was reconstructed as follows: (1) selection of a round pebble, or splitting a pebble; (2) shaping the pendant through flaking and hammering; (3) grinding and polishing until the general shape is achieved; (4) preparations for drilling the hole, by making a small indentation; (5) drilling the hole with a pipe or rod-shaped drill; (6) final polishing (report 176a: 54).

Much research on jadeite pendant production has been carried out by Teramura Mitsuharu. In the case of the Jadeite Coast production sites, the material could be easily collected in the immediate vicinity: from the streambed or at the beach. Originally, there may have been a preference for using the smaller 'floating' type pebbles, since their quality is easier to ascertain, and these required minimal shaping (for example **fig. 4A**, the Early Jōmon pendant from Tenjin A). Nonetheless, at for example Teraji and Chōjagahara sites large quantities of jadeite fragments (**fig. 20A**, top row) formed testimony to the frequent use of larger 'rolling' pebbles, which had to be split by applying percussion to weaker spots in the stone, like cracks or veins. The bonito shape is the most representative of Early Jōmon and Middle Jōmon pendants—not only by choice because of its convenient pendant shape, but also because of the form resulting from the first splitting. Many pendants are not perfectly ellipse-shaped, but are fairly straight on one side and semicircular on the other, so that the resulting shape is closer to a 'half-moon' (**fig. 20A**, bottom row: left and right). Because many 'rolling' pebbles are irregular ball-shaped (**fig. 20A** bottom row: middle), this asymmetry is hard to correct even through grinding.⁶ For the grinding of a roughly shaped pendant, an abrasive is used in combination with

⁵ The Maori, who value jadeite and nephrite (which can only be acquired from a few remote river beds in the thinly-populated South Island) very highly, use this stone for making prestigious *tiki* ornaments and ceremonial polished adze blades. Jadeite plays a role in various origin myths; one describes the stone as a fish that magically turned into stone after being caught (Clarke 1988: 37). This narrative aptly describes such visual characteristics.

⁶ Problems of such asymmetrical shape could theoretically have been avoided by using the 'surikiri' cutting technique adopted from Siberia, which—until the Middle Jōmon period—also was commonly used in Japan for serpentinite adzes production. However, no evidence of this technique was found at

whetstone; this usually consists of pulverised hard stone (such as jadeite) and mixed with water (Teramura 1995: 196-7).

The piercing of the hole probably presented the gravest technological difficulty: since Middle Jōmon pendants were often 2~3cm thick. There are three types of holes: V-shaped, U-shaped or Straight. Most commonly found in the Middle Jōmon pendants is the 'straight' hole which is technologically the most advanced, carried out with a pipe drill (*kudagiri*). Evidence of this technique is found in half-finished pendants: there are some with a half-way abandoned piercing, which looks like an indentation whereby the central bit protrudes a bit (see for example **fig. 19A**: the three unfinished pendants on the right). To the drill is added some material as abrasive, using powdered stone (something hard like jadeite or serpentinite). The drill itself is probably made of relatively soft, flexible material (bamboo or bone, like the pipe-bone of a bird) instead of stone; otherwise the abrasive will be expelled and the hole won't succeed properly (ibid: 198-99). It is possible that the drill may have been rotated with a device (like a bow drill construction) instead of through hand motions. This technique did present some problems,⁷ and in the Late Jōmon and Final Jōmon periods when smaller round and comma-shaped pendants became fashionable, the pipe drill was replaced by the stick drill. Experimental archaeology tests have shown that an experienced person using a bamboo drill and hard powdered stone (jadeite or hard sandstone) mixed with water or saliva as abrasive, could make a 2mm deep hole in about four to five hours in good-quality jadeite (Ibid: 200-1).

Archaeologically preserved evidence of special production tools at Sakai A site includes flat stone 'anvil' platforms, jadeite hammer-stones (see **fig. 20B**) and grooved whetstones (see **fig. 20D**). The latter, consisting of very rough-grained sandstone, were different from the flat-surfaced whetstones (**fig. 20C**) used for polishing serpentinite adzes: they were U-shaped, and scored with grooves as a result of grinding the harder, smaller ornaments (ibid: 32-33). Drills, since they were made of organic materials, were not preserved at the production sites.

Incidentally, not all jadeite used at the Jadeite Coast was of equally high quality; sometimes the material was impure, containing for example serpentinite. At Sakai A, one of the bonito-shaped pendants was described as having a high serpentinite content (report 176a: 154); some of the distributed material is also described in the site reports as being of rather poor quality—for example one of the pendants at Kusakari section B (report 162a: 545-6) and the

Teraji and Chōjagahara sites at all. The 'percussion-and-grinding' technique was clearly a local preference; Yawata Ichirō demonstrated that this technique was used on jade items in Siberia, SE Asia and New Guinea (Teramura 1995: 196-197).

⁷ Technically, this technique has to be very accurate; one cannot drill through all the way to the other side, because this would damage the surface of the other side. Instead one has to stop a fraction beforehand, turn the pendant around and gently knock the middle part through.

pendant at Higashinagayamano, site 175.⁸ It is interesting that both sites are located in the East Kantô, at a relatively larger distance from the source area than the Chûbu area. I did not come across such examples at for example Chûbu sites. On the one hand this may be coincidence, on the other hand there is a possibility that 'human nature' prevailed, and sometimes lesser-quality ornaments were deliberately forwarded in long-distance exchange networks while the superior items were held back. It is not unlikely that relatively more remote sites (which perhaps were not perceived as being closely related) occasionally ended up receiving somewhat inferior items.

4.2 AMBER PRODUCTION SITE: AWASHIMADAI, EAST KANTO 'AMBER COAST'

4.2.1 Amber source information

Amber is a scarce material. During the Jômon period, amber was derived from two resource areas: one outcrop is located near Chôshi-city at the Pacific Coast in Chiba prefecture; another at Kuji-city in North Eastern Iwate (Harada 1988: 131). There was no information on the sourcing of amber available; therefore it is unclear to which extent the amber from the sample sites was derived from the Chôshi source, the Kuji source, or perhaps a combination of both. Most amber finds from the site sample discussed in this thesis were concentrated in the Yatsugadake area, as will be described below. The Iwate amber source was located at more than 600km from Suwa Lake, whereas the Chôshi source was much closer: approximately 250 km away. Apparently some recent research of Yatsugadake amber suggested that part of this amber might have been derived from the Iwate source.⁹ If this is indeed the case, it is a very important discovery that gives a whole new perspective on Middle Jômon exchange, suggesting that prestige networks including jadeite and amber may have been structurally far more elaborate and long-distance than expected—with North Japan already playing a crucial role—and involving large stretches of sea travel. In such a case it is not inconceivable that large influential settlement sites like Sannai-Maruyama (which contained liberal quantities of both Hokuriku jadeite and Kuji amber: Okamura 1995) played an important role in such networks, and gained their prominence in this way. Nevertheless, more research is necessary, and until this possibility has been confirmed, this author will concentrate for the time being on the Chôshi source as the more likely source area for Central Japan, because of its relative proximity and the elaborate

⁸ In the Higashinagayamano report, the pendant is first classified as '*hisui*'; then it is described (presumably through visual observation, without proper analysis) as 'not jadeite but something related to jadeite' (site 175:). It is likely that this is an example of jadeite with a high content of serpentinite or soapstone.

⁹ Mrs. Kobayashi of the Cultural section, Chôshi-city Board of Education mentioned having come across such an article to Junzo Uchiyama, but admitted she was not certain of this.

evidence for intensive contacts and exchange between the Chubu and Kanto regions in particular.

The scarcity of amber material at Jōmon sites is reflected by the limited data on amber bead manufacture available; so far only a single production site with amber in all stages of production (see fig. 21 and 22) has been reported: Awashimadai site, a settlement near Chōshi which flourished between the end of the Early Jōmon and the middle of the Middle Jōmon period (Naumann 2000: 54). Following recent research on prehistoric amber production in Europe (Shennan 1982, duGardin 1993), the fact that such failures were found at all could be explained either by inferior quality of the amber itself (for example due to inclusions or air bubbles) or by clumsiness and lack of skill of the 'craftsmen' at the site. In the latter case, it is possible that amber-working at Awashimadai was not as specialised and extensive as the ornament production at its jade-working counterparts—Hokuriku sites such as Teraji and Sakai A. This could also be partly due to temporal differences: if Naumann's chronological interpretations are correct, the settlement at Awashimadai reached its high point at a somewhat earlier stage in the Middle Jōmon than most Hokuriku sites did.

The following information is derived from the MA dissertation of Uchiyama Junzo (unpublished), and the Awashimadai site reports of 1953, 1973 and 1990. The Awashimadai site group consists of various sub-sites, including a low-land waterlogged site, and—located nearby on a hill slope—a small shell mound and a Middle Jōmon settlement site containing pottery from Early to Middle Jōmon. The lowland site, which mainly functioned as a part-time hunting site—characterised by a large quantity of well-preserved animal bones, particularly *shika* deer—was also used for processing amber: a large quantity (ca. 56 fragments) of raw material and a number of partially finished objects were found at this site. At the nearby settlement site, several *completed* amber pendants were reportedly found in the past. Based on ecological evidence of the hunted animal bones, the hunt site was probably seasonally used from spring to summer. Pollen has indicated the presence of deciduous oak and walnut trees, which would have provided nuts in autumn, and proximity of a freshwater lagoon.

Uchiyama suggested an interesting hypothesis on the socio-economic conditions of amber production. According to his interpretation, this site represented the activities of a small group of rather prestigious, specialised game hunters, who also engaged in part-time amber production, using the products for exchange activities with other hunter groups (or like-minded groups). Interestingly, despite close proximity to the coast, evidence of marine product consumption at Awashimadai appears relatively sparse.

It would be extremely interesting to find out which exchange items from other regions were present; it is likely that there may be some evidence of counter-gifts. If amber represented 'gift' exchange revolving around hunting, the type of counter-gift most likely to have been

valued would consist of hunting tools. In other words, arrowheads, or material to make them, particularly high quality but locally unavailable material like obsidian must have made a very welcome counter gift or exchange commodity. Therefore I expect a certain quantity of high quality obsidian—especially since obsidian is the primary exchange commodity of the Mountain area that appears to have been the chief client of amber exchange. Since this group had access to various potential food resources, but—judging from the ecological evidence—chose to concentrate on hunting, it is not likely that there was a pressing need for food materials from other regions. On the other hand, ceremonial or celebratory food contributions are always welcome, and it is likely that some pottery from the Chûbu and West Kantô is present.

4.2.2 Awashimadai site evidence

The Awashimadai site group is located on the tip of Chôshi peninsula in Chiba Prefecture; as the 1953 map (see **map 5**, page 67) shows, its location is very close to both the Pacific Coast (to the east) and the mouth of Tone River (to the north). As in the case of the Jadeite Coast production sites, amber pendant production took place very close to the material source. The amber outcrop is located at the end of Chôshi Peninsula at Togawa-town Ishikiriba, at a distance of 2.4km from Awashimadai, where material can be picked up from the beach. Apparently it was possible to find fist-sized chunks of amber there—until recently, when collection became prohibited (Noguchi 1973, report 180b: 10).

There have been three excavations of Awashimadai site—all rather small-scale, with a number of trenches and excavated grids—which have so far recovered one Early Jômon pit dwelling, one Late Middle Jômon part of a shell mound, and a lowland waste disposal area (part of a seasonal hunting site) containing large quantities of animal bones, pottery, stone tools, amber debitage, and very rare examples of wooden and lacquered items. The ecofacts as well as the amber have been well-preserved due to the wetland peat bog conditions. The Late Middle Jômon pottery, apart from Kasori E, also included Sori pottery—which may suggest some ties to the Chûbu area.

The first excavation in 1952 discovered a Middle Jômon shell mound and an Early Jômon house pit, and a large quantity of well-preserved artefacts. Relevant to this study are several discoveries from Middle Jômon contexts: amber, obsidian, pottery and jadeite. Two large, unfinished amber pendants were found: one fragment (partially pierced) and one pierced fragment that was severely chipped, probably lacking final polishing. Moreover, the tools included eleven arrowheads and one drill made of chert, obsidian and slate were found. The quantity of the obsidian tools is not recorded, but special mention is made about the provenance of the arrowheads, indicating that obsidian arrowheads were in use from the Middle Jômon onwards (report 180a: 36-7). Moreover, in A-section trench, large quantities of obsidian flakes

and fragments were found in association with Late Middle Jōmon Kasori E pottery (ibid: 14). Excavator Ohba Iwao speculates that the obsidian may have come from either the Wada Pass in the Chūbu or Amagi Mt. in Hakone, West Kantō.¹⁰ This site appears also to have been quite 'rich' in imported stone ornaments: a soapstone pendant (converted earring) and an agate (or jasper) pendant have been found at the site, and a jadeite pendant has been surface-collected next to it. The jadeite pendant (surface-collected-nearby) is identified as a Middle Jōmon artefact imported from the Niigata Odaki area (ibid: 52-3). However, serpentinite adzes are absent among the teikaku-style polished adzes found at this time (ibid: 38).

The 1973 excavation was carried out on the hill slopes and covered 242m². Only a temporary report was published at the time. No structural remains were found; the majority of materials was recovered from two trenches. Pottery in the cultural layers showed that this site had been occupied from the Early Jōmon to the early Late Jōmon, but the mid to late phases of the Middle Jōmon were most strongly represented (Atamadai and Kasori E pottery); these layers contained the majority of ecofacts and artefacts—ceramics (including lacquered pottery and earplugs), a considerable but unrecorded number of subsistence tools (plant food processing, fishing and hunting tools, including arrowheads but also drills and polished adzes), artefacts with a more social significance (sekibō ritual stone rods and a round jade ('nephrite') ornament)—and of course evidence of amber production. Although no finished or partially finished pendants were found at this time, only debitage: raw material and flakes (27 items in all), the associated presence of bead production tools like grooved and flat whetstones was interpreted as sufficient evidence that amber production took place there (report 180b: 9). As described above, grooved and flat whetstones were also in use at the Hokuriku pendant production sites on the opposite Japan Sea coast; in this context the associated presence of the 'nephrite' [=probably jadeite] pendant is highly interesting. The oldest amber production evidence was found in the Atamadai layer; however most material was confined to the Late Middle Jōmon (Kasori E) layers (report 180b: 9-10)—i.e. later than the Early Jōmon to early Middle Jōmon production dates sometimes reported (cf. Naumann 2000: 54).

The very small-scale 1990 excavation was mainly aimed at recovering ecofacts (animal bones, pollen, wood and other organic material) from the disposal area, but also recorded 56 unfinished amber ornaments (6 cores and flakes, 13 unfinished ornaments, 37 fragments). Several of the cores show evidence of polishing and piercing; three failed ornaments were pierced twice (See **fig. 22**: particularly, items 3, 5 and 6).

¹⁰ Oba suggests that the Hakone source may have been nearer when imported via sea route (report 180a: 52); however, due to the relatively poor quality of Hakone obsidian, it is actually more likely that Kōzu Island was among the suppliers.

So far, a full-scale Middle Jōmon settlement has not been recovered yet, but on the basis of the amber debitage Awashimadai has already been compared to the large-scale jadeite producing base settlements Sakai A and Teraji site in Niigata. It is even suggested that Awashimadai very probably ‘was an amber processing and supplying *core settlement*’ (Harada in report 180c: 31, my emphasis).

In conclusion, although Awashimadai amber production is sometimes described as having flourished during a brief and rather early time, namely between the Early Jōmon and mid Middle Jōmon (e.g. Naumann 2000: *ibid*), associations of amber with Atamadai and Kasori E pottery strongly suggest that amber production was still flourishing during the Later Middle Jōmon. Moreover, there are strong indications of interregional contacts suggesting active participation in exchange networks during this period: *Sori* style pottery (predominant in the Chūbu) is found during all excavations, as well as *obsidian* and two cases of *jadeite* (or nephrite) pendants.

Not much has been written about the exact procedures of amber pendant production during the Jōmon period, however the evidence suggests some technical parallels to the production of jadeite pendants at the opposite Japan Sea Coast. The presence of large quantities of amber fragments possibly indicates that rough shaping of the pendants was also carried out by splitting away unwanted parts with the aid of percussion. Since amber is a relatively soft material, processing would not require nearly as much force or heavy tools as the production of jadeite pendants would. Moreover, grinding and polishing also played an important part, as is shown by the presence of the grooved whetstone—a tool also used for polishing jadeite pendants. So far, no finished ornaments have been found at Awashimadai itself, only fragments and partially finished or rejected items. However, no doubt the specific characteristics of amber also necessitated specialised production strategies for trouble-shooting. As Naumann has pointed out, the presence of items that had only been discarded after various attempts at piercing may be a sign of the relative scarcity and value of the material (Naumann 2000). On the other hand, these pieces are quite small; as rejects they may have been primarily used for teaching or practice.

Uchiyama’s hypothesis attributing control over amber production and exchange to a prestigious hunter group is intriguing, especially since at the eight distribution sites within the sample, there does appear to be a link between the presence of amber, and archaeologically visible factors relating to hunting. As has been described previously, these factors are both related to arrowheads, possibly the definitive hunter tool: (1) relative prominence of arrowheads in the site toolkit and (2) evidence of arrowhead production and access to resources (particularly obsidian).

CHAPTER FIVE: SPATIAL ASPECTS OF ORNAMENT CIRCULATION

5.1. THE CONDITIONS BEHIND STONE ORNAMENTS CIRCULATION

5.1.1. Previous findings

The first part of this case study (Chapter Three) touched upon the Japanese archaeological traditions of research on beadstone (and jadeite in particular), starting at the early 20th century. Two aspects of exotic ornament exchange are usually underlined: (a) distribution of jadeite (and to a lesser extent, amber) has been long-distance; (b) jadeite pendants were greatly valued during the Jōmon due to rarity and aesthetic qualities, and several archaeologists interpret the function of pendants as having played an important role in the social and ritual life during the Middle Jōmon, conferring either magical or political status on an individual (or an entire settlement). Unfortunately, this research would be considered rather ‘vague’ in western terms; often it does not consider greater socio-economic implications of their interpretation of the archaeological record, and even the few recent studies that do pay attention to this aspect (e.g. Kobayashi, Andō, Watanabe, Hayashi and Mizoguchi), do not back up their conclusions by much concrete evidence, or quantification of their (presumably extensive?) data. In the Japanese archaeological world, they are not required to; everyone knows that they—as senior professors—are inherently best qualified to make such generalising statements. At best, a few individual examples are considered to suffice.

Chapter Seven will test the latter assumption that ‘exotic’ ornament materials were valuables, by looking at specific *in situ* contexts within the sample—for example to which degree these have been included in highly ‘personal’ contexts like burials, as opposed to more generic contexts such as disposal heaps. That analysis will also investigate the condition in which the ornaments have been found, for example striving to assess whether more labour and care had been invested in both production and maintenance of jadeite and amber items, compared to other materials or artefacts).

This chapter and the Chapter Six will deal with patterns of ornament circulation. The widespread distribution of jadeite from the Hokuriku source area (and to a lesser degree, amber from the East Kantō) in the Chūbu and Kantō areas and beyond, is well-known in Japanese archaeology; so much so that little recent work on the relation between distribution and the dynamics of exchange has been carried out. Only a few archaeologists hazard a guess concerning the role of beadstone ornaments within broader exchange networks; moreover, although the broad, regional patterns of distribution are known, little is known about the details of distribution—the reasons why beadstone is distributed at some sub-regions and individual sites but not at others, are never explored. It will be argued in this thesis that apart from strategic

geographical location, the characteristics at particular sites (for example size, habitation history, access to useful resources to be traded, long established contacts with other regions) have an important bearing on the distribution of certain commodities. For this purpose, a sample of 175 Central Japan sites has been compiled.

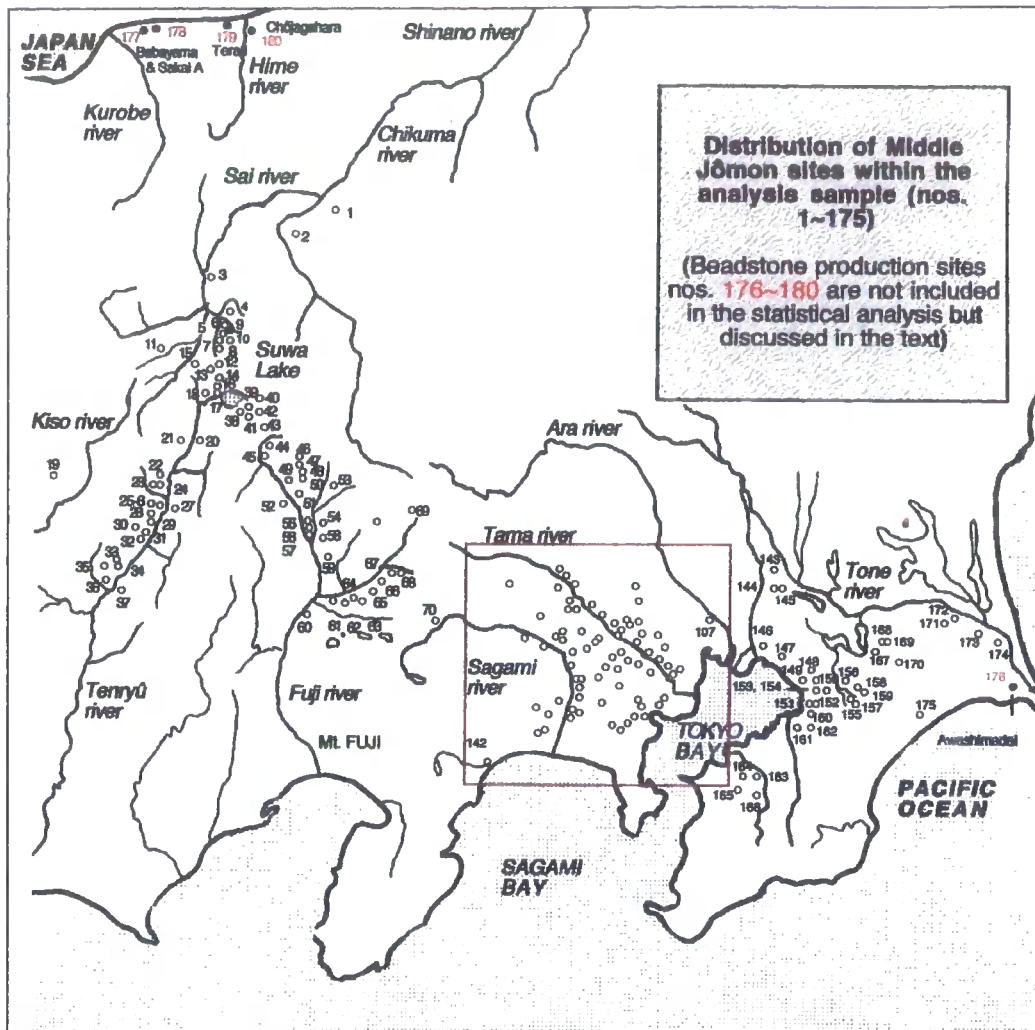
The location of the sample sites has all been shown in a distribution map, which will be introduced here. First an **overview map of the distribution area**, namely **map 6**, is given, then the following distribution maps will be presented.

Map 7 Generic stone ornament distribution within the sample

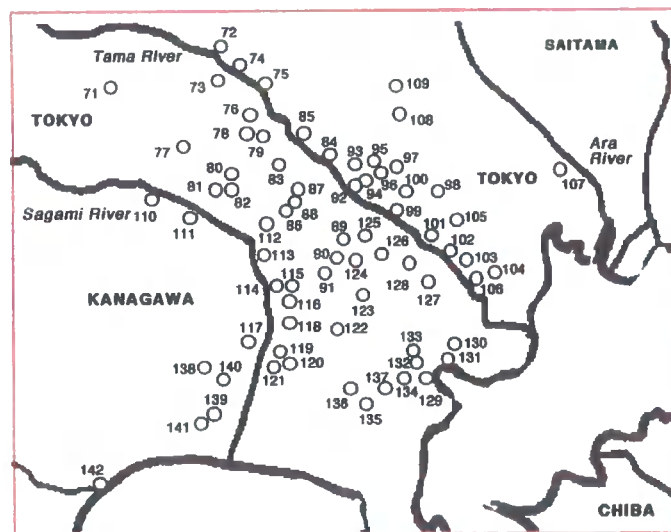
Map 8 Jadeite distribution at sites within the sample

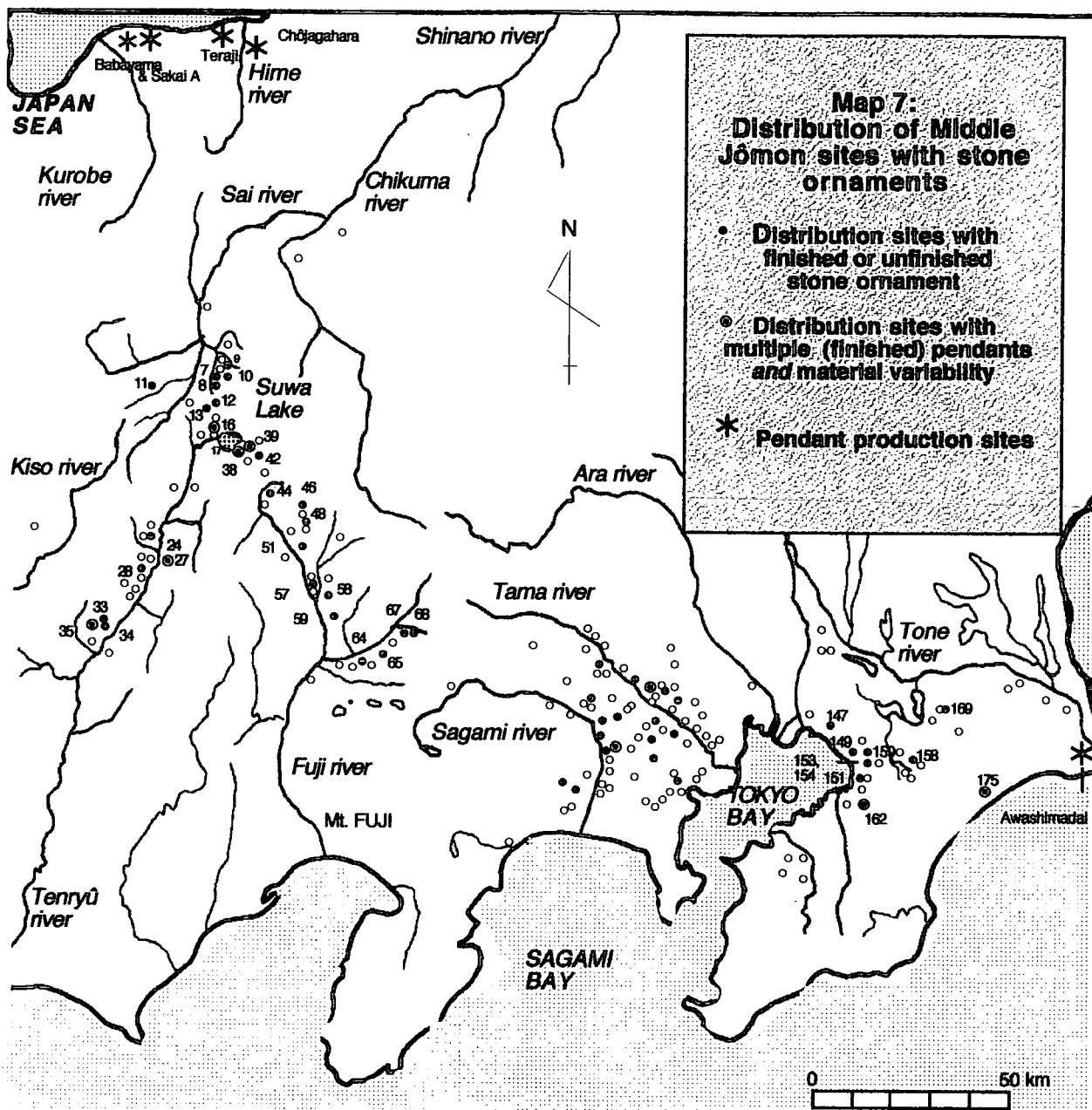
Map 9 Amber ornament distribution at sites within the sample

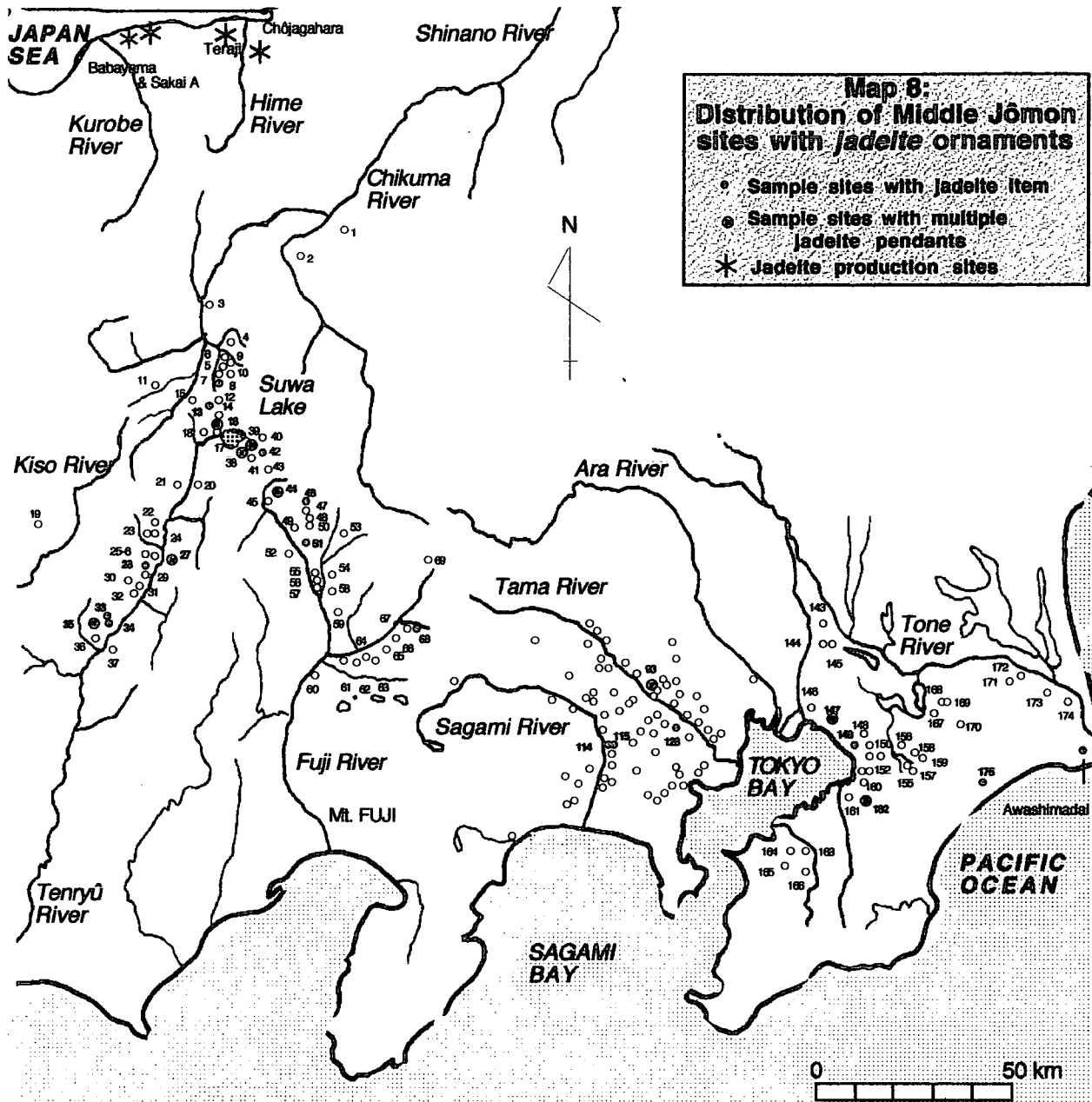
These important distribution maps will be presented on the next four pages.

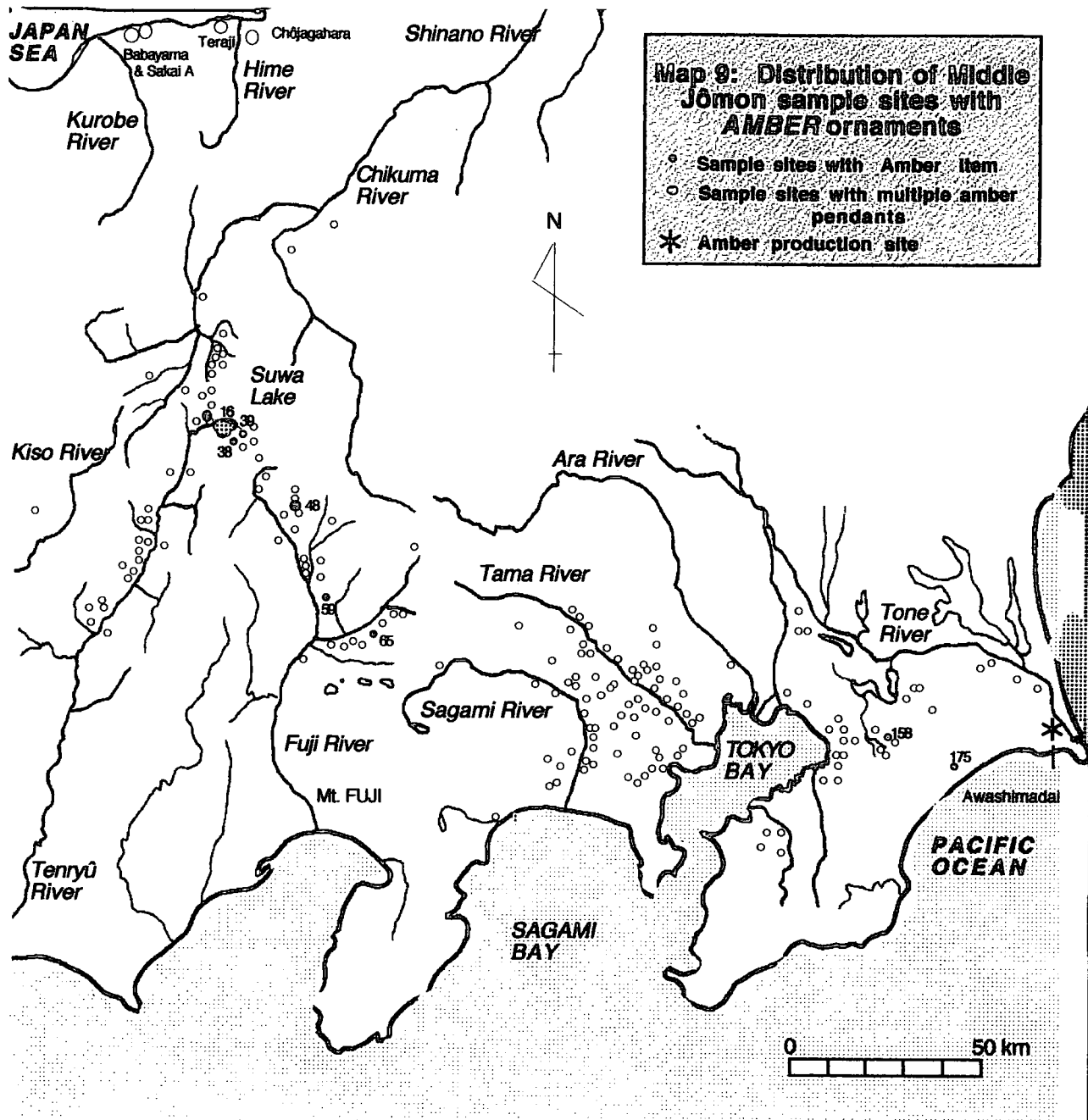


Map 6: Distribution map of Central Japan, showing the location of the sample sites. The site numbers correspond to the site lists in Appendix B1 and 2. Above: Distribution map including all 175 sites in the sample, as well as five ornament production sites (which are not included in the sample analysis, but are discussed intensively in the text). Right: a close-up of the location of the 72 sample sites in the West Kantô area (modern Tokyo and Kanagawa prefectures).









5.1.2 Interregional variability in distribution

Chapter Six will deal with a statistical analysis of the relationship between stone pendant presence and the presence of various characteristics at a site. However, this section will give a spatial and temporal overview of all the 55 sites with stone ornaments in the sample, according to region and sub-region. A distance regression analysis in the vein of Renfrew's research lies outside the scope of this research. An important reason for this is the fact that this sample only represents a relatively small part of this network, which already during the Middle Jōmon covered most of Eastern Japan, up to the northernmost point of Honshū Island. This research concentrates purely on interaction within a far more limited scope, namely Central Japan, involving only sites in Nagano, Yamanashi, Tokyo, Kanagawa and Chiba prefectures. However, in order to give a better impression of the scope of the exchange within Central Japan, a comparative overview of the approximate distances from source to distribution site of jadeite and amber is given in **Table 3**, on the next page.

It is interesting that of all the sites with (mostly Late) Middle Jōmon ornaments, 28 sites—more than half—are concentrated in the Mountain area; 18 sites are located in the West Kantō, and nine in the East Kantō. When comparing these numbers with the representation of each area in the sample, it turns out that 40% of the sampled Mountain area sites contain stone ornaments, against 25% of West Kantō sites and 27% of East Kantō sites. This already shows there are regional differences in stone pendant distribution, with the Mountain area possessing a significantly higher number of ornaments. However, there are more variables, as this chapter will show.

The most commonly found ornament material—despite its scarcity—is jadeite, which occurs during the Middle Jōmon at least at 23 sites in the sample.¹¹ This gives some indication of the demand for it. Amber is found at only eight sites in the sample, but this seeming scarcity may be partially due to the vulnerability of this material. Soapstone ornaments, from 21 sites within the sample, form the second-largest category within the sample; while serpentinite—although found in the same area as jadeite and soapstone—was clearly more popular for adze production than for ornaments, as the latter have been found at only nine sites. The use of jasper and agate pendants during the Middle Jōmon—only at three and at two sites respectively—proved almost negligible. Significantly, the third-largest category of stone pendants is made of 'ordinary' ubiquitous stone materials, which occur at 16 sites, possibly more—because at nine sites, the ornament material has not been defined in the report, and it is likely that this also includes some local materials.

¹¹ Excluding two sites where the jadeite possibly belongs to the Late Jōmon: Kitamura and Tsubonouchi.

Table 3: Approximate distances from source area to distribution site, in km

Place name (site names)	JADEITE	AMBER
Akashina (Kitamura site) (CHUBU)	70	-
Matsumoto (Tsubonouchi, Koike sites)	90	-
Shiojiri (Hiraide site)	100	-
Okaya (Nashikubo site)	115	270
Komagane (Tsujiawaminami, Takamihara,)	145	-
Matsukawa (Satomi V; Kôshinbara II sites)	165	-
Takagi (Masunoshinkiri sites)	170	-
Chino (Tanabatake, Tateishi, Chinowada sites)	125	250
Fujiimi (Idaira site)	140	-
Nagasaka (Kashiranashi site)	150	-
Oizumi (Hôjô I, Kabutsuppara sites)	155	230
Shiikishima (Kaneno site)	-	210
Sakaigawa (Ichinosawa site)	-	200
Ichinomiya (Shakadô site)	190	-
Kokubunji (Koigakubo site) (West KANTO)	270	-
Chofu (Harayama site)	275	-
Sagamihara (Kaminakamaru, Taima sites)	265	-
Kawasaki (Shiomidai site)	270	-
Funabashi (Takanekido site) (East KANTO)	315	-
Chiba (Arayashiki Kaizuka site)	340	-
Ichiwara (Kusakari Kaizuka site)	365	-
Sakura (Mukaihara site)	-	50
Yokoshiba (Higashinagayamano site)	360	30

This section will give a broad regional outline of the distribution of various beadstone materials at sites in Central Japan during the Middle Jômon; describing the distribution per area, according to various site characteristics. Not only are the distribution characteristics discussed per region; due to the geographical variability, which leads to many different micro-environments and different subsistence sources to be exploited, it was considered important to pay attention to each sub-region. Moreover, the situation at every individual sub-regional site with stone ornament distribution (an overview of these is found in **Appendix A1**) is also discussed in terms of their social and ecological environment. The bracketed numbers are the **site codes**; these also refer to location on the distribution **maps 6-9**. After description of the relevant sample sites, examples of beadstone distribution at other local sites—recorded in

secondary literature—will also be mentioned in the exchange network discussion in Chapter Eight, in order to support or amend these findings.

5.2 REGIONAL COMPARISONS

5.2.1 The Chûbu Mountain area

Distribution of beadstone ornaments at sites is densest in the Chûbu Mountains; several sites in this region even yielded more than one item. However there are clear spatial differences in density; therefore these sites will be discussed here according to their sub-regional location. As **table 3** (p. 86) above shows, the approximate distances from the source area range between 70km and 200km for jadeite from the Hokuriku area, and 200~270km for amber (assumed to be) from Chôshi.

North Matsumoto Basin

Although closest to the Hokuriku source area, distribution of beadstone ornaments is relatively modest, compared with the more southern Mountain areas. While amber is entirely absent, jadeite is only found at three of the larger, longer-term sites where multiple ornaments are found. Paradoxically, the presence of Hokuriku style pottery and large representation of serpentinite adzes at the Matsumoto sites indicate good contacts with the beadstone source area. Moreover, these settlements generally show signs of stable, long-term habitation; ritual evidence is also present, in the form of generally large numbers of dogû and/or sekibô. The dominant Late Middle Jômon pottery style is the Karakusamon.

Kitamura is the northernmost of these sites: a large-scale settlement inhabited during the Final Middle Jômon until the Mid Late Jômon. An extensive excavation yielded large numbers of (predominantly Late Jômon) houses and burials,¹² and much evidence of ritual activity such as dogû and sekibô. Two jadeite items were found without context—but as another jadeite and a shale pendant were found in Late Jômon burials, those may also post-date the Middle Jômon. *For this reason, the jadeite items at Kitamura have not been included in the statistical analysis, which is aimed at Middle Jômon circulation and consumption. Instead it has been included in Appendix A2.* Interregional contacts are obvious from the presence of various pottery styles influences, including Hokuriku; moreover Hokuriku serpentinite adzes are extremely well-represented. Strangely, despite relative proximity to the Wada pass, the percentage of obsidian is remarkably low, in favour of chert.

At a distance of ca. 20km south from Kitamura site, Tsubonouchi site also has a predominantly Late Jômon habitation; only six houses belong to the (Late to Final) Middle

¹² Due to the conserving influence of a 2~3m thick covering layer of clay, the human remains have been extremely well-preserved, leading to invaluable data about health and diet of the Late Jômon people as well.

Jōmon. Moreover, obsidian arrowhead percentages—while not as low as at Kitamura—are also below the sub-regional average; perhaps this was a sign of the (Late Jōmon) times. One nodule of unprocessed jadeite and one of serpentinite have each been found in Late Jōmon period pits. One jadeite nodule and a finished jadeite pendant have been found at the surface of the site, in a secondary context; their date is unclear.¹³ *Because of strong Late Jōmon connotations, Tsubonouchi jadeite has not been entered in the statistical analysis, either.*

In contrast, the large-scale settlement formed by the combined Kōike-Hitotsuya sites (no. 8)—continuously inhabited throughout the Middle Jōmon period but particularly densely during the Late Middle Jōmon¹⁴—has considerably more obsidian arrowheads and debitage; it contains two nodules of unprocessed jadeite, one serpentinite and one green tuff pendant. It appears that the jadeite belongs to Later Middle Jōmon contexts.¹⁵ Single ornaments were found at several nearby sites: one serpentinite pendant in Yamakage (no. 9) one half-finished (polished but not pierced) soapstone item at Minaminakajima, (no. 10) a ‘ordinary’ tuff bead on a house floor at Nakajima (no. 12), and one broken soapstone earring (possibly a recycled Early Jōmon item) at the Hora settlement (no. 11). Like Kōike-Hitotsuya, these settlements were appear to have been rather stable, including earlier Middle Jōmon houses and an increase in Late Middle Jōmon habitation; however it is difficult to estimate their size since they were excavated on a much smaller scale.

Small excavation size (<5,000m²) may have negatively affected the number and quality of the artefacts found in the latter cases; however, the general lack of finished ‘bonito’-shaped jadeite pendants, coupled with the presence of local ornaments and/or half-finished or recycled objects convey the impression that these sites were unable to acquire ornaments from the Hokuriku at this time. Moreover—although the sample may be biased to the extent that it lacks sites located North of the Matsumoto Basin—it is perhaps conspicuous that so far I have not come across any references to other Northern Nagano sites with jadeite or beadstone distribution in the literature. In summary it would seem that serpentinite adzes are not necessarily linked with jadeite distribution in the Matsumoto area during the Middle Jōmon: despite close contact represented by the presence of Hokuriku pottery style and high numbers of serpentinite adzes, there are relatively few sites with jadeite ornaments. At those that do, both quantity and quality are rather poor, mostly representing unprocessed material rather than finished items. Especially in the

¹³ Because no further data or illustrations have been provided, from a stylistic perspective it cannot be established whether the pendant is from the Late Jōmon or the Middle Jōmon. However, since one nodule of unprocessed jadeite and one of serpentinite have each been found in Late Jōmon burials, it is not unlikely that the nodule and finished pendant also belonged to the Late Jōmon.

¹⁴ The number of houses at this site increased especially during the middle phase of the Late Middle Jōmon, around the Kasori E 2 pottery phase.

northern part of the Basin, both adze and ornament presence appears to increase only during the Late Jōmon. This appears to be consistent with much earlier research (cf. Andō 1995).

Suwa Lake

However in the southern end of the Matsumoto Basin, around Shiojiri and Okaya city, northwest of the Suwa Lake, the situation is different: both amber and jadeite ornaments are distributed here, found in earlier Middle Jōmon contexts (mostly Early to Mid Middle Jōmon burials), which indicates that this area may have established contacts before the more northern area. The most representative of these is Nashikubo site, Okaya. Nashikubo is located close to Suwa Lake—with a view of Mt. Fuji (see **fig. 23A**)—and was excavated on a larger scale (ca. 12,000m²), uncovering part of a very large, stable settlement that shows signs of habitation from the Initial Jōmon until the start of the Late Jōmon, and flourished especially during the Middle Jōmon at which time it was continuously inhabited. Of the more than 100 houses recovered (**fig. 23B**), many could not be dated, but only about a third belonged to the Late Middle Jōmon. These houses were grouped around a central open space containing many pits and burials. Among the exceptionally large number of 20 beadstone items found at Nashikubo site, a three-quarter majority—including jadeite, amber and soapstone ornaments—was recovered from Middle Jōmon burial contexts (see also **fig. 25**).¹⁵ In addition to evidence of extensive interregional contacts such as various pottery style influences (Hokuriku, East and West Kantō, Tōkai), both serpentinite and jadeite adzes (**fig. 23C**) were present. The jadeite items (raw material, finished pendant and polished adze) and some of the better-preserved amber beads from Nashikubo site can be seen in **figures 23C** and **23D**, respectively. The most remarkable feature of Nashikubo however is the great quantity of obsidian from the nearby Wada Pass, both in terms of finished arrowheads, debitage and cached raw material. In a number of houses from the Mid and Late phases of the Middle Jōmon, small ‘hoards’ of raw material and tools were found (**fig. 10**). Obsidian production at this site clearly far outstripped local need and was probably used to export to other sites and other regions; the excavators suggest it may have been obsidian that was exchanged for exotic materials like amber and jadeite, because of the proximity of this large settlement to the Wada Pass source, and the sheer quantity of material at the site (report 16: 54). Nearby in Shiojiri-city, at the Mid~Late Middle Jōmon site Hiraide, (which was only partially excavated), 17 houses were uncovered, 70% belonging to the Later

¹⁵ The green tuff pendant was found at a Mid Middle Jōmon dwelling, and probably belongs to this period; one jadeite nodule was located inside a Late Middle Jōmon house. The other nodule and the serpentinite ornament were both found without structural context.

¹⁶ At Nashikubo site, there are seven pits with beadstone grave goods in ‘central space’ section G alone. These ornaments have been assigned the following dating by the excavators: the jadeite pendants as Mid to Late Middle Jōmon, the amber as Early to Mid Middle Jōmon, and the soapstone as contemporaneous with the amber (report 16: 547).

Middle Jōmon. Two unfinished beadstone objects (a jadeite nodule and a half-finished soapstone ornament) were nevertheless found at a Mid Middle Jōmon house from the Katsusaka pottery phase.

As it happens, the majority of beadstone ornaments at both sites may have been found in earlier Middle Jōmon contexts; however these sites continued to flourish during the Later Middle Jōmon. Perhaps it was partially the early establishment of interregional contacts that allowed a settlement like Nashikubo to become so prosperous over a long period.

The combination of stable, relatively long-term core settlements with large quantities of obsidian and beadstone products is also found at other areas bordering on the Suwa Lake area: the Yatsugadake Mountain area to the east, and—surprisingly, considering their relative isolation—the Ina Valley.

Ina Valley

This valley, which is located south of the Suwa Lake, flourished during a shorter time span than most other Chūbu Mountain areas; many of these large settlements commenced during the end of the Mid Middle Jōmon, expanded drastically during the first half of the Late Middle Jōmon and went into decline again after the Kasori E 2 phase. During this time, they prospered: according to other sources, jadeite ornaments were found at more than 20 sites (Andō 1995b: 222). The dominant pottery style is *Karakusamon*, as at Matsumoto Basin and Suwa Lake sites; it is likely that close relations existed with the area around and to the north of the Suwa Lake, and many commodities were acquired via this route. Unfortunately, apart from jadeite, not much data is available about such imported goods: these Ina excavation reports (which mostly predated the 1980s) generally do not provide extensive analytical information about interregional pottery style influences and stone tool materials. However judging from the few site reports that do, the obsidian arrowhead percentages are very high—all in excess of 90%. Information about the presence of serpentinite polished adzes is also lacking, but according to Yamamoto Masatoshi the Ina Valley is an important distribution area of Hokuriku serpentinite adzes (personal communication). In other words, despite its seemingly isolated location, (some sites in) this area may have been an important participant in the Late Middle Jōmon exchange network. Among the sites in the sample, jade ornaments were indeed found at several of the larger-scale excavations, which yielded very large numbers of Late Middle Jōmon houses, such as Tsujisawaminami and Takamihara near Komagane, and Masunoshinkiri further to the south. At the largest settlements Tsujisawaminami and Masunoshinkiri, multiple items were found of jade and soapstone pendants (see **fig. 24B** for the Tsujisawaminami pendants); both sites

contained two jadeite pendants and one soapstone pendant.¹⁷ These sites can clearly be defined as ‘core settlements’ (i.e. Kobayashi’s type ‘A’ model village) because of the density of the Tsujisawa-minami structures (fig. 24A), as well as extensive evidence of ritual activity such as high *dogû* clay figurine numbers and some *sekibô* stone rods— particularly Masunoshinkiri has yielded almost 50 figurine parts. Moreover, at Tsujisawaminami, a rare *prism-shaped clay object* is found; the distribution of this object is wide, but is limited to a few select sites. Perhaps this prism-shaped clay object was a token of membership of a wider exchange network. Ornaments are also found in Late Middle Jômon contexts at smaller settlement sites: a soapstone pendant at Shichimengawa B (near Komagane-city, not far from the Takamihara and Tsujisawaminami settlements) and—near Masunoshinkiri site—a jadeite nodule inside a burial at Satomi V and a jadeite pendant at Nakahara site.

Yatsugadake Mountains

Located on the eastern side of the Suwa Lake, the predominant Late Middle Jômon pottery style in this area is the *Sori* style instead of the Karakusamon style in the greater Matsumoto and Ina areas; however a mix of pottery styles is found at most sites (Kobayashi 1988). This area, which is closely located to the Kirigamine obsidian source, was generally inhabited throughout the Middle Jômon period, but expanded especially during the Late Middle Jômon; it has large settlements with elaborate pottery and clay figurines, and—located closely to the Kirigamine source—extremely large quantities of obsidian. Both jadeite and amber are frequently found at sites in the Yatsugadake area especially. It is evident that the largest concentration of precious beadstone ornaments is located around Chino-city, near the Lake.

The most famous settlement in this area is without a doubt Tanabatake, a very large-scale settlement that was continuously inhabited throughout the Middle Jômon, and is also well-known for its high number of figurines throughout the Middle Jômon period, including the famous Mid Middle Jômon ‘Venus’. Like Nashikubo, this site was a large-scale obsidian production site with large quantities of arrowheads, debitage and raw material caches. Tanabatake has the second-highest quantity of beadstone ornaments in the sample: three jadeite and one amber pendants inside four Late Middle Jômon burials in the centre of the settlement, as well as five soapstone and one local stone ornaments. Extensive interregional influences are evident from pottery style influences (including from the Hokuriku and East Kantô), and among the polished adzes, there appear to be at least one jadeite and one serpentinite item: additional

¹⁷ In the Masunoshinkiri report, both pendants are actually referred to as *nephrite*; however in the light of jadeite finds at contemporaneous nearby sites Kôshinbara and Nakahara, and the typical shape of the ornaments, it is far more likely that they are actually jadeite, also imported from the Hokuriku. In the absence of chemical analysis it cannot be 100% certain, but this is probably a case of confusion about the generic term ‘jade’ (*hisui*) which includes jadeite (*kôgyoku*) and nephrite (*nangyoku*).

finds confirming a relation with the Japan coast area. It has been tentatively suggested by the excavators that there probably was a trade connection between the surplus obsidian exploitation and the distribution of rare beadstone at the site.¹⁸ At another nearby site from the sample, Tateishi site, five jadeite and one amber pendants were found as burial goods (one of the pits contained three jadeites)¹⁹ but this settlement was inhabited during the second half of the Late Middle Jōmon until the early Late Jōmon—a bit later and shorter-term than Tanabatake site. The Mid to Late Middle Jōmon Chinowada site on the other hand was more or less contemporaneous with Tanabatake—also including house remains from the Early Jōmon and Late Jōmon periods. At this site several soapstone items (unfinished ornament; adze) were located in Late Middle Jōmon house fills; moreover one jadeite pendant reputedly was found (without structural context) in the western section of the sites (Chino Togariishi Museum: 28, 61).²⁰

Idaira site, part of the predominantly Late Middle Jōmon site group Todonomiya, is located near Fujimi-town, further East of the Lake district.²¹ This site consists of a group of four settlement sub-sites, which are however less than a few hundred metres apart. Moreover, it is highly likely that they were functionally interconnected. Several different life aspects appear to have been divided over different sub-sites, even though houses were found at all sites: most mortuary structures were found at Idaira site, whereas evidence of ‘regenerative’ ritual practices (clay figurines) was found at Sakaue sub-site. Like many Yatsugadake sites, this site group contains elaborate Sori-style pottery and clay figurines (including one beautiful unbroken specimen of a Sori figurine, see **fig. 6B**) and high percentages of obsidian arrowheads. Although Hokuriku pottery influences—reported from nearby Sori site—may have been present, serpentinite adzes appear to be absent. Most interestingly, six jadeite pendants were found in five Late Middle Jōmon burial pits (part of a large mortuary structure group) inside the centre of the Idaira sub site.²²

¹⁸ It has been suggested that Kirigamine obsidian was exported to other regions including the Hokuriku, Kantō and South Tōhoku; moreover that the route via the Kōfu Basin into the Kantō area was also used to transport back amber (report 38: 691).

¹⁹ The exact date of the pits with ornament grave goods could not be established, but on the basis of stratigraphic evidence it is believed to be ‘from Sori IV onwards’—between the final Middle Jōmon and early Late Jōmon (report 039: 128).

²⁰ This find was not found in the 1970 report, perhaps because this report only records artefacts with a structural contexts. It is possible that the item was found during an later survey; however, the 1970 report did include a division into ‘east’ and ‘west’ section.

²¹ Todonomiya is located near to the well-known Middle Jōmon sites Idojiri and Sori, which were used by Fujimori (1970) as showcase to expound his theory on Jōmon agriculture. The same theory is argued inside the Todonomiya site report.

²² Strangely enough, this highly interesting occurrence is only mentioned in a sort of footnote at the end of the Idaira section in the 1988 site Todonomiya report, which summarises an additional 1986 rescue excavation at Idaira subsite of 1600m² discovering a large group of Late Middle Jōmon pits (mainly Sori IV–V)—including 90 pits in the central plaza accompanied by high-floored structures associated with burial rites—and a few more houses were discovered (bringing the discovered total to 11) The find of six

Still further into the southern Yatsugadake (located in modern Yamanashi prefecture), it is clear that the area around Oizumi-town has been able to acquire various types of long-distance beadstone ornaments since the Early Jōmon (e.g. Tenjin site, which contains the oldest-known jadeite pendant example). At the long-term settlement Kabutsumpara site, which was inhabited from the Early Jōmon and throughout the Middle Jōmon, several Early Middle Jōmon burial pits contain *amber* beads, while jadeite pendants have been found in Late and Final Middle Jōmon contexts at Kashiranashi and Hōjō sites. However, not all pendants were recovered from grave contexts: although at the Hōjō site the pendant was located in a burial context from the Final phase of the Middle Jōmon, at Kashiranashi site one jadeite pendant was found in a Late Middle Jōmon house fill, and an 'ordinary' andesite pendant was not associated with any structures. Perhaps in the case of the Kashiranashi jadeite pendant this was related to the fact that it was slightly damaged (chipped) at the bottom.

Kōfu Basin

Further to the south of the Yatsugadake, *jadeite* ornaments become more rare, limited to the Eastern side of the Kōfu Basin. On the other hand, *amber* ornaments are found at Kanenoo and Ichinosawanishi sites in the Western side. Since Kanenoo has a long habitation history (including Early Jōmon and earlier Middle Jōmon houses) and only a few Final Middle Jōmon structures, the amber (and soapstone items) may belong to an Earlier Middle Jōmon context, like Kabutsumpara. Since Ichinosawanishi is a predominantly Mid to Late Middle Jōmon settlement, the amber there may belong to a slightly later Middle Jōmon context.²³

At smaller-scale settlements such as Kitaushiroda and Karamatsu, ornaments made of less rare, local resources are found; these—unlike the soapstone ornament found at the tiny excavation of Tateishiminami—are not located in burial contexts. Despite the very limited number of houses, the habitation history at Karamatsu is long, including houses from the entire Middle Jōmon. The 'ornaments' are crude and clearly locally made; however a small number of serpentinite adzes was found at this site, which perhaps indicates a sometime-membership to the Hōkuriku adze network.

In the Eastern end of the Kōfu Basin at Ichinomiya, an unprocessed jadeite nodule was found in an Early Middle Jōmon context at Tsukakoshikita A, a sub-site of the Shakadō site group. This site appears to have been a stable large-scale settlement for a long time, including pre-Middle Jōmon habitation but was mainly inhabited throughout the Middle Jōmon. As a

pendants in this central burial group of this 'circular settlement' is mentioned as being of particular interest (Nagano pref. Fujimi-machi Board of Education 1988: 235-6)—although for some strange reason the items are neither depicted nor described.

²³ Unfortunately the exact number and context of the Ichinosawanishi amber is unknown due to a copying omission.

whole, this site group is best-known for its uniquely high quantities of clay figurines (more than 1,000 parts), especially during the Mid and Late Middle Jōmon periods. The view that this site was a specialised, large-scale ritual location has become widely accepted; based on the fact that two parts of one figurine were distributed over two sub-sites, 300m apart, it has been hypothesised that figurine ceremonies involving ritual fragmentation involved a larger-scale social gathering, whereby people from other settlements took part and carried figurine parts away (e.g. Ono 1985, Yamagata 1992; Kidder 1991). Although this is a strong possibility, unfortunately no clear proof—in the shape of *dogū* parts from other sites that could be refitted to Shakadō parts—has been discovered so far. Considering the large size of the excavation, as well as the settlement's obvious size, stability and social activities during the Mid and Late Middle Jōmon it is rather surprising that (with the possible exception of a (recycled?) agate earring at the Noronohara sub-site) so few beadstone ornaments have been recovered. Nevertheless, lack of finds of pendant grave goods at Shakadō does not entirely rule out the possibility that 'exotic' stone ornaments *did* circulate at the sites—for example, a typical 'bonito' shaped *agate* pendant has been found at the nearby, relatively insignificant Late Middle Jōmon site Kitabori.

Based on the situation described above, and following the concentrations of sites with jadeite and/or amber ornaments *on the map*, it appears that there may have been at least two point-to-point beadstone networks in the Chūbu Mountain area during the Late Middle Jōmon: (1) going from the Hokuriku to the *Ina Valley*, passing through the Matsumoto Basin, and (2a) from the Hokuriku straight to the *Yatsugadake* area east of the Suwa Lake. Moreover, (2b) the sites at the latter area also had a connection to East Kantō amber, via the Kōfu Basin. This distribution route is surmised on the basis of the trail of items that were left behind on the way from the Hokuriku and to and from the East Kantō areas: namely (in case of route 1) a raw jadeite stone at Kōike in the Matsumoto Basin from the Hokuriku to the Ina Valley (another Late Middle Jōmon raw stone was found there at Satomi V); (in case of route 2b) a jadeite pendant at east Kōfu site Sankō on its way to East Kantō; (possibly) amber at west Kōfu site Ichinosawanishi on the way back up.

However, there appears to have been an earlier exchange route involving raw jadeite and amber beads, which perhaps may have run like this: from the Hokuriku it deposited raw material jadeite at Nashikubo at the Northwestern side of the Suwa Lake; on its way to the Kantō area to collect amber via the Kōfu Basin it deposited a jadeite stone at Shakadō, and on the way back up through the Kōfu Basin it left behind amber at Kanenuo and Kabutsuppara sites. Since so far no amber was found further North beyond Nashikubo, it is very possible that at that time this settlement was the motor behind this exchange.

As the statistics already indicated, jadeite and amber ornament finds are usually made at large-scale settlements with a longer occupation history, which continues from at least the Mid Middle Jōmon. Ornaments made from less exotic materials are frequently encountered at somewhat smaller-sized settlements; in the case of the crudely-made Karamatsu ‘pendants’, these may even have been produced locally.

Of course, this only deals with the Chūbu side of the distribution; next the beadstone distribution at the other regions will be examined, to see if the exchange passed along the same routes or not.

5.2.2 West Kantō beadstone distribution

The West Kantō distribution, divided over modern Tokyo and Kanagawa prefectures, includes eighteen sample sites with stone pendants (finished or half-finished). According to this particular sample, it appears that the ratios of materials used for these ornaments are quite different from those in the Chūbu Mountains: there is a comparative scarcity of pendants made of rare materials. Examples of amber are entirely absent within this sample, and the number of sites with jadeite items (distributed at a distance of approximately 250 to 275km from their source area) is also remarkably low: only four sites. Instead, the distribution of other beadstone materials like *soapstone* (at six sites), *serpentinite* (at three sites) and *jasper* (at two to three sites) is comparatively more prominent, and eight sites contain ornaments made of locally available materials like tuff, shale, pumice and green mudstone (with one exception, in combination with rarer material), and in five cases, the pendant material remained undefined. Particularly jasper ornaments have not been reported from any other area within the sample. Several sites contain more than one type of beadstone material, but only in the case of Kaminakamaru site jadeite, soapstone, serpentinite and local material are all found together. Interestingly, the jadeite and soapstone distributions don’t tend to overlap at sites (excepting Kaminakamaru) whereas a serpentinite ornament is found at a ‘jadeite’ site at Kōigakubo. Jasper is not found together with any other rare beadstone type. Locally available material is found with all material types, but most frequently with soapstone (three cases).

The influence of a different type of landscape may also be considerable. Unlike the Mountain area, the Kantō Plains have no strong geographic features dividing up areas into valleys and basins; however, the defining natural features are waterways: the major rivers (in the case of this sample, the Sagami and Tama Rivers are particularly relevant), as well as the Tokyo Bay Coast. The social and economic importance of the major rivers as potential trade routes to other regions is perhaps evident in the distribution of the four sites with jadeite ornaments. Distribution **Map 8** shows that *all four sites are located within very close proximity, (within ca. 5 km) to a major river. Kōigakubo and Shiomidai* are located along the Tama River

(the former at the northern bank, closer to the Tama hills; the latter near its southern bank, closer to Tokyo Bay); Taima and Kaminakamaru sites are both located along the Sagami River. Other sites with stone ornaments are generally located within ca. 10km distance of one of the rivers—or of both rivers, in the case of several Tama New Town sites. Remarkably, beadstone sites located closer to the Tokyo Bay—presumably also an economically important location, because of the Chiba Peninsula on the other side—are rare: the only example within this sample is Hazawadaidô site.

The dominant pottery style in West Kantô area is the *Kasori E*-style, but under the influence of the neighbouring Kôfu Basin, the Sori-style pottery is also frequently found at many sites; although in some cases a hybrid style ('Renkômon') occurs. Sori pottery style presence was found at 94% of stone ornaments sites (three times more than at non-ornament sites), and Kasori E style clay figurines at 78% (almost four times as frequently as at non-ornament sites).²⁴ The presence of both is strongly indicative of influence from the adjacent Chûbu area; this connection suggests that interregional contacts with the Mountain area are important prerequisites for the distribution of stone ornaments.

On the other hand, there are variations in the absence or presence of serpentinite polished adzes and the levels of obsidian arrowhead use. Such information may be relevant to the nature of exchange relations of sites: while high-quality items of both serpentinite and obsidian tools could have been acquired respectively via or from the Mountain area, closer alternatives may also have been available to those sites with less extensive contacts. In some areas in the West Kantô, chert was commonly used for arrowheads (Shibata & Yamamoto 2000: 81); apparently in the Tama and Musashino areas, there were at least two 'alternative' networks that circulated chert from the Chichibu area (Kôjô 1999). Moreover, it has been suggested that the Sambagawa metamorphic belt in West Saitama and Gunma may have supplied the material for serpentinite adzes in the Kantô area (Yamamoto K. 1989: 95-6; Shibata 1990: 152-6; Shibata et al. 1994: 104)— although so far, no serpentinite adze production evidence has been found outside the Hokuriku Jadeite Coast area (Yamamoto, M., personal communication, 2002).

Nevertheless, as the statistics section will further demonstrate, there are a few factors which most ornament sites have in common: fairly long-term habitation and reasonably high house numbers. The presence of Earlier Middle Jômon houses was found at two-third of these sites, and none of the distribution consisted of less than ten dwelling pits. The excavation scope was relevant as well: no finds were made at 'small excavations' of less than 1,000m².

²⁴ Figurine ritual appears to be a particularly strong and persistent characteristic of the Mountain area. After the Mid Middle Jômon, the appearance of figurines declines drastically in the West Kantô, and is extremely rare in the East Kantô. If it does occur during the Late Middle Jômon, it usually is at sites with a particularly strong presence of Mountain area influences, such as Sori style pottery (in extremely rare

Tama River area

This area is located somewhat to the North, in present-day Tokyo prefecture; in the case of jadeite pendant distribution, it is likely that the route from Hokuriku passed via the Kôfu Basin, but it is not inconceivable that some items may have come from the North via Gunma and Saitama.

Koigakubo site was extensively excavated over a period of circa 20 years; unfortunately only four relevant site reports were available for this analysis. However, from the quantity of structures uncovered it is clear that this site was inhabited on an impressive scale throughout the Middle Jômon—including at least 27 Mid Middle Jômon Katsusaka and 21 Late Middle Jômon Kasori E (especially phases 1~2) houses described in four reports (report 93a-d). Moreover, a brief overview in the 1996 report describes the site as a large-scale Mid to Late Middle Jômon settlement, with houses arranged in the typical horse-shoe (or circular) shape and a large group of pits in the central part (report 93c: 74). In addition to the beadstone ornaments recorded in available reports—namely one serpentinite ornament from a Katsusaka house floor; one broken, unfinished jadeite pendant in a mid Late Middle Jômon house fill (report 93a: 71), and an unprocessed nodule from a Katsusaka II house (report 93d: 23-29)—there is a brief mention of two jadeite pendants found during an earlier survey in an oval Late Middle Jômon burial pit with Kasori E1 pottery and a few tools (report 93c: 76).²⁵ This shows that this settlement had a rather surprising ability to acquire jadeite: several items, representing all production stages), which is a relatively rare phenomenon in the Tama area where jadeite ornaments are relatively scarce. The majority of jadeite was found in Later Middle Jômon contexts, which is interesting considering that Mid Middle Jômon habitation was also strong, judging from the small majority of Mid Middle Jômon structures described. Despite the presence of relatively high quantities of jadeite, there is no evidence that Koigakubo also imported serpentinite polished adzes from the same region—the majority of adzes consists of sandstone—and the percentage of obsidian among arrowheads is just over 50%—which admittedly is higher than usual in an area where arrowhead material use is dominated by the easily available chert.

In the Tama area, soapstone ornaments are found at Mid~Late Middle Jômon sites Oomachi and Nanyôji site, both found in Mid Middle Jômon house fill contexts, and both either unfinished or crudely made. According to the Oomachi report, there is no soapstone source in this area (south of the Tama River), so the item was probably imported from the

case, Karakusamon style influences)—even though in the Kantô area the figurine type is adapted to the local Kasori E pottery style.

²⁵ In an overview of the 1996 report (p. 76-77), the pits in the central space are described; 57 out of 129 containing artefacts are recorded. In addition to pit 28 which contained Late Middle Jômon pottery and

Hokuriku/Shirouma area (Y. Watanabe 1994: 263). At Nanyôji, a shale ornament was found in a Late Middle Jômon house. Nanyôji (north of the Tama River) appears to have been the larger settlement of the two, and also contained some serpentinite adzes. However, both sites had relatively low percentages of obsidian arrowheads—possibly due to proximity to the Chichibu chert resources, and the corresponding ‘chert networks’ identified by Kôjô (1999).

Finally, undefined stone pendants were found at Kunugita and Tama New Town 300 sites around Hachiôji (south of the river), and Nukii at the northern bank. Of these, Kunugita was the largest settlement; moreover it was inhabited throughout the Middle Jômon (unlike TNT 300 which only lasted during the Late Middle Jômon). This site was excavated over a number of years; although not all reports were available, it clearly was a large-scale settlement throughout the Middle Jômon. Although apparently no jadeite ornaments were found, there clearly was contact with the Chûbu area: the presence of obsidian arrowheads is much higher than at surrounding sites, and among the Late Middle Jômon clay figurines there is one which clearly resembles a Sori type figurine part, which therefore must have been transported from this region.²⁶ The pendants at TNT 300 and Nukii were found in Late Middle Jômon context,²⁷ while the Kunugita ornament was found on the floor of an Early Middle Jômon structure.

There are several other sites in the Tama areas with ‘precious’ beadstone ornaments like jadeite; there is even one site where an amber find was recorded. On the whole, such finds occur at large-scale settlements; these sites—for which site reports were unavailable—will be discussed below, in the discussion.

Tokyo Bay area

Middle Jômon habitation at the sample sites south of the Tama River, but relatively closer to Tokyo Bay—Inagahara, Yatsu, Juchidayama, Shiomidai and Hazawa Daidô (nos. 123, 124, 125, 128 and 131)—was perhaps on a slightly smaller (and perhaps less stable) scale than at the beadstone sample sites located in the Sagami and Tama hill areas. Although excavated on a fairly large scale (>5000m²), the house numbers at these sample sites appear somewhat smaller.

the two jadeite pendants, pit 83 was also of special interest as it contained rare cremated human remains with Katsusaka II pottery from the Mid Middle Jômon (p. 74).

²⁶ Such clay figurines belonging to another pottery style are rarely documented; however, the resemblance of a Late Middle Jômon figurine from the Kunugita site to Karakusamon characteristics has been remarked upon (Abiko 1991: 86-7). Another example of a (probably) imported figurine in the southern Tama area may be found at nearby TNT 72 site, another large-scale Middle Jômon settlement which yielded many Late Middle Jômon dogû including one head which—judging from a photo—appears to have facial features from the Sori or Karakusamon style (Tokyo Metropolitan Centre for Buried Cultural Properties 1996). Moreover, a photo from that same site depicts a Karakusamon-style burial jar buried upside-down according to Mountain area tradition (ibid). Based on this stylistic evidence from Kunugita and TNT 72 sites, it seems safe to say that the Tama New Town area (at least the large settlements) had particularly strong links to the Mountain area.

Although houses from other periods are often present, the occupation history does not always appear to be continuous,²⁸ and the Late Middle Jōmon occupation is often relatively short, limited to one or two pottery phases. Nevertheless, these sites also functioned as (relatively) influential settlements, that each possessed at least three out of four of the following characteristics: presence of ritual artefacts (dogū and/or sekibō), interregional pottery styles, serpentinite adzes, relatively high ratios of obsidian arrowheads.

Ornaments—with the exception of the jasper ‘bonito’ pendant found at a Final Middle Jōmon burial at Hazawadaidō—are rarely found in temporal contexts: one ‘local’ pendant at Yatsu was found in the fill of a Mid Middle Jōmon house. Earrings-converted-into-pendants (i.e. pierced broken halves) are often found damaged and discarded: made of soapstone and chalcedony at Juchidayama. At Inagahara, two ‘local’ pendants at Inagahara were found scattered over the settlement.

At Shiomidai site (no. 128), on the southern side of the Tama River, a beautiful undamaged pendant (6.7cm long; see **fig. 17**, no. 222) was also found without structural context. Its presence is rather surprising at the settlement which appears to have been rather smaller and less continuously occupied than most sites with precious ornaments. Eleven Jōmon pit dwellings were found at a reasonably large excavation (6,400m²), including nine Late Middle Jōmon houses. Although two Early Jōmon houses were also found, dwellings from the Earlier part of the Middle Jōmon were absent; moreover the Late Middle Jōmon settlement was mostly inhabited during the Kasori E 2 phase. Its rather modest nature may also be seen in the absence of ritual objects like clay figurines and sekibō; furthermore the fact that the jadeite was not found in a burial context may in itself be indicative of the lack of a person with special social standing—not surprising under the circumstances. Perhaps the presence of such a rare item can be best explained by a strategic location near Tama River, and evidently strong contacts with the Chūbu area, judging from (1) the presence of Sori style pottery; (b) relatively abundant obsidian (five out of six arrowheads, as well as some raw material), which is regarded as *Shinshū* type from Nagano prefecture (report 128: 106).

Sagami River area

The most remarkable feature of distribution at sample sites in this area is formed by a concentration of large-scale settlements around Sagami-hara-city: the Shimomizo site group (consisting of Kaminakamaru and Shitahara sites), Hashimoto, Kawajiri and Taima sites. These

²⁷ At TNT300, the pendant was found on the floor of a mid Late Middle Jōmon house (Kasori E2~3); at Nukii it was found in the fill of a house of the same period.

²⁸ Only two sites (Yatsu and Juchidayama) have more continuous occupation during the Middle Jōmon (e.g. including Mid Middle Jōmon Katsusaka houses), while the Late Middle Jōmon habitation is

sites have various features in common: continuous habitation started only during the Mid Middle Jōmon; house numbers are high throughout the Late Middle Jōmon; Sori pottery is strongly represented,²⁹ considerable presence of ritual paraphernalia like Kasori E clay figurines, and high percentages of obsidian arrowheads. Pottery style influences indicate wide-ranging interregional contacts: apart from *Sori* pottery from the Chūbu, the *Daigi* style from the southern Tōhoku was also represented (to a much lesser extent); moreover, at Kawajiri, small quantities of *Kamiyamada* pottery from the Hokuriku were discovered. This strong representation of Sori style pottery; high percentages of obsidian arrowheads—assumed to have been largely imported from the Mountain area (report 112, 1986: 170; Report 114, 1977: 535)—as well as the presence of clay figurines, suggests close relations with the Mountain area. In addition to ‘local’ stone, the most common types of beadstone are soapstone and jadeite.

The largest of these settlements seems to have been Shimomizo site group, which includes the circular settlements of Kaminakamaru and Shitahara A and B. There are definite temporal differences between stone ornaments of different materials. At Shitahara sub-site, which has a stronger Mid Middle Jōmon habitation history than Kaminakamaru, three ornaments made of ‘local’ stone (tuff and shale) were found inside Mid Middle Jōmon houses, while a soapstone pendant piece was found inside a Late Middle Jōmon house.³⁰ The condition of the objects, with the exception of one ‘extremely brittle’ was quite good. On the other hand, the other subsite Kaminakamaru, which flourished especially during the Late Middle Jōmon, appears to have been ‘richer’ in terms of rare objects: the beadstone ornaments (including one jadeite, two soapstone, one serpentinite and three ‘ordinary’ stone pendants) may have belonged to the Later Middle Jōmon. The jadeite pendant was found in a Late Middle Jōmon stone-lined burial pit, and two soapstone and one ‘local’ pumice pendant came from Final Middle Jōmon house pits of successive stages. One serpentinite adze—rather rare in this area— was found. Finally, the presence of a rare triangular clay object, in a final Middle Jōmon (Kasori E4, Sori 5) house, further underlines the strength of interregional influences during the Later Middle Jōmon period.

At Taima, the only other Sagami sample site to contain jadeite, an unfinished (partially pierced) jadeite ornament was found without structural context—but as 83% of houses belonged to the Later Middle Jōmon, the ornament possibly did also. This large settlement site, which

relatively short-lived as well, limited to one or two pottery style phases per site. On the other hand, three out of the five sites have Pre-Middle Jōmon habitation remains—higher than at the other areas.

²⁹ Sori pottery is found in very high quantities at all four sites. At Hashimoto site, it even appears to be the dominant pottery style instead of Kasori E.

³⁰ In section A, an undamaged, polished tuff pendant was found on the floor of Katsusaka house 19, the other three were found in section B: the broken soapstone ornament close to the floor of Kasori EII house 17; an undamaged tuff pendant in the fill of house 20 and the slightly damaged (chipped) shale pendant was found on the floor of house 35.

was also characterised by Mid Middle Jōmon antecedents and was inhabited throughout the Late Middle Jōmon, may have had good trade connections in various directions, including the Chūbu and East Kantō area, judging also from the presence of interregional pottery, clay figurines and large obsidian arrowhead ratios.³¹

Ornament material at Late Middle Jōmon-only large settlement Hashimoto site is restricted to soapstone: two pendants are found inside burial pits; two in the secondary fill of houses. Although this site shows much evidence of contacts with the Chūbu (large quantities of Sori-style pottery and many clay figurines), the ratio of obsidian arrowheads is also slightly lower than surrounding sites, perhaps due to its shorter occupational history. At Kawajiri (with the relatively highest representation of Mid Middle Jōmon houses), the five pendants consisted of one soapstone, three 'local' and one unknown material. Most were found without structural context, except for the undamaged pendant of unknown material which was recovered from a Mid Middle Jōmon house.

Therefore, it seems that—although there already was interregional contact with the Hokuriku area during the Mid Middle Jōmon—at these Sagamihara sites, the rarer types of ornament material (jadeite, soapstone) are more frequently found in Late Middle Jōmon contexts. At least the jadeite (and possibly the soapstone) items were probably imported via the Mountain area route passing through the Kōfu Basin. Interestingly, despite the telling presence of jadeite ornaments at Taima and Shimomizo sites and the earlier Hokuriku pottery at Kawajiri sites, the import of Hokuriku items does not seem to include serpentinite adzes, which are either very scarce (1% at Kaminakamaru), or entirely absent.

Two more sites containing beadstone ornaments are found closer to the Sagami Bay coast at Isehara: Shimokitahara and Kaminarimatsu sites (nos. 138 and 140 on **maps 6-9**). Based on the data of rather modest excavations, both sites are characterised by rather long-term habitation, from the earlier Middle Jōmon until the Late Jōmon. Although Sori-style pottery is present, Kasori E-style pottery is by far dominant, and clay figurines are absent. At Shimokitahara tool materials were not recorded, but Kaminarimatsu yielded both serpentinite adzes and high percentages of obsidian arrowheads.³² The contexts of the 'local' tuff items and the soapstone pendant at Shimokitahara are unclear; at Kaminarimatsu the contexts belonged to the Final Middle Jōmon: a *jasper* pendant was found inside a burial belonging to the Final phase of the Middle Jōmon or and a 'local' pumice pendant at a Late Middle Jōmon (Sori III) house

³¹ According to the Taima site report, the quantity and quality of obsidian tools indicates trade with Izu and Nagano areas. Moreover, the presence of several sea mammal bones despite relative proximity to Mountain area was interpreted as indications of likely contact with the '*kaizuka* people' (report 114: 535).

³² Because of the association of Sori III pottery with some obsidian in Late Middle Jōmon house 17 (which also included a pumice pendant), it is possible that obsidian was partially derived from the Mountain area sources. However considering the relative proximity to the Sagami Bay and Izu islands, it is likely that a large percentage was also derived from Kōzu Island.

fill. It is not unlikely that the jasper pendant took on some of the qualities and value normally associated with jadeite.

5.2.3 East Kantô beadstone distribution

The East Kantô (Chiba Peninsula) sample included *nine* sites with stone ornaments. Jadeite pendants were found at four sites (nos. 147, 149, 162 and 175); amber at two sites (nos. 158 and 175); soapstone at three sites (nos. 162, 169 and 175) and serpentinite at three sites (nos. 150, 151 and 162). This sample did not include any pendants made of jasper or agate. On the other hand, two sites (nos. 162, 169) contained pendants of commonly available 'local' materials, and at one site (no. 154), a pendant made of undefined material was found. It is clear that a variety of ornaments of different materials is found at nos. 162, 169 and 175. As the **maps 7 and 8** shows, the majority of beadstone ornament sites is located at the Tokyo Bay Coast.

The characteristics of East Kantô sites are generally a bit different from those in the West Kantô. Often, the sites have been occupied over a shorter period: only ca. a third of the sites includes Earlier Middle Jômon houses, and only 10% of the 33 sites was inhabited throughout the Late Middle Jômon. The prevailing pottery styles are Atamadai (Mid Middle Jômon) and Kasori E (Late Middle Jômon; the presence of Chûbu/West Kantô pottery styles like Katsusaka, Sori, and Renkômon is relatively minor; influences from the Daigi-style from the Tôhoku are also frequently present. Probably related to this lesser influence from the Chûbu, ritual practices involving dogû clay figurines are much rarer than in the other areas; Kasori E-style dogû were found at only three sites, including one with beadstone ornaments (no. 175)—whereas sekibô (ritual phallic stone rods) are found at almost half of the sites.

Animal protein seems to have been a considerably more important part of the East Kantô diet than in the Chûbu and West Kantô; apart from the shell mound remains, East Kantô coastal sites also contain large quantities of net-sinkers. In addition to fishing, hunting also appears to have played a bigger role: arrowheads occupy a proportionally much larger role in the subsistence toolkit than at Chûbu and West Kantô sites. Despite relatively greater distance to good-quality obsidian resources, most sites were in possession of (at least some) obsidian arrowheads. At many sites, extensive evidence of arrowhead production is found—presumably mostly for private use. The importance of hunting is underlined by several cases of burials involving *dogs* buried in the same fashion as—and sometimes alongside—humans.³³ The respectful treatment demonstrates their important role in Chiba as hunting companions. The

³³ Dog burials within the site sample have been found at three sites: Takanekeido (site no. 147), where three dogs were laid out together; Kasori Kaizuka (site no. 150), where two dogs were found buried separately, and Shiraiômiyadai (site no. 173), where a man was found buried with his dog accompanied by part of a boar cub (and an arrowhead in the secondary fill).



overall impression is of a relatively ‘masculine’ society,³⁴ particularly compared to the contemporaneous Chûbu and West Kantô sites, where subsistence tools relating to plant foods and figurine ritual prevail. Moreover, East Kantô sites tend to flourish over relatively short periods of time.

However, as the graphs in the statistics section in Chapter Six will demonstrate, beadstone ornaments tend to be found comparatively more often at those sites which showed evidence of larger settlements with a longer and more continuous habitation history, and have broader exchange contacts. Conspicuously, all four *jadeite* sites are located at shellmound sites at the coast: three at the Kaizuka sites of Takanekido, Arayashiki and Kusakari (no. 147, 149 and 162), and one at Higashinagayamano (no. 175) on the opposite Pacific Coast. These jadeites are distributed at a distance of over 300km (ca. 315 to 360km) from the Jadeite Coast area.

At Takanekido in Funabashi, two jadeite pendants are found: one whole bonito (in a house fill), and one irregular-shaped item that may be a fragment, in a (burial) pit. This site represents a large, stable settlement, that was first inhabited during the Mid Middle Jômon, and flourished throughout the Late Middle Jômon. No evidence about interregional pottery styles is present, but the size had an above-average ratio of obsidian arrowheads.

Arayashiki Kaizuka has been excavated bit by bit on a regular basis over time, but because I only had access to three reports in the 1970s, these data are limited to the presence of one Mid and two Late Middle Jômon houses. Nevertheless, considering the high number of burial pits at the site, there is little doubt that this site once formed a large-scale settlement. Moreover, the site has other ritual evidence such as sekibô. An undamaged bonito jadeite pendant was found in a Middle Jômon provenance. Other important signs of wider contacts are the presence of a (damaged) rare pyramid/gable-shaped clay artefact (of the type that is also found at Higashinagayamano, Kaminakamaru and Tsujisawaminami), serpentinite adzes and obsidian. Twenty-five Middle Jômon samples of obsidian were analysed, and found to derive from mainly from Kôzu Island, and some from Hakone; Shinshû obsidian was not recognised (Suzuki 1976: 60). Use wear traces were identified on the blade of one of the serpentinite adzes (report 149c, 1978: 94), indicating that it was utilised, not merely ceremonial.

Excavations at Kusakari Kaizuka and Section B sites reconstructed a very large, stable and prosperous Mid and Late Middle Jômon large settlement, consisting of almost 200 Jômon pit dwellings, many pits, shell mounds etc—and a great quantity of artefacts, including *six stone ornaments*. Many graves were discovered, including well-preserved remains of 23 Mid and 13

³⁴ One interesting example is Iwai site (165), which consists of one Late Middle Jômon house, 99 arrowheads, lots of evidence of arrowhead production—and no less than eight sekibô: a tribute to Jômon masculinity.

Late individuals. Graves (especially during the Mid Middle Jōmon)³⁵ frequently contain personal items like decorated bone and antler ornaments, and shell bracelets—but surprisingly, no stone ornaments. Evidence of contact with other regions at this core settlement is also abundantly present. Interregional pottery style influences include the Chūbu, West Kantō and Southern Tōhoku; various serpentinite polished adzes and relatively very large quantities of obsidian (87% of 259 recorded arrowheads)³⁶ have been imported. The obsidian was not formally analysed, but it was assumed to be mostly of Chūbu origin (report 162b, 1990: 108-9). Moreover, the excavators deduce long-distance contacts with the Chūbu and Kantō from the presence of ptarmigan bones and a typical sort of ‘ishisaji’ tool (report 162b: 109). Finally, the site also yielded *two jadeite* pendants, one *serpentinite* pendant from a Mid Middle Jōmon house fill, one *soapstone* pendant (from post-Jōmon context), and two pendants made of ‘ordinary’ (one tuff, one sandstone) materials. Both pendants were undamaged, but not associated with a structural context. One of the pendants was said to be of somewhat inferior quality (report 162a, 1986: 545). Nevertheless, the excavators remarked upon the scarcity of Middle Jōmon jadeite pendants at Chiba sites—even at large-scale settlements—and surmised that the Kusakari settlement must have occupied an important position (*ibid.*).

At the Pacific Coast, Higashinagayamano settlement (no. 175) also appears to have been one of the bigger ‘players’ in the East Kantō networks. This site, which was inhabited throughout the Late Middle Jōmon, contains plenty of evidence of contacts with other areas: six stone ornaments (one jadeite, one amber, four soapstone pendants); serpentinite adzes, relatively high ratios of obsidian arrowheads, interregional pottery styles including small quantities of pottery from the Chūbu, West Kantō and Southern Tōhoku, and one of the rare pyramid/gable shaped clay objects. In addition, the nature of the site included relatively unusual ritual evidence: both *sekibō* stone rods and clay figurine parts were present. The amber pendant was undoubtedly derived from the Chōshi area, ca. 30km away (possibly from Awashimadai site itself), perhaps even exchanged among ‘hunters’; its burial context (dated from the very start of the site, at the end of the Mid Middle Jōmon) suggests that it was considered a personal prestige item. The role of arrowheads in the toolkit is prominent; moreover the obsidian ratios are also unusually high, particularly when compared to slightly more northern sites near Tone River, where chert arrowheads prevail. The obsidian has not been formally tested, but again the assumption was made that it originated mainly from the Chūbu area (Report 175, 1990: 481). The four soapstone ornaments all consist of converted earring-halves, which have been well-

³⁵ There was another interesting contrast between Mid and Late Middle Jōmon graves: the former were more often found in multiple burials (up to six persons) buried in abandoned house pits, whereas Late Middle Jōmon burials were often single, or contained maximum two people. Of course this may indicate a change in social structure, but an early disaster (e.g. epidemic) is also a possibility.

polished and pierced through the top (report 175: 377); one of these has been found in a Late Middle Jōmon burial. The other soapstone ‘pendants’—as well as the jadeite pendant—were found without structural contexts in the Late Middle Jōmon cultural layer. The quality of the jadeite pendant however appears somewhat inferior.³⁷ Perhaps this site exchanged dried marine products (perhaps including sea mammals?), or perhaps even salt with more inland regions (although there is no evidence for this before the Late Jōmon).

Another long-lived Tokyo Bay shell mound settlement site, Kasori Kaizuka section 4, (no. 150) yielded a serpentinite pendant from a Late Middle Jōmon provenance, and jadeite ones from Final Jōmon layers. The Middle Jōmon evidence at this particular section consisted of 11 Middle Jōmon houses, seven Mid and four Late Middle Jōmon. However, this is another site which was extensively excavated and analysed over the years, and is generally known to represent a large Middle Jōmon core settlement; therefore this limited information is not very representative to the character of the entire site. Unfortunately more information, including concerning a possible Middle Jōmon jadeite find, was unavailable at the time.

Sites that were probably more modest-sized settlements were Kamatori site (no. 151) and Warabi site (no. 154), also located along the Tokyo Bay area. At Kamatori, a broken *serpentinite* pendant was found in a Late Middle Jōmon (Kasori E 3) house fill context, and at Warabi a well-made undamaged preserved pendant of *undefined material* was found without structural context. At both sites, some evidence of earlier site use was found (in the case of Warabi, including a large number of Earlier Jōmon houses), but habitation was not continuous, and the sites only flourished around the middle of the Late Middle Jōmon (ca. Kasori E 2). Neither site showed evidence of ritual activities like sekibō. Obsidian arrowhead ratios were relatively high at Kamatori, indicating some exchange, but considerably lower at Warabi—perhaps due to its strong Initial Jōmon character.

Ornaments at ‘inland’ sites appear to have been rare: the sample contained only two such examples. Another *amber* pendant was found at Mukaihara site (no. 158), an ‘inland’ site at ca. 50km distance of Chōshi Peninsula. This site mainly consisted of one small Early Jōmon (4 houses) and a separate small Late Middle Jōmon settlement (3 houses), and was deeply involved in hunting, and/or arrowhead production. Large quantities of arrowhead debitage were found at the Late Middle Jōmon part of the site, including considerable amounts of obsidian (in three concentrations). Although this small Middle Jōmon settlement (dated around Kasori E 2) was relatively short-lived, its activities were probably continued at the neighbouring Ikemugai

³⁶ The ratios of obsidian arrowheads among the arrowhead total at Kusakari were the highest in the East Kantō sample; in itself an indication of its influence.

³⁷ It is enigmatically referred to as ‘not jade (*hisui*) but jade-related’ (report 175: 377).

settlement (159), which dates from the Final Middle Jōmon.³⁸ The location of the amber pendant (and therefore its probable date) was not revealed, but the dominant presence of arrowheads and obsidian would tentatively support Uchiyama's hypothesis about the link between amber and hunters.

Finally, some beadstone ornaments were found at the relatively large-scale (57 dwellings) but short-lived settlement of Nagata-kijigahara (site no. 169) that flourished between the Final Middle Jōmon (Kasori E 3~4) and Start Late Jōmon (*Shomyodera* pottery style). A round green tuff pendant was found in a Final Middle Jōmon burial, and a soapstone pendant in another burial pit. Moreover, a broken 'nephrite' axe without a structural context was also reported. This designation is rather ambiguous: is unclear whether tests have shown that this adze was truly made of nephrite (which visually closely resembles jadeite but has a different chemical composition and is slightly softer) or whether a high-quality form of serpentinite (cf. Suzuki 1994: 170) is meant. In any case, apart from the ornaments, evidence of interregional contexts is modest. No interregional pottery style influences have been mentioned, and the ratio of obsidian among the arrowheads is low. It shares this characteristic with at many Northern Chiba sites near Tone River—probably due to the relative proximity of a *chert* outcrop near Chōshi.

5.2.4 Summary

This section, which has described the location and conditions at all stone ornament distribution sites from the sample, has shown that diversity in the distribution of stone ornament material types existed on various levels: regional, sub-regional and between sites. Regional differences may well be (at least partially) related to distance to the source—for example, compared to the Kantō regions, the Mountain area sites (especially in the lower Matsumoto Basin and Yatsugadake area) clearly had a much better access to the Jadeite Coast products. This can be partially explained by geographical factors, like relative proximity, and the fact that there is a natural route from the area including Jadeite Coast sites Teraji and Chōjagahara into this area, namely through the path carved by the Himegawa River, which originates high in the Chūbu Mountain area. Therefore, proximity to natural routes such as rivers play an important role in the circulation of goods; this could also be seen in the West Kantō and the Tokyo Bay sites in Chiba. However, sub-regional differences are also evident: for example distance to source area fails to explain the difference in exotic ornament distribution density between the Upper Matsumoto sites (which is closer to the jadeite source area) and the Yatsugadake area, or

³⁸ Ikemugai site was larger (14 Final Middle Jōmon houses), also involved in arrowhead production and showed more evidence of interregional contacts through the presence of Sori style pottery and a rare prism-shaped clay object.

between the Tone River sites which are closest to the Chôshi amber source, and Higashinagayamano and Mukaihara sites. It is argued here that this is also related to other factors: closeness to a desirable source (i.e. obsidian) clearly was an important factor in the case of the Yatsugadake sites; however, socio-cultural reasons like enmity between groups cannot be ruled out, as McBryde's (1979, 1981) research has shown. In such a case, certain areas would also be 'skipped' in distribution. Finally, on an inter-site level, the site descriptions of the 'richest' sites have already indicated that there existed considerable differences in site character, which may have been contributed to the network membership. Other, nearby sites may not have shared these characteristics, and therefore not have had access to the most exotic products. The next chapter, Chapter Six, will investigate a number of variable factors which are believed to be relevant to the exchange network systems, by statistically comparing these variables in distributions with and without stone ornaments. The next level of the analysis compares the variables within the stone ornament distribution, distinguishing between ornament sites *with* 'exotic' ornaments (jadeite and/or amber), and those *without*.

CHAPTER SIX: STATISTICAL ANALYSIS—THE RELATION BETWEEN ORNAMENT DISTRIBUTION AND SITE CHARACTERISTIC VARIABILITY

6.1 INTRODUCTION: THE SITE SAMPLE

The 175 sites in the Central Japan sample—70 in the Chûbu Mountains, 72 in the West Kantô Plains and 33 on the East Kantô Peninsula—have all been selected because of significant evidence for habitation during the Late Middle Jômon period. At 55—just little under *one-third*—of these sites,³⁹ one or more stone ornaments probably belonging to the Middle Jômon were found; these mostly consist of finished objects, but sometimes include (jadeite) raw nodules, partially shaped objects without fully drilled holes, or recycled earrings. These sites are summarised in the overview table of **Appendix A1**, which indicates which ornament materials were found, as well as some vital site information (corresponding to the sources used)⁴⁰ which will be dealt with later. The stone materials present at the site have been ticked; bracketing indicates that the temporal context is ambiguous, and could perhaps belong to the Early or Late Jômon periods.

In the previous chapter it has become clear that at some sites larger numbers of ornaments are found than at others, and that there is also variability in settlement characteristics as uncovered by the excavations. Here, the hypothesis that exactly these differences in settlement characteristics may have played a profound influence on presence, quality and quantity of ornaments at site, will be statistically tested, in the way explained in the 'Methodology' section in the Preface (p. ix-xiii). For the purpose of studying exchange networks, the ornament materials are divided into two categories on the basis of their availability: (A) the extremely rare materials which were imported from a distant source area, and (B) materials that may have been slightly more easily available, and locally available materials. This division has been made on the grounds of (a) differences in availability (b) possession of unique characteristics (which may have been particularly valued); and was (c) supported by the contextual study, which showed that rare objects are found far more often in 'special' contexts like burials, and probably were regarded in a different way by the Middle Jômon people.

³⁹ The famous jadeite pendant from Tenjin site (Oizumi-village, no. 47) has been excluded, since it was found in an Early Jômon burial in a section clearly separated from the Middle Jômon habitation area. Meanwhile, Kitamura site (no. 3) has been tentatively included in the sample: although two pendants were found in Late Jômon burials, the contexts of the remaining jadeite pendant and raw material remain ambiguous. However, it is not inconceivable that these also belonged to the Late Jômon.

⁴⁰ NB: in the case of several large-scale sites, only part of the excavation reports was available to me at the time; therefore this information herein is NOT necessarily comprehensive.

Category A consists of the extremely rare materials *jadeite* and *amber*, which are each limited to a unique source and production area, and have been imported via a long-distance network; category B can be subdivided into (i) the slightly less rare materials, for which theoretically alternative source areas exist, but which are often still imported over a fairly long distance: especially *soapstone* and *serpentine*, and (ii) ubiquitous stone materials which can be obtained quite easily, and which are also commonly used for the production of functional tools: most frequently including materials like *tuff*, *sandstone*, *shale*, *chert* etc.

With regard to category B (i), there are two more types of rare beadstone materials, which are however extremely rarely found in Jōmon contexts: these are *agate* and *jasper*.⁴¹ Less than five occurrences of each have been found within this sample—too small to be statistically significant in themselves. Therefore these shall be briefly mentioned, but because of statistical irrelevance of these cases, attention will mainly focus on the more commonly used types of beadstone. The Japan Sea coastal region (including the Himegawa and Shirouma production areas), which has specialised in ornament production since the Early Jōmon, is the most important (and likely) source area for all these materials—except amber which is derived from the opposite side, the Chōshi source at the Pacific coast in Chiba..

The statistical analysis in this chapter will consist of two parts. The first analysis will seek to identify the differences between sites *with* stone ornaments (55 sites) and those *without* (120 of the sample sites). The second analysis will concentrate on the 55-site sample with stone ornaments, in order to distinguish between the distribution of the ‘exotic’ ornaments jadeite and amber, and the distribution of ‘alternative’ ornaments, in other words those confined to category B. *It is expected that in both analyses, significant differences in the presence of all site characteristic variables can be distinguished between both distributions.* All sites in the sample have been summarised in **Appendix A**, including all site characteristic variables used in the statistical analysis. **Appendix A1** contains all 55 sites where stone ornaments are present, whereas **Appendix A2** contains all relevant information for the 120 sample sites without stone ornaments.

⁴¹ Especially jasper was commonly used for bead production from the Yayoi period onwards; after the 5th century AD when Japan may have been unified under single rule, jasper from Kasenzan (Shimane) was even transported 600km to the West Kantō (Warashina 1992: 372). Other potential sources are Saruhachi (Sado island), Toki (Gifu), Futamata (Ishikawa), and Hosoiri (Tōyama) (ibid: 358-9); one of these sources may have supplied the West Kantō sites—quite possibly Hosoiri as it is located relatively close to the well-known Itoigawa area.

6.2 STATISTICAL ANALYSIS PART I: DISTINCTIVE CHARACTERISTICS OF SITES WHERE STONE ORNAMENTS ARE PRESENT

6.2.1 The method of analysis

This analysis concentrates on the presence of *Middle Jōmon* stone ornaments, and the conditions that may be relevant to this occurrence. Therefore, those ornaments found at sample sites in contexts which clearly pre- or post-date this period—such as the jadeite items found in Late Jōmon burial at Kitamura site (no. 3) and Kasori Kaizuka (no. 150), or the jadeite pendant buried in the centre of the Early Jōmon settlement at Tenjin site (no. 47, in section C, physically separate from the Late Middle Jōmon habitation)—have been excluded.

First, an attempt will be made to show that the distribution of *stone pendants in general* is related to certain conditions, which are less commonplace at sites where the pendants are *absent*. In the second analysis, a further statistical distinction will be made within the stone pendant site sample itself, based on the presence of different materials.

Statistical analysis is carried out to determine whether there is a relevant relationship between certain site or excavation characteristics—such as size, habitation length and continuity, and the presence of other commodities which give an indication about the nature of the site, or may indicate an advantageous position in trade networks or good access to resources—and the presence or absence of stone ornaments at sites. Within the sample of 175 sites within Nagano, Yamanashi, Kanagawa, Tokyo and Chiba, 55 sites have stone ornaments, whereas 120 sites do not. As with the presence of ‘exotic’ polished adzes, the Chūbu Mountain area appears to be most favoured in this regard: 28 sites (40%) of the 70 site sample have stone ornaments, against 18 (25%) of 72 West Kantō sites, and 9 (27%) of 33 East Kantō sites.

As the results described above show, it turns out that there is in fact a marked difference in distribution pattern relating to all these characteristics, which clearly distinguishes the sites with stone ornaments. At a later stage, this analysis will be repeated, whereby a distinction in material type will be made among the 55 sites with stone ornaments. Those results will show the relevance between distinctions in material scarcity (and presumably, value) of an item and the conditions in which it is distributed.

As described in the ‘statistical methodology’ section in the Preface (p. ix-xiii), the statistical analysis will be carried out using (a) the ‘chi-squared’ test to determine whether there is a statistically significant relationship between the characteristic and the distribution; furthermore (b) the strength of the association is measured via “Cramer’s V” association measure. In the case of the first level of the analysis, the association measures vary between 0.0x (for a completely random relation) and 0.500. In the subsequent analysis (distinguishing between two categories of stone material within the Stone Pendant distribution sample of 55 sites), the maximum levels are even lower: 0.241, and 0.350 for the polished adze sample. In

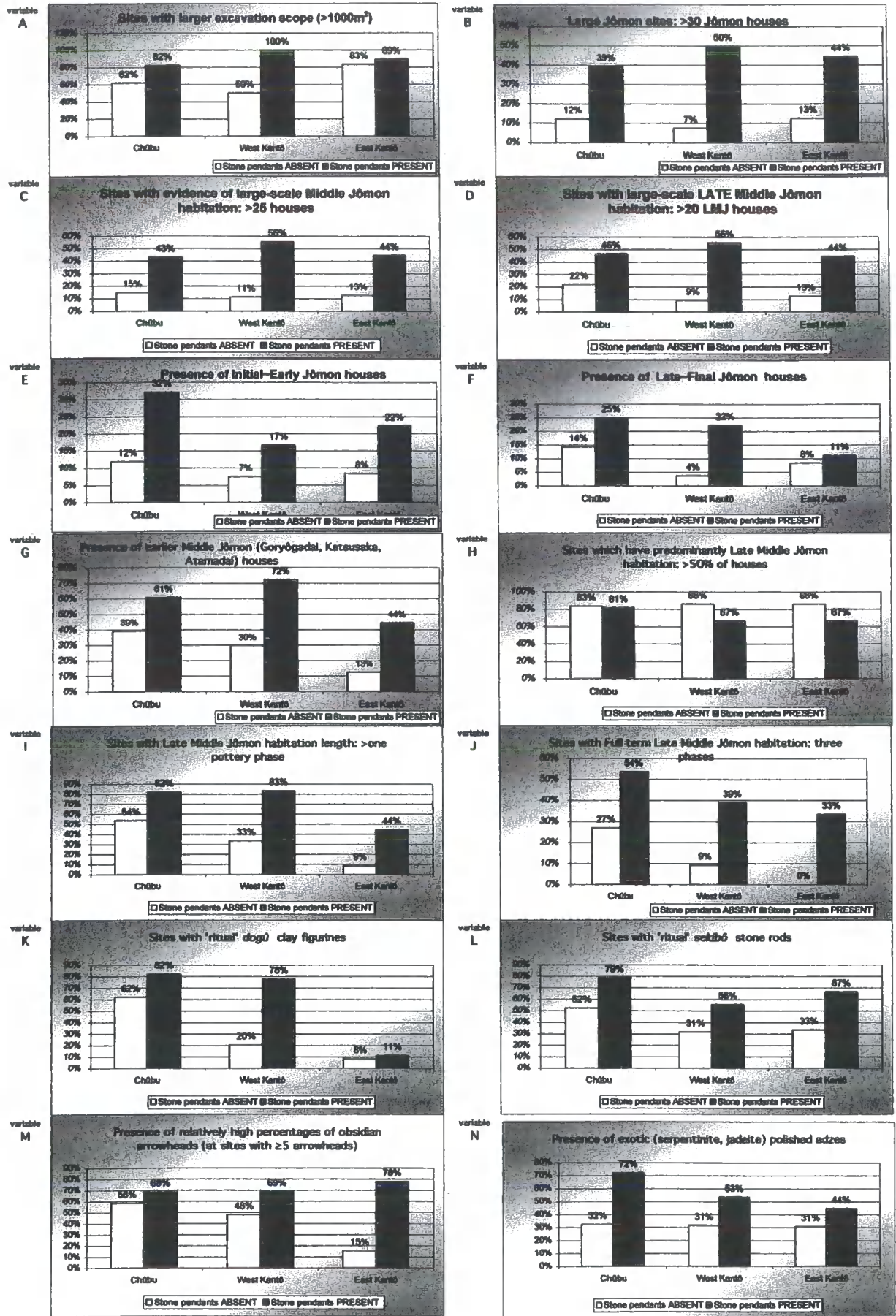
absolute terms these measures could be called rather low, as they do not come very close to 'one' (1.0). However, they are used to compare values with those from other criteria, and will therefore be sometimes referred to as 'relatively strong'—i.e. in comparison with another variable with a weaker association measure.

For each variable (labelled A to N), the significance level and Cramer's V are given; this result is an average, which applies to the *sample site total*. Often, the values for each individual region turn out to be statistically invalid, due to the relatively small size of the sample (if results of the larger sample areas Chûbu and West Kantô are valid, these values are also given). In any case, in order to compare regional distribution differences between the Chûbu, West Kantô and East Kantô regions, a table summarises the numbers of sites where the variable is present, the total numbers of relevant sample sites per region, and the resulting percentage of the distribution.

Furthermore, the differences in characteristics between ornament 'Absent' and ornament 'Present' sites are visualised in **graph 1 A-N** (designated with a letter corresponding to that of the variable), which shows the percentage of relevant sites per region and distribution where this characteristic is found. These graphs compare the distribution characteristics of sites with stone ornaments (black columns) and without stone ornaments (white columns); the percentages shown are *relative (not cumulative!)*, and indicate the percentage of all relevant sites *within each category* where the variable (numbered A to N) is present. A comparison based on absolute site percentages (i.e. calculated from the sample site total) would be far less informative, because of the much smaller number of sites with stone ornaments in this site sample—just under one-third of the sample site total of 175 sites. These graphs are all found on the next page. Based on the combined information from chi-squared analysis and relative occurrences per distribution, a brief description of the distribution characteristics of each variable is then given.

Graph 1

Comparing characteristics between sites where Middle Jōmon STONE PENDANTS are Absent (WHITE) and Present (BLACK)



6.2.2 Statistical analysis: sites with stone ornaments versus sites without

Variable A: Sites with a larger excavation scale: > 1,000m² (N=175: 70 Chûbu, 72 West Kantô and 33 East Kantô sites)

The relationship between larger excavation scale and generic stone ornament presence is relevant at the 0.1% level, with an association measure of 0.286. The relationship is by far the strongest in the West Kantô, (0.1% level, with a relatively stronger association measure: 0.447), where 100% of stone ornaments occurrences were found at larger sites.

Distribution condition 1: Excavations >1,000m ²	Stone ornaments ABSENT (120 sites)			Stone ornaments PRESENT (55 sites)		
	Site numbers	Site %		Site numbers	Site % of	
Chûbu (70 sites)	26	42	62%	23	28	82%
West Kantô (72 sites)	27	54	50%	18	18	100%
East Kantô (33 sites)	20	24	83%	8	9	89%
TOTAL (175 sites)	73	120	61%	49	55	89%

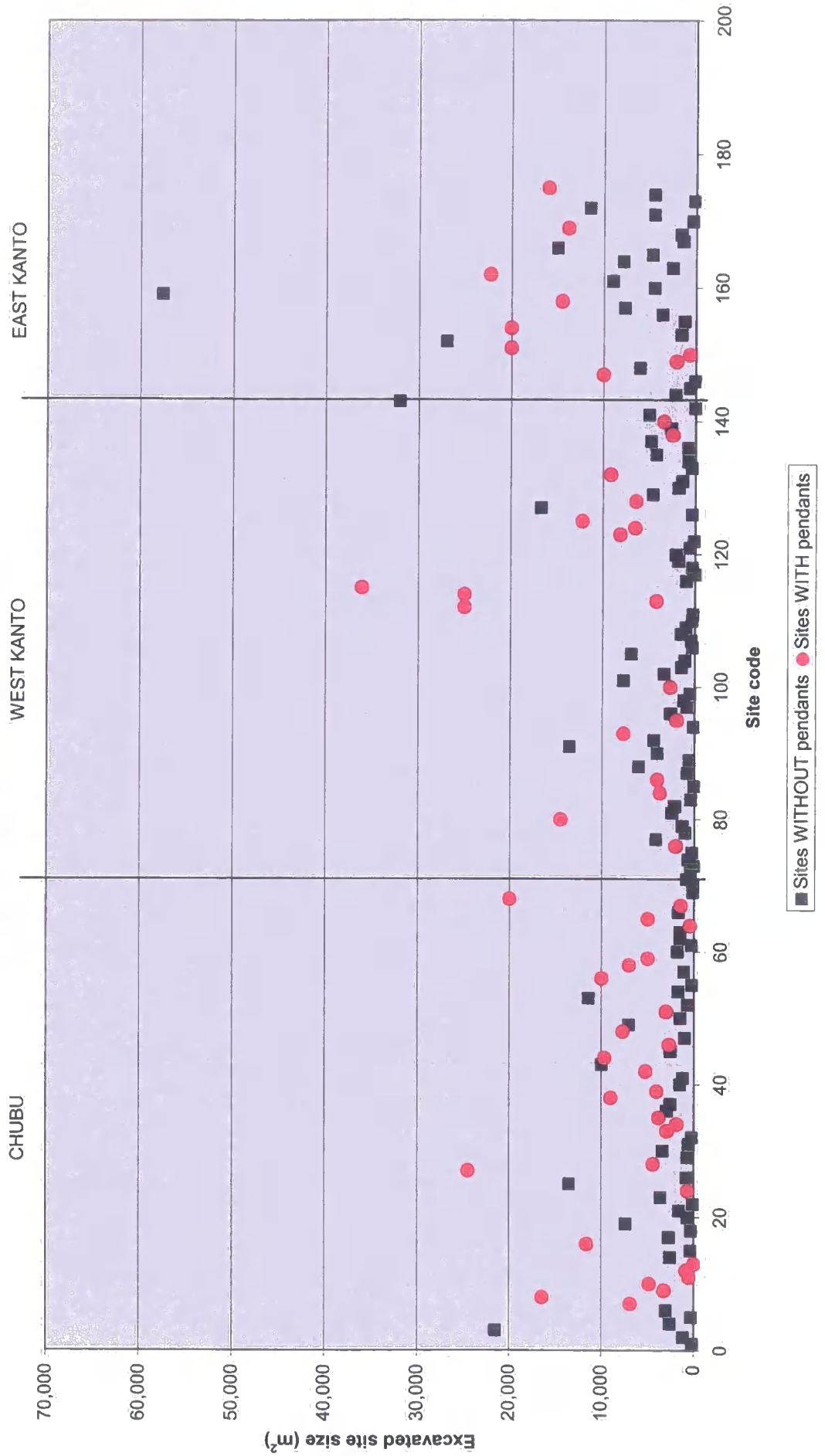
The strength of the relationship is somewhat less in the Chûbu area but still significant (10% level, with an 0.216 measure). As in all cases, the East Kantô sample is too small to be relevant by itself, but as the relative site percentages show, there barely exists a distinction between the sites where stone ornaments are absent and present. The scatterplot **graph 2** (next page) further illustrates the relation between excavation size and presence or absence of ornaments, demonstrating clearly that larger excavations do yield ornaments far more frequently than the smaller excavations. Each individual site can be located in the scatterplots by their **site code**.

Variable B: The Habitation density and visible size of settlement: 'large' settlements with more than 30 Jômon pit dwellings. N=174: 69 Chûbu, 72 West Kantô and 33 East Kantô sites.

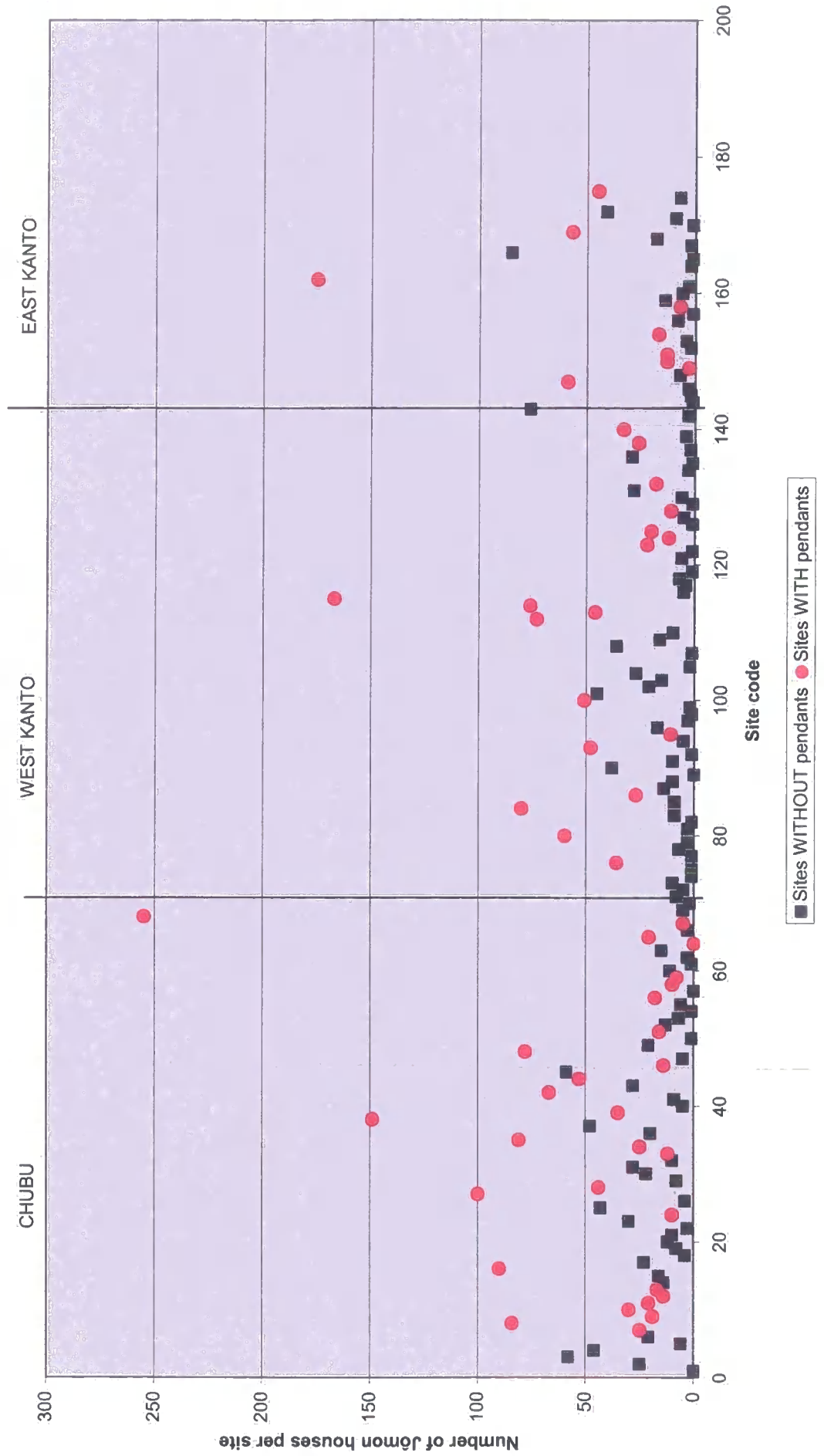
In the analysis of variable B one Chûbu site (Sakai, no. 57) has been excluded due to uncertainty on the exact number of houses. Here the relationship between presence and larger number of houses is relevant at the 0.1% level, with an association measure of 0.385. Moreover, the table and corresponding graph also show that the contrast in scale between sites with and without stone ornaments is more pronounced:

Distribution condition 2: Sites with >30 Jômon houses	Stone ornaments ABSENT (119 sites)			Stone ornaments PRESENT (55 sites)		
	Site no.	of	Site %	Site no.	of	Site % of
Chûbu (69 sites)	5	41	12%	11	28	39%
West Kantô (72 sites)	4	54	7%	9	18	50%
East Kantô (33 sites)	3	24	13%	4	9	44%
TOTAL (174 sites)	12	119	10%	24	55	44%

Graph 2: Comparing excavation size between sites WITH and WITHOUT stone pendants (n=175)



Graph 3: Comparing Jōmon house number between sites WITH and WITHOUT stone ornaments (n=175)



Scatterplot **Graph 3** (previous page) illustrates this relation between number of generic Jōmon houses and absence or presence of stone ornaments. It shows how the presence of ornaments is strongly associated with a high number of houses.

Variable C: The habitation density and visible size of settlement: 'large' Middle Jōmon settlements, which consist of more than 25 Middle Jōmon pit dwellings.

This analysis, also relevant on a 0.1% level (association measure of 0.380) gives a good idea of the immense population increase that took place during the Middle Jōmon: this result barely differs from the previous analysis, which looked at habitation evidence in general.

Distribution condition C: Sites with >25 CHUKI houses	Stone ornaments ABSENT (119 sites)			Stone ornaments PRESENT (55 sites)		
	Site numbers		Site %	Site numbers		Site % of
Chūbu (69 sites)	6	41	15%	12	28	43%
West Kantō (72 sites)	6	54	11%	10	18	56%
East Kantō (33 sites)	3	24	13%	4	9	44%
TOTAL (174 sites)	15	119	13%	26	55	44%

Again, as the table and graph indicate, presence of stone ornaments occurs relatively far more frequently at sites where higher concentrations of Middle Jōmon houses are excavated. In the Mountain area, the statistical relation with the Middle Jōmon house concentrations is stronger (1%; 0.316) than with generic high house number; sites with a high Middle Jōmon house concentration in the Kantō sample are again too few to be valid.

Variable D: Sites which show evidence of extensive habitation during the Late phase of Middle Jōmon, and consist of more than 20 Late Middle Jōmon houses

The final part of the Middle Jōmon generally witnessed the highest population increase in Central Japan (Imamura 1996: 93, see also **fig. 3**). The result of this analysis is again valid at the 0.1% level (0.372 association measure), not much different from the previous two analyses. Again, in all three regions, the variable of 'large' settlements evident in higher house numbers is found far more often among the sites where stone ornaments are present.

Distribution condition D: Sites with >20 LATE Middle Jōmon houses	Stone ornaments ABSENT (119 sites)			Stone ornaments PRESENT (55 sites)		
	Site numbers		Site %	Site numbers		Site % of
Chūbu (69 sites)	9	41	22%	13	28	46%
West Kantō (72 sites)	5	54	9%	10	18	56%
East Kantō (33 sites)	3	24	13%	4	9	44%
TOTAL (174 sites)	17	119	14%	27	55	49%

Based on these consecutive findings, it appears that the existence of a large-sized settlement—here indicated by the discovery of relatively high numbers of (Late) Middle Jōmon houses—is an important condition for the distribution of Middle Jōmon stone ornaments. However, this

fulfils only one criterion; as Kobayashi suggested, important settlements are characterised by more than just a high number of houses. Related to the assumption that house number may represent settlement scale, the size of the excavation is also extremely relevant: a small-scale excavation probably will only discover or excavate part of a large-scale settlement. Partial excavation may account both for presence of stone ornaments at a small excavation with few excavated houses, and for 'absence' (i.e. failure to recover) ornaments at sites with more excavated houses. This remains one of the frustrating problems for archaeologists.

Variable E: Sites which were inhabited before the Middle Jōmon: presence of Earlier Jōmon (Initial Jōmon and/or Early Jōmon) houses

The relationship between pre-Middle Jōmon habitation at sites and the occurrence of stone ornaments is relevant at the 1.0% level (Cramer's V: 0.216). The table and graph show the relation between the occurrence of this criterion and the presence of stone ornaments: in all three regions, the presence of earlier habitation is found three times as often at sites with stone ornaments. Often—but not always—such sites have a relatively large house concentration and/or continued habitation throughout the Middle Jōmon. The relation might indicate either the relative favorability of the site location, being used over a long period of time, or (less likely) that some items that were already acquired during the Early Jōmon, continued to circulate and be used for a long time, before eventually being deposited during the later Middle Jōmon.

Distribution condition E: Presence of Earlier Jōmon (Initial Jōmon and/or Early Jōmon) houses	Stone ornaments ABSENT (120 sites)			Stone ornaments PRESENT (55 sites)		
	Site numbers		Site %	Site numbers		Site % of
Chūbu (70 sites)	5	42	12%	9	28	32%
West Kantō (72 sites)	4	54	7%	3	18	17%
East Kantō (33 sites)	2	24	8%	2	9	22%
TOTAL (175 sites)	11	120	9%	14	55	25%

Variable F: Continuation of use after the Middle Jōmon: sites where LATER Jōmon (Late Jōmon) houses are also present

The relationship between Middle Jōmon stone ornament occurrence and signs of continued site habitation into the Late Jōmon is somewhat weaker: significant at the 5% level (association measure 0.189). Continued habitation beyond the Middle Jōmon perhaps shows again the viability of site location, and therefore potential success of the site. Late Jōmon houses are found relatively more often at sites with stone ornaments than at those without, but the contrast is strongest in the West Kantō area. Considering the Late and Final Jōmon depopulation of the Chūbu area, this is probably understandable (e.g. Koyama 1978; Kidder 1991).

Distribution condition F: Presence of LATER Jōmon (Late Jōmon) houses	Stone ornaments ABSENT (120 sites)			Stone ornaments PRESENT (55 sites)		
	Site numbers	Site %		Site numbers	Site % of	
Chūbu (70 sites)	6	42	14%	7	28	25%
West Kantō (72 sites)	2	54	4%	4	18	22%
East Kantō (33 sites)	2	24	8%	1	9	11%
TOTAL (175 sites)	10	120	8%	12	55	22%

Variable G: Presence of Earlier Middle Jōmon houses, e.g. Early (Goryogadai) and/or Mid (Katsusaka or Atamadai) houses

The relationship of stone ornament occurrence with long-term habitation during the Middle Jōmon is stronger than with earlier or later Jōmon influences: relevant at the 0.1% level (ASSOCIATION MEASURE: 0.307). The presence of Earlier Middle Jōmon house remains plays an important role at most sites in the sample, but is clearly related to the occurrence of stone ornaments, as table and graph show. Especially in the Kantō Plains, the relationship turns out to be strong.⁴² Many sites originated during this period, growing steadily and reaching their apex during the Late Middle Jōmon. Therefore, temporal continuity in habitation can be seen as a sign of a viable and successful settlement. Moreover, it is likely that some ornaments were acquired during the Early and Middle Phase.

Distribution condition G: Presence of earlier MIDDLE Jōmon (Middle Jōmon) houses	Stone ornaments ABSENT (119 sites)			Stone ornaments PRESENT (55 sites)		
	Site numbers	Site %		Site numbers	Site % of	
Chūbu (69 sites)	16	41	39%	17	28	61%
West Kantō (72 sites)	16	54	30%	13	18	72%
East Kantō (33 sites)	3	24	13%	4	9	44%
TOTAL (174 sites)	35	119	29%	34	55	62%

Variable H: Predominance of Late Middle Jōmon habitation: sites where Late Middle Jōmon houses account for 50% or more of all houses excavated at the site

However, since the Late Middle Jōmon is generally the most prosperous period in terms of house and population increase, I always assumed that the possibility that the majority of Middle Jōmon ornament items belongs to this period is strong. Or is it? Looking at the relationship between sites with very strongly predominant Late Middle Jōmon habitation and generic stone pendant occurrence,⁴³ it turned out that there was no statistically relevant relationship (random; 0.157). Moreover, contrary to expectation, the table and graph show that—particularly in the

⁴² Within the sample, the statistically valid relationship between ornament presence and earlier Middle Jōmon houses is 1.0% (association measure: 0.409) in the West Kantō area, against 10.0% (0.238) in the Chūbu Mountains.

⁴³ In this analysis, 11 sites without house remains have been excluded, including one with a soapstone ornament.

Kantô area—ornaments actually occur less frequently at sites with very high percentages of Late Middle Jômon houses! In the Chûbu, the ratios are about equal, suggesting a random relation. Therefore, the presence of earlier habitation (probably coupled with continuity) is clearly an important factor with regard to generic stone ornament distribution.

Distribution condition H: Prevalence of Late Middle Jômon habitation: sites with >50% Late Middle Jômon houses	Stone ornaments ABSENT (109 sites)			Stone ornaments PRESENT (54 sites)		
	Site numbers		Site %	Site numbers		Site % of
Chûbu (67 sites)	33	40	83%	22	27	81%
West Kantô (66 sites)	40	48	86%	12	18	67%
East Kantô (30 sites)	18	21	86%	6	9	67%
TOTAL (163 sites)	91	109	83%	40	54	74%

Variable I: Sites which were inhabited for a longer than a short period during the Late Middle Jômon: presence of structures dated to more than one pottery phase

Nevertheless, the Late Middle Jômon period indeed turned out to be instrumental to stone ornament distribution, but the length of habitation during this period was an important factor.

Distribution condition I: Length of Late Middle Jômon habitation: more than 1 pottery style phase	Stone ornaments ABSENT (118 sites)			Stone ornaments PRESENT (55 sites)		
	Site numbers		Site %	Site numbers		Site % of
Chûbu (69 sites)	22	41	54%	23	28	82%
West Kantô (72 sites)	18	54	33%	15	18	83%
East Kantô (32 sites)	2	23	9%	4	9	44%
TOTAL (173 sites)	42	118	36%	42	55	76%

Based on distinctions in pottery styles found in dwellings, several phases can be distinguished, reconstructing the habitation history within the Late Middle Jômon: sites inhabited during a longer period (e.g. more than the early part, ca. Kasori E 1) are far more favourable to ornament distribution. As the table and graph show, this is particularly the case in the Kantô area; slightly less so in the Chûbu area, probably due to relatively short-lived but highly prosperous sites in the Ina Valley. Statistically the relationship was highly relevant at 0.1%, with a relatively high association measure of 0.507.

Variable J: Sites which were inhabited throughout the Late Middle Jômon: structures dated to three or more pottery phases

At sites that show evidence of continuous habitation throughout the Late Middle Jômon (with houses dated to early, mid and final phases), the relation between settlement continuity and habitation length during the Late Middle Jômon and stone ornament presence is even more relevant: 0.1% level and a 0.552 association measure.

Distribution condition J: Full term Late Middle Jōmon habitation: more than 2 pottery style phases	Stone ornaments ABSENT (118 sites)			Stone ornaments PRESENT (55 sites)		
	Site numbers	Site %		Site numbers	Site % of	
Chūbu (69 sites)	11	41	27%	15	28	54%
West Kantō (72 sites)	5	54	9%	7	18	39%
East Kantō (32 sites)	0	23	0%	3	9	33%
TOTAL (173 sites)	16	118	14%	25	55	45%

It would be safe to conclude that the length and continuity of habitation during the Late Middle Jōmon period itself appears to be a favourable factor to the distribution of stone ornaments.

Variable K: Sites where 'ritual' activities took place, as seen from the presence of *dogū* clay figurines

Following Kobayashi (1992a, 1986), the presence of supposedly ceremonial artefacts is taken into account for the determination of an important settlement site. The association between stone ornament presence and that of *dogū* clay figurines at sites indeed turns out to be relatively extremely strong: statistically, the relation is relevant at the 0.1% level, with a "Cramer's V" association measure of 0.500. In the Mountain area, where clay figurines are most common, the association with stone ornament distribution (0.200 at the 10.0% level) is far less conspicuous than in the West Kantō (0.489 at the 0.1% level), where clay figurines occur almost four times more often at sites where stone ornaments are also present. On the other hand, in the East Kantō, where clay figurine practices are rare, figurine presence clearly is not a strong factor.

Distribution condition K: Presence of 'ritual' <i>dogū</i> clay figurines	Stone ornaments ABSENT (120 sites)			Stone ornaments PRESENT (55 sites)		
	Site numbers	Site %		Site numbers	Site %	
Chūbu (70 sites)	26	42	62%	23	28	82%
West Kantō (72 sites)	11	54	20%	14	18	78%
East Kantō (33 sites)	2	24	8%	1	9	11%
TOTAL (175 sites)	39	120	33%	38	55	69%

Variable L: Sites where 'ritual' activities took place, as seen from the presence of *sekibō* stone rods

Sekibō stone rods also turn out to be associated frequently with the presence of stone ornaments, at a 0.1% level. The association measure is somewhat lower (0.406) compared to that of *dogū* figurines, but there is more homogeneity in distribution: the ratio difference with sites without ornaments is similar for the Chūbu and both Kantō areas, reflecting the universally important role of *sekibō* in the entire region.

Distribution condition L: Presence of 'ritual' <i>sekibô</i> stone rods	Stone ornaments ABSENT (120 sites)			Stone ornaments PRESENT (55 sites)		
	Site no. of		Site %	Site no. of		Site %
Chûbu (70 sites)	22	42	51%	22	22	79%
West Kantô (72 sites)	17	54	31%	10	10	56%
East Kantô (33 sites)	8	24	33%	6	6	67%
TOTAL (175 sites)	47	120	39%	38	55	69%

Variable M: Sites with good access (through source proximity or trade) to obsidian, as seen from above-average percentages of obsidian among arrowheads

This sample only includes sites with at least five arrowheads and recorded arrowhead material; the sample size of relevant sites therefore is relatively small, at 104 sites. The relationship between relatively high obsidian arrowhead ratios and stone ornament presence is statistically valid at the 1.0% level (ASSOCIATION MEASURE: 0.285). The table and graph illustrate well how the association becomes progressively stronger at sites in the Kantô areas—further away from the prime *Shinshû* sources in the Mountain area. In the East Kantô Peninsula, the association is most remarkable: relatively high obsidian arrowhead ratios occur more than five times more often at sites where stone ornaments are present. In contrast, in the Chûbu area, closer to potential high quality obsidian sources, more sites tend to have good access to the material overall. Nevertheless, even in the Mountain region where obsidian cannot be considered a scarce commodity, it is clear that sites where stone ornaments were present still appear to attract larger quantities of obsidian arrowheads—or vice versa.

Distribution condition M: Obsidian availability: high percentage of arrowheads at sites with ≥5 arrowheads	Stone ornaments ABSENT (60 sites)			Stone ornaments PRESENT (44 sites)		
	Site numbers		Site %	Site numbers		Site % of
Chûbu (43 sites) ≥90%	14	24	58%	13	19	68%
West Kantô (39 sites) ≥75%	11	23	48%	11	16	69%
East Kantô (22 sites) ≥60%	2	13	15%	7	9	78%
TOTAL (104 sites)	27	60	45%	31	44	70%

Variable N: Sites where 'exotic' polished adzes (made of serpentinite or jadeite) are present

This sample size is also rather smaller, due to the fact that 18 sites lacked polished adzes altogether, and a further 33 sites sadly lacked a record of the materials used.⁴⁴ Because generally

⁴⁴ Of the sites lacking polished adzes altogether, two were located in the Chûbu (site nos. 61, 70); six in the West Kantô (site nos. 82, 105, 106, 107, 111, 134) and the majority of ten (site nos. 145, 146, 156, 157, 160, 163, 164, 167, 173, 174) in the East Kantô. These are usually the smaller sites and settlements, with less than 10 house remains. In case of the 33 sites where data concerning tool material were unavailable (i.e. unrecorded in the site report), site size is as much a factor as the aims of the excavators. Sites lacking this information include 16 sites in the Chûbu (site nos. 4, 22, 27, 28, 30-35, 39, 52, 56, 64, 65, 68); 16 sites in the West Kantô (site nos. 72, 74, 81, 85, 89, 90, 94, 95, 96, 101, 109, 118, 120, 124, 126, 138) and one in the East Kantô (site no. 155). Sadly, particularly in the Mountain area, several of

at sites polished adzes are fewer in number than arrowheads, all sites with polished adzes PLUS material information have been included: 124 sites in all. Again, the relative proportion of stone pendant sites with 'exotic adzes' is higher than at sites without. The overall statistical relevance of the association with stone ornament distribution is at the 1% level (association measure 0.329). Serpentine adzes are found at just under a third of sites without stone ornaments—a ratio which is similar in all three regions. However in the case of sites where stone ornaments are present, there are regional differences in the strength of the relation with exotic adze distribution: with a presence at almost three-quarters of relevant sites, the relation appears to be far stronger in the Chûbu area (valid at the 1% level, Cramer's association measure 0.303) than in the West Kantô, where serpentine adzes are present at just over half of the stone ornament sites. The association is comparatively weakest in the East Kantô area.

Distribution condition N: Presence of EXOTIC polished adzes	Stone ornaments ABSENT (82 sites)			Stone ornaments PRESENT (42 sites)		
	Site numbers		Site %	Site numbers		Site % of
Chûbu (52 sites)	11	34	32%	13	18	72%
West Kantô (50 sites)	11	35	31%	8	15	53%
East Kantô (22 sites)	4	13	31%	4	9	44%
TOTAL (124 sites)	26	82	32%	25	42	60%

6.2.3 Generic stone ornament findings

In summary, this statistical analysis demonstrated that a clear distinction can be made between sites where stone ornaments were present, and those where they were absent, on the basis of various descriptive criteria. Overall, stone ornament distribution sites tend to more frequently conform to the characteristics enumerated above—e.g. relatively large house number, long and continuous habitation, evidence of ritual behaviour, access to desirable, exchangeable materials or items—than sites where they are absent. More importantly, generally a distribution site can be defined by a combination of several or most of these characteristics; suggesting a position as a relatively large, viable, successful settlement, particularly compared to smaller, ornament-less ones in the vicinity. Distribution of stone ornaments does seem to be most often connected to the more 'important' settlement sites, possibly of the type 'A' hypothesized by Kobayashi Tatsuo.

However, within the sample of 'sites with stone ornaments' itself, another, similar ranking can be distinguished, based on the materials (or rather scarcity and value), and the quantity and diversity of ornaments found at sites. It is hypothesized here that possession of the rarest (and arguably, most beautiful) materials, namely jadeite and/or amber, indicates a stronger position (or trade acumen), of a settlement, leading to more prestige.

these excluded sites are very large and interesting settlements with much evidence of ritual and stone

The second part of this analysis confines itself to the sample of 55 sites with stone ornaments, distinguishing between the sites which include finds of jadeite and/or amber, and sites with only less exotic stone ornaments. The rules of the statistical analysis are the same as for this analysis, and the relative site ratios conforming to the site characteristic variables will be shown again in tables. Again, the ratios are relative, not cumulative; stone ornament sites including jadeite and/or amber are depicted by the *red* column; sites with less exotic stone ornaments by the *blue* column.

ornaments.

6.3 STATISTICAL ANALYSIS part II: DISTINGUISHING SITE CHARACTERISTICS BETWEEN SITES WITH EXOTIC PENDANTS, AND THOSE WITH ALTERNATIVE STONE PENDANTS.

6.3.1 The distinction between 'exotic' and 'alternative' ornaments

In this section, statistics are used to demonstrate a further distinction in distribution patterns among the 55 sites with stone ornaments, on the basis of the material used for the ornaments. This distinction can be roughly categorised as 'rare ornament materials' versus 'alternative' (or 'more easily available') ornament materials. At 27 sites in this sample, items of *amber* and/or *jadeite* were discovered (often in combination with items made of other materials), whereas the other 28 sites only contain pendants made of alternative materials, a category which includes *soapstone*, *serpentinite*, *jasper/agate*, *locally available* and *undefined stone* materials. Why this distinction? Possibly a case could be made against this categorization: for example, jadeite and amber sources are located in opposite directions (the Japan Sea Coast versus the Pacific Coast), and their products were probably acquired via different networks. Moreover the combination of all the materials in the second category can be seen as very random and artificial as well. For one thing, unlike jadeite and amber, their source and production location are unknown; it is even possible that many of these 'alternative' pendants were also made at the same Hokuriku production sites that made jadeite; see for example **figures 19** and **20**, which shows the Middle Jōmon production evidence for pendants (jadeite and other materials like soapstone) made at Sakai A site in Toyama.

Nevertheless this categorization appeared most sensible and was chosen for various reasons. First, carrying out individual analyses for each material type proved to take up too much time and writing space, and would complicate analysis overmuch, especially since (except in the case of jadeite, soapstone and 'locally available' ornaments), the samples of separate stone categories are simply too small to render a statistically valid result. Instead, this categorization is based on the *scarcity* and presumed *value* of the pendant materials—and the difficulty in acquiring such rare items. The assumption is made that possession of scarce items give an indication of the relative prosperity and influence of a settlement. In Chapter Seven, the scarce material-based distinction will be examined from another angle—i.e. the context in which the ornaments are located. As will be demonstrated in Section 6.3.2 below, the conditions surrounding distribution of jadeite and amber items are relatively more similar than those at the sites that only contained 'alternative' ornaments. Furthermore, as the final part of the analysis will show, many sites contain multiple items, and material diversity is greatest at the sites that include 'rare' items. The total sample analysed here consists of 55 sites with Middle Jōmon stone ornaments: 27 sites that include amber and/or jadeite items, and 28 sites where pendants or ornaments made of alternative materials are found.

Again, as statistical tools, chi-squared test and “Cramer’s V” association measure are used, in order to determine whether there is a statistically significant association, and its relative strength compared to other variables. This analysis is on a general level, including all 55 sites with stone ornaments, spread over the Chûbu and Kantô areas. However, on a regional level, distribution differences between sites with ‘rare’ and with ‘alternative’ pendant materials are illustrated in tables and graphs with the corresponding lettering to the variable types (in this case, variables A-N; R-S). In the table, both distribution site numbers and percentages are given per region; the **graphs 4A-N**, next page) depict the site percentages per region.

6.3.2 The statistical analysis: ‘exotic’ ornament distribution versus ‘alternative’ ornament distribution

Variable A: The excavation scale (larger than 1,000m²)

This relation is valid at the 10% level (0.127); there is a distinction between the distributions, but it is not extremely great: the majority of sites in both cases. Sites where jadeite and amber items were discovered tend to almost always consist of excavations larger than 1,000m²; but other types of stone ornaments are also generally found at large sites.

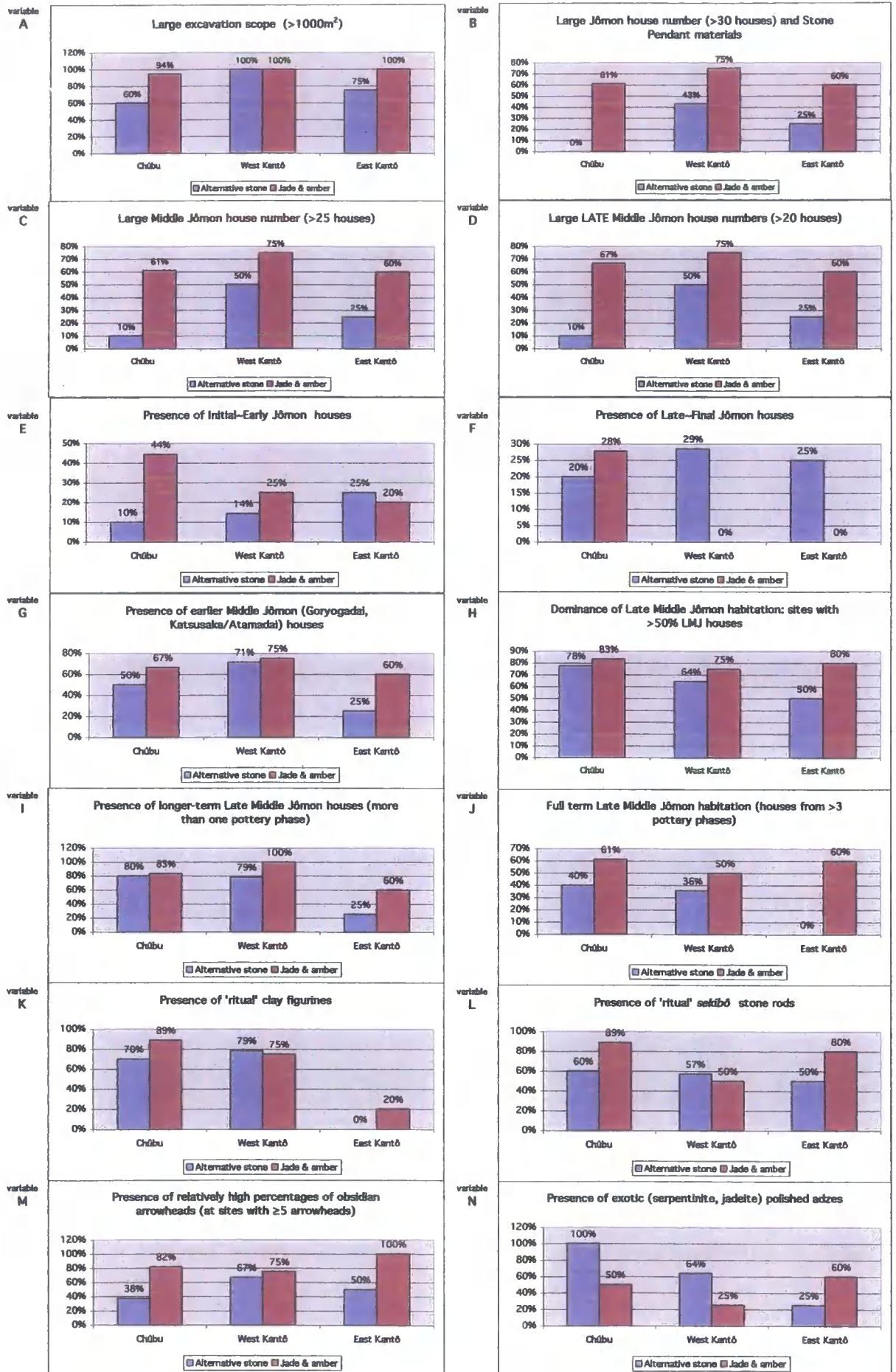
Distribution condition A: Excavations >1,000m ²	Sites with Alternative Stone Pendants (28 sites)			Sites with Amber and/or Jadeite items (27 sites)		
	Site nos.	of	Site %	Site nos.	of	Site %
Chûbu (28 sites)	6	10	60%	17	18	94%
West Kantô (18 sites)	14	14	100%	4	4	100%
East Kantô (9 sites)	3	4	75%	5	5	100%
TOTAL (55 sites)	23	28	82%	26	27	96%

Scatterplot **graph 5** (page 127) shows the relationship between excavation size and presence of ‘exotic’ ornaments, which appears to be strongest in the Chûbu Mountains—the area with the greatest concentrations of ornaments, particularly jadeite and amber. Excavation size appears to play a somewhat lesser role as limiting criterion in the Kantô regions.

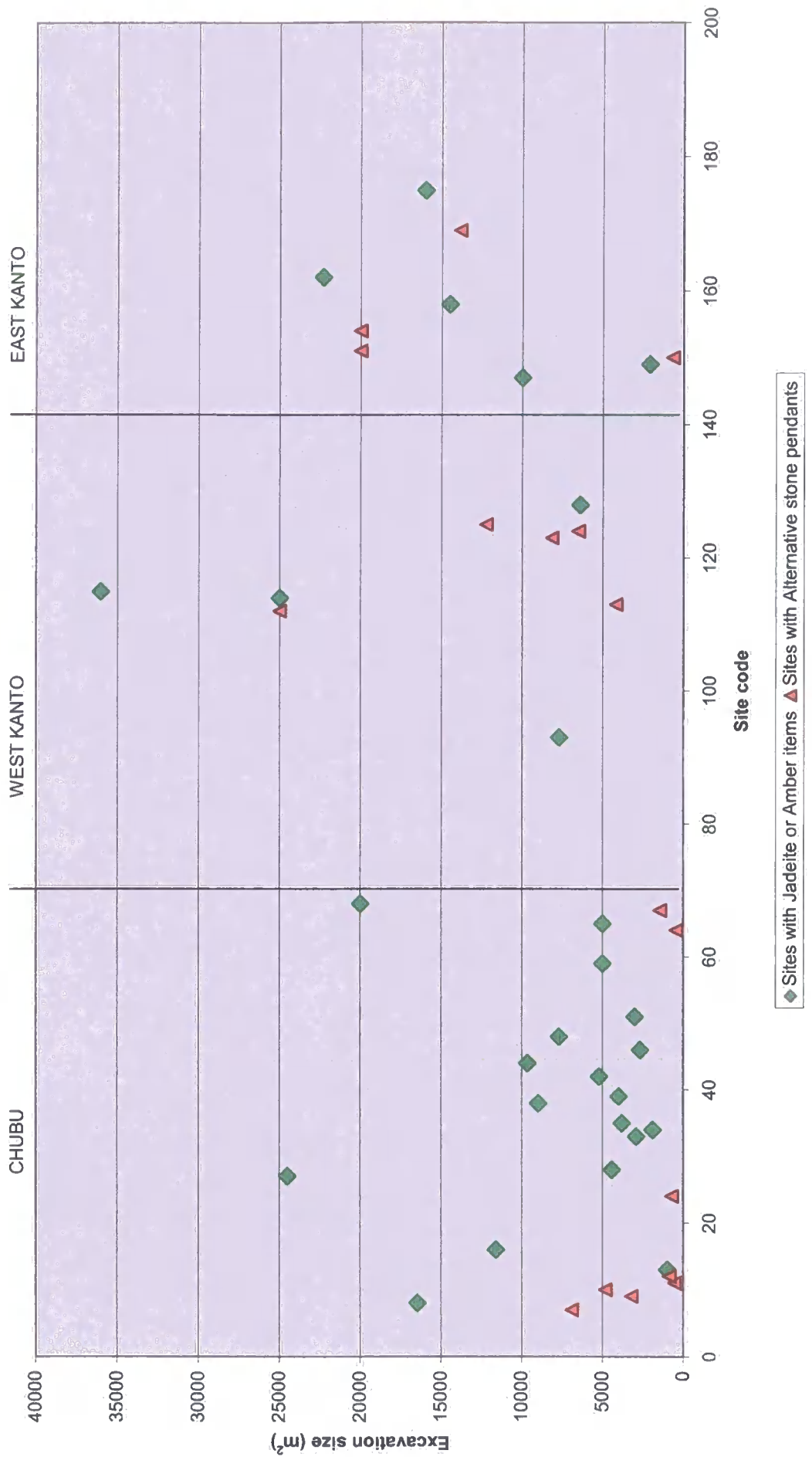
Variable B: The Habitation density and visible size of settlement: ‘large’ settlement sites with more than 30 Jômon pit dwellings.

When looking at indications about the scale of habitation, it turns out that there is a stronger contrast between the distributions. The association between rare ornaments and greater house number is relevant at the 1% level, with an association measure of 0.215. Jadeite or amber items are far more often recovered at sites when a relatively high number of houses is involved; whereas sites with only pendants of less ‘exotic’ materials tend to have smaller house numbers.

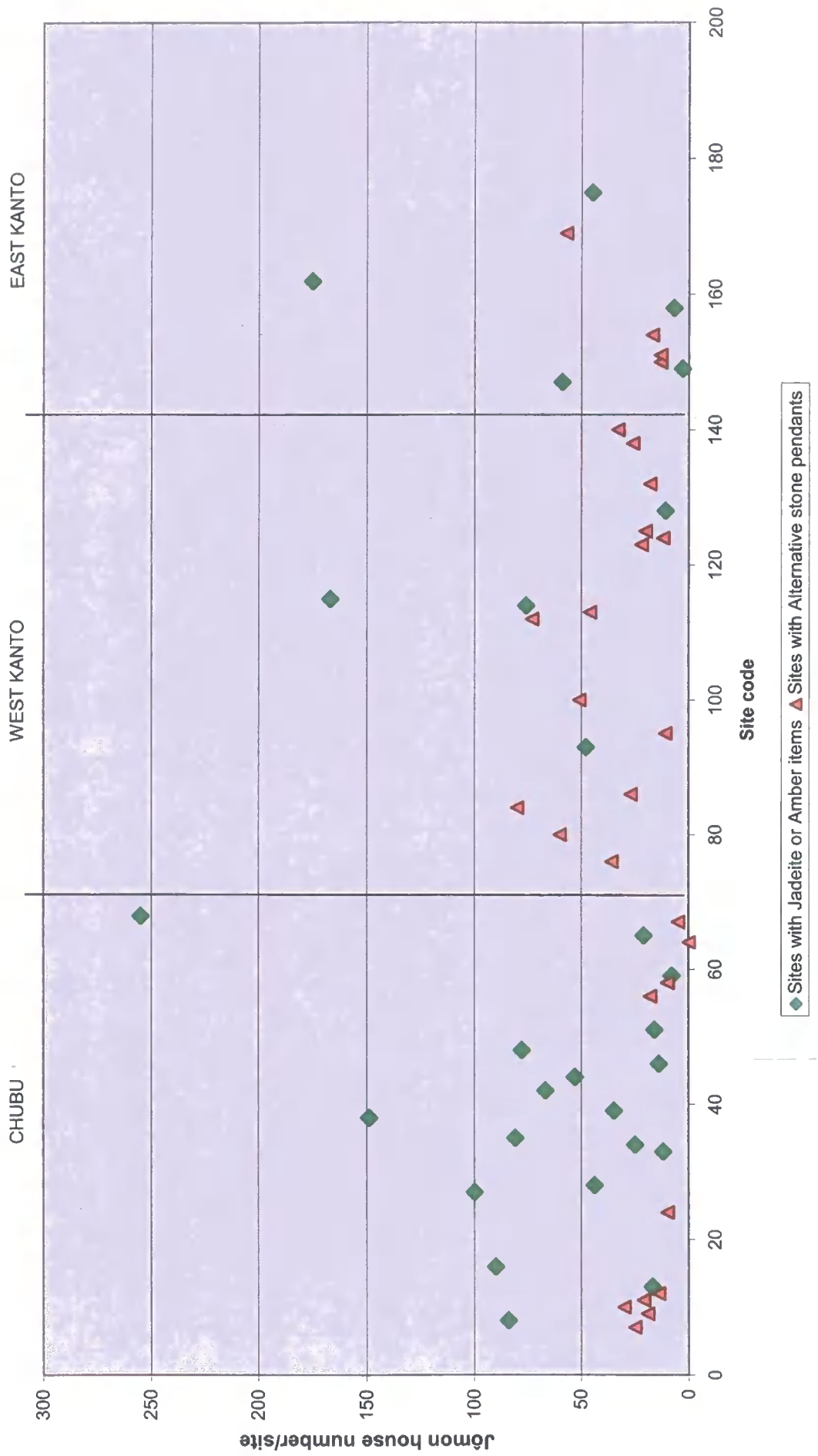
Graph 4 Comparing site characteristics between stone ornament distribution sites where AMBER and/or JADEITE are present (RED), and absent (BLUE)



Graph 5: Comparing excavation size between sites with Jadeite and/or Amber ornaments, and sites with Alternative stone pendants (n=55)



Graph 6: Comparing Jōmon house number between sites with Jadeite and/or Amber ornaments, and sites with Alternative stone pendants (n=55)



The contrast is particularly noticeable in the Chûbu area, which lacks examples of ‘ordinary’ pendant finds at large settlement sites with more than 30 houses.

Distribution condition B: Sites with >30 Jômon houses	Sites with Alternative Stone Pendants (28 sites)			Sites with Amber and/or Jadeite items (27 sites)		
	Site nos.	of	Site %	Site nos.	of	Site %
Chûbu (28 sites)	0	10	0%	11	18	61%
West Kantô (18 sites)	6	14	43%	3	4	75%
East Kantô (9 sites)	1	4	25%	3	5	60%
TOTAL (55 sites)	7	28	25%	17	27	63%

Scatterplot **graph 6**, on the previous page, further underlines this strong association between ‘exotic’ ornament presence and large house number in all three regions, especially the Mountain area.

Variable C: The Habitation density and visible size of settlement: ‘large’ Middle Jômon (Middle Jômon) settlements, which consist of more than 25 Middle Jômon pit dwellings.

The general statistical association between rare ornament distribution and large Middle Jômon settlements is valid at the 5% level (association measure 0.174); a bit less strong than the association with large numbers of generic Jômon house, but still significant. Again, the contrast between sites with rare ornaments and those with alternative ornaments is highest in the Mountain area, followed by the East Kantô. The distinction between the two material categories is least strong in the West Kantô.

Distribution condition C: Sites with >25 CHUKI houses	Sites with Alternative Stone Pendants (28 sites)			Sites with Amber and/or Jadeite items (27 sites)		
	Site nos.	of	Site %	Site nos.	of	Site %
Chûbu (28 sites)	1	10	10%	11	18	61%
West Kantô (18 sites)	7	14	50%	3	4	75%
East Kantô (9 sites)	1	4	25%	3	5	60%
TOTAL (55 sites)	9	28	32%	17	27	63%

Variable D: Sites which show evidence of extensive habitation during the Late phase of Middle Jômon, and consist of more than 20 Late Middle Jômon houses

With regard to evidence of relatively large Late Middle Jômon settlements, the general statistical relation is valid at the 5% level (but close to 1%), with an association measure of 0.194—slightly stronger than the generic Middle Jômon settlements. In the Kantô areas, the distributions are identical to those of the former analysis, but in the Chûbu area, the number of large-scale jadeite sites slightly increases. The Chûbu sample is large enough for the chi-squared test results to have become valid, and the association is relevant at the 1% level, with an association measure of 0.347—considerably stronger than the general association.

Distribution condition D: Sites with >20 LATE Middle Jōmon houses	Sites with Alternative Stone Pendants (28 sites)			Sites with Amber and/or Jadeite items (27 sites)		
	Site nos.	of	Site %	Site nos.	of	Site %
Chūbu (28 sites)	1	10	10%	12	18	67%
West Kantō (18 sites)	7	14	50%	3	4	75%
East Kantō (9 sites)	1	4	25%	3	5	60%
TOTAL (55 sites)	9	28	32%	18	27	67%

Variable E: Sites which were inhabited before the Middle Jōmon: presence of Earlier Jōmon (Initial Jōmon and/or Early Jōmon) houses

This is statistically relevant at the 10% level; with a comparatively rather weak “Cramer’s V” of 0.146. Again, this characteristic—a long tradition of site use, another indication of favourable circumstances—is relatively more common in sites with amber/jadeite ornaments, particularly in the Mountain area. However, the presence of Earlier Jōmon habitation remains relatively rare; even there, it applies to less than 50% of sites.

Distribution condition E: Presence of Earlier Jōmon (Initial Jōmon and/or Early Jōmon) houses	Sites with Alternative Stone Pendants (28 sites)			Sites with Amber and/or Jadeite items (27 sites)		
	Site nos.	of	Site %	Site nos.	of	Site %
Chūbu (28 sites)	1	10	10%	8	18	44%
West Kantō (18 sites)	2	14	14%	1	4	25%
East Kantō (9 sites)	1	4	25%	1	5	20%
TOTAL (55 sites)	4	28	14%	10	27	37%

Variable F: Continuation of use after the Middle Jōmon: sites where LATER Jōmon (Late Jōmon) houses are also present

This association turns out to be *random* (with a low association measure of 0.044). The percentage of sites with continued habitation after the Middle Jōmon in this distribution is generally quite low; in the Chūbu area such Late Jōmon remains are found at both alternative and precious pendant sites (with only a minor difference). In the West Kantō sample, where ‘precious’ ornaments are comparatively scarcest, continued habitation is found only at a few ‘alternative pendant’ sites.

Distribution condition F: Presence of LATER Jōmon (Late Jōmon) houses	Sites with Alternative Stone Pendants (28 sites)			Sites with Amber and/or Jadeite items (27 sites)		
	Site nos.	of	Site %	Site nos.	of	Site %
Chūbu (28 sites)	2	10	20%	5	18	28%
West Kantō (18 sites)	4	14	29%	0	4	0%
East Kantō (9 sites)	1	4	25%	0	5	0%
TOTAL (55 sites)	7	28	25%	5	27	19%

Variable G: Presence of Earlier Middle Jōmon houses, e.g. Early (Goryogadai) and/or Mid (Katsusaka or Atamadai) houses

The relationship between Earlier Middle Jōmon habitation (i.e. indicating a long stable habitation tradition) is also statistically insignificant (association measure 0.055), but for a different reason than the post-Middle Jōmon variable: the presence of Early and/or Mid Middle Jōmon houses is a relatively common occurrence at stone ornament sites. Nevertheless, this association tends to be somewhat stronger at sites with jadeite/amber items—particularly in the East Kantō sample. In the West Kantō most sites show signs of continued Middle Jōmon habitation; this is relevant to all sites with beadstone ornaments, and difference between those sites with and without ‘precious’ materials jadeite and/or amber is negligible.

Distribution condition G: Presence of earlier MIDDLE Jōmon (Middle Jōmon) houses	Sites with Alternative Stone Pendants (28 sites)			Sites with Amber and/or Jadeite items (27 sites)		
	Site nos.	of	Site %	Site nos.	of	Site %
Chūbu (28 sites)	5	10	50%	12	18	67%
West Kantō (18 sites)	10	14	71%	3	4	75%
East Kantō (9 sites)	1	4	25%	3	5	60%
TOTAL (55 sites)	16	28	57%	18	27	67%

Variable H: Predominance of Late Middle Jōmon habitation: sites where Late Middle Jōmon houses account for 50% or more of all houses excavated at the site

In this analysis, one site (Tateishiminami) is excluded due its small excavation and resulting lack of houses (a soapstone ornament was found in a burial). The majority of beadstone sites consist predominantly of Late Middle Jōmon remains, and the association with a particular category is not strong enough to be statistically significant (C. association measure: 0.137). However, in the East Kantō, sites with a strong Late Middle Jōmon flavour tend to be more frequently found on the side of ‘rare’ ornaments sites.

Distribution condition H: Prevalence of Late Middle Jōmon habitation: sites with >50% Late Middle Jōmon houses	Sites with Alternative Stone Pendants (27 sites)			Sites with Amber and/or Jadeite items (27 sites)		
	Site nos.	of	Site %	Site nos.	of	Site %
Chūbu (27 sites)	7	9	78%	15	18	83%
West Kantō (18 sites)	9	14	64%	3	4	75%
East Kantō (9 sites)	2	4	50%	4	5	80%
TOTAL (54 sites)	18	27	67%	22	27	81%

Variable I: Sites which were inhabited for a longer than a short period during the Late Middle Jōmon: presence of structures dated to more than one pottery phase

This association is also too weak to be statistically significant (Random; association measure 0.097). In the Chūbu and West Kantō samples, the majority of sites of both distributions were

inhabited during a longer period of Late Middle Jōmon, and contrasts are not very strong. However, in the EK the difference between sites with and without rare pendants is more remarkable: a majority of sites which acquired rare ornaments was inhabited during more than one Late Middle Jōmon stage, against only 25% of sites with less exotic ornaments.

Distribution condition I: Length of Late Middle Jōmon habitation: more than 1 pottery style phase	Sites with Alternative Stone Pendants (28 sites)			Sites with Amber and/or Jadeite items (27 sites)		
	Site nos.	of	Site %	Site nos.	of	Site %
Chūbu (28 sites)	8	10	80%	15	18	83%
West Kantō (18 sites)	11	14	79%	4	4	100%
East Kantō (9 sites)	1	4	25%	3	5	60%
TOTAL (55 sites)	20	28	71%	22	27	81%

Variable J: Sites which were inhabited throughout the Late Middle Jōmon: structures dated to three or more pottery phases

Compared to the previous variable, habitation throughout the Late Middle Jōmon is more rare; the association is statistically relevant at the 5% level (0.223). In all regions, sites with such long stable habitation are more frequently associated with the presence of rare beadstone.

Distribution condition J: Full term Late Middle Jōmon habitation: more than 2 pottery style phases	Sites with Alternative Stone Pendants (28 sites)			Sites with Amber and/or Jadeite items (27 sites)		
	Site nos.	of	Site %	Site nos.	of	Site %
Chūbu (28 sites)	4	10	40%	11	18	61%
West Kantō (18 sites)	5	14	36%	2	4	50%
East Kantō (9 sites)	0	4	0%	3	5	60%
TOTAL (55 sites)	9	28	32%	16	27	59%

Variable K: Sites where 'ritual' activities took place, as seen from the presence of *dogū* clay figurines

The association with clay figurine ritual practices, common everywhere apart from the East Kantō is not strong enough to be statistically significant (association measure 0.087). In the West Kantō figurine presence is not related to a particular type of stone ornament. However, in the Chūbu area clay figurine practices appear to be found slightly more often at sites with rare ornaments—probably because these are also found more frequently at larger settlements. There probably is a connection between settlement size and figurine presence: the larger and denser the population, the stronger the need for shared, ritualised practices and other social expressions of cooperation and solidarity.

Distribution condition K: Presence of 'ritual' <i>dogû</i> clay figurines	Sites with Alternative Stone Pendants (28 sites)			Sites with Amber and/or Jadeite items (27 sites)		
	Site nos.	of	Site %	Site nos.	of	Site %
Chûbu (28 sites)	7	10	70%	16	18	89%
West Kantô (18 sites)	11	14	79%	3	4	75%
East Kantô (9 sites)	0	4	0%	1	5	20%
TOTAL (55 sites)	18	28	64%	20	27	74%

Variable L: Sites where 'ritual' activities took place, as seen from the presence of *sekibô* stone rods

Statistically, the presence of *sekibô* ritual is considerably stronger than that of *dogû*: significant at the 10% level (association measure 0.216). In the Chûbu and East Kantô areas, where *sekibô* are quite prevalent, such evidence is found more frequently at jadeite/amber sites. In the West Kantô, figurine ritual is more prevalent, but again there is no association with a particular type of ornament material.

Distribution condition L: Presence of 'ritual' <i>sekibô</i> stone rods	Sites with Alternative Stone Pendants (28 sites)			Sites with Amber and/or Jadeite items (27 sites)		
	Site nos.	of	Site %	Site nos.	of	Site %
Chûbu (28 sites)	6	10	60%	16	18	89%
West Kantô (18 sites)	8	14	57%	2	4	50%
East Kantô (9 sites)	2	4	50%	4	5	80%
TOTAL (55 sites)	16	28	57%	22	27	81%

Variable M: Sites with good access (through source proximity or trade) to obsidian, as seen from above-average percentages of obsidian among arrowheads

There is a statistically relevant relation with high obsidian ratios at the 5% level, with an association measure of 0.241—the strongest measure found in this particular analysis. Unfortunately only part of the sites could be used, because in eleven cases, arrowhead material was not defined, or the recorded data were incomplete.⁴⁵ Most of the excluded sites are found in the Chûbu area (particularly in the Ina Valley and Yatsugadake area), and involving seven sites with jadeite or amber items; therefore it is assumed that otherwise the association may have been even stronger. With the available information, it is clear that the associations of good obsidian access are strongest in the Chûbu and East Kantô areas; the differences in site percentage are considerable here. In the case of the Chûbu, proximity to obsidian sources may have been used to advantage in exchange relations. As for the East Kantô (which is furthest removed from obsidian resources), the previous analysis showed that the association of (generic) stone ornaments with relatively abundant obsidian quantities was very strong. Here it becomes

⁴⁵ Information about arrowhead material was unavailable for nine sites in the Chûbu (site nos. 28, 33, 34, 35, 39, 42, 56, 64 and 65; including seven with jade or amber ornaments) and two sites in the West Kantô

clear that this correlation is strongest at sites with rare beadstone ornaments. The conclusion appears to be that East Kantô sites that were in the position to acquire the one commodity, were also in a strong enough position to get their hands on the other.

Distribution condition M: Obsidian availability: high percentage of arrowheads at sites with ≥5 arrowheads	Sites with Alternative Stone Pendants (24 sites)			Sites with Amber and/or Jadeite items (20 sites)		
	Site nos.	of	Site %	Site nos.	of	Site %
Chûbu (19 sites)	3	8	38%	9	11	82%
West Kantô (16 sites)	8	12	67%	3	4	75%
East Kantô (9 sites)	2	4	50%	5	5	100%
TOTAL (44 sites)	13	24	54%	17	20	85%

Variable N: Sites where ‘exotic’ polished adzes (made of serpentinite or jadeite) are present

On the other hand, the association with the presence of another imported commodity, serpentinite and/or jadeite polished adzes, turns out to be statistically irrelevant (association measure 0.161). This may be due to the fact that again a large number of potentially interesting sites (thirteen, again mostly in the Mountain area—ten sites, including five in the Ina Valley and four in the Kôfu Basin—and involving no less than eight cases of jadeite/amber sites) had to be excluded from analysis due to lack of material data. Based on the available data, the chi-squared test shows a very interesting tendency: it appears that the association with ‘alternative’ stone pendant sites, is far stronger than with sites that have more precious ornaments—especially in the Chûbu (particularly the Matsumoto Basin sites) and West Kantô.

Distribution condition N: Presence of EXOTIC polished adzes	Sites with Alternative Stone Pendants (28 sites)			Sites with Amber and/or Jadeite items (27 sites)		
	Site nos.	of	Site %	Site nos.	of	Site %
Chûbu (18 sites)	8	8	100%	5	10	50%
West Kantô (15 sites)	7	11	64%	1	4	25%
East Kantô (9 sites)	1	4	25%	3	5	60%
TOTAL (42 sites)	16	23	70%	9	19	47%

This is particularly surprising in the light of Ando’s (1995b: 226-7) theory, which explicitly linked the circulation of jadeite pendants to the maintenance of serpentinite adze distribution networks based on the fact that both were produced at the same sites. On the other hand, in the East Kanto, sites with exotic ornaments are indeed associated relatively more frequently with exotic adzes.

Of course, many sites in the stone ornament site sample contain more than one pendant item; the following two analyses try to distinguish on the basis of quantity and material diversity.

(nos. 124, 138). Considering the relative proximity of the Chûbu sites and site no. 138 to obsidian source areas (Shinshû and Hakone respectively), it is likely that obsidian ratios would have been high.

Variable R: Sites where more than one ornament is present

This analysis consists of 54 sites; because of lack of information about the exact quantity of amber at Chûbu site Ichinosawanishi (no. 65), this site is excluded from analysis. Nevertheless, the relationship between material type and quantity of ornaments at a site turns out to be valid at the 10% level, although the association measure is quite low (0.187). The relative percentages of occurrences per material type show that multiple ornaments (see next analysis) occur more frequently at sites where ‘rare’ ornament materials like jadeite or amber are also present—except in the West Kantô.

However, in the latter area the number of rare ornaments represented in the sample was very low; whether this situation is representative of the (in)ability of West Kantô sites to acquire rare ornament materials remains a problem to be investigated during more extensive research.

Distribution condition R: Presence of MULTIPLE ornaments	Sites with Alternative Stone Pendants (28 sites)			Sites with Amber and/or Jadeite items (26 sites)		
	Site nos.	of	Site %	Site nos.	of	Site %
Chûbu (27 sites)	3	10	30%	13	17	76%
West Kantô (18 sites)	9	14	64%	2	4	50%
East Kantô (9 sites)	1	4	25%	3	5	60%
TOTAL (54 sites)	13	28	46%	18	26	69%

Variable S: Sites where multiple ornaments of different material types are present

In this analysis, the diversity of ornament material is tested; the relation with material type is again significant at the 10% level, with a slightly higher association measure (0.208) than the previous test. The table and graph show that stone pendant material diversity is higher at those sites which also have rare ornaments—particularly at the Chûbu Mountain sites.

Distribution condition S: Presence of multiple ornaments of DIFFERENT materials	Sites with Alternative Stone Pendants (28 sites)			Sites with Amber and/or Jadeite items (26 sites)		
	Site nos.	of	Site %	Site nos.	of	Site %
Chûbu (27 sites)	2	10	20%	11	17	65%
West Kantô (18 sites)	6	14	43%	2	4	50%
East Kantô (9 sites)	1	4	25%	2	5	40%
TOTAL (54 sites)	9	28	32%	15	26	58%

In conclusion, it appears that both ornament number and ornament material diversity are higher at sites that also acquired amber and/or jadeite.

6.3.3 The importance of large-scale stable settlements

Summarizing the findings above, there is strong evidence that the distribution of extremely ‘rare’ and exotic materials like jadeite and amber was most frequently restricted to large-scale, successful settlements, that could be described as Kobayashi’s settlement A type, or as core

settlement etc. This can be shown even more clearly through a comparison between the distribution of jadeite and amber ornaments and the distribution of important ‘core settlements’, whereby such large-scale settlements are identified on the basis of the combined presence of several of the above-mentioned variables.

There are various possible combinations of variables, each delivering a slightly different set of sample sites. However, a fairly comprehensive combination may include large settlement size, temporal stability, evidence of desirable materials for trade, and ritual activities. Based on this example, one could define an important ‘core settlement’ as a site which has all the following characteristics:

- Large settlement size, as indicated by presence of more than 30 Jōmon houses
- Long-term habitation history, including presence of Earlier Middle Jōmon houses
- Long-term continued habitation throughout the Late phase of the Middle Jōmon
- Relatively good access to obsidian, as shown by comparatively high ratios of obsidian arrowheads
- Evidence of ritual practices (clay figurines and/or sekibō),

It turned out only *thirteen* among the 175 sites in the sample (i.e. 7%) corresponded to *all* these criteria. Of these, *ten* sites (i.e. 77% of the thirteen largest *and* most stable ‘core settlements’ in the sample) —Koike-Hitotsuya, Nashikubo, Tanabatake, Idaira/Todonomiya, Kabutsuppara, Shakadō, Taima, Kaminakamaru, Takanekido and Kusakari (nos. 8, 16, 38, 44, 48, 68, 114, 115, 147 and 162)—possessed jadeite or amber (or both in the cases of Nashikubo and Tanabatake sites), while at *two* sites (15% of core settlements), Kawashiri and Kaminarimatsu (112 and 140; both in the vicinity of Sagami River) pendants made of alternative materials were present. At only *one* (8%) of these sites, Sori (no. 45), no ornaments were reported at all—although this site did possess two very rare jadeite adzes. However, an important caveat must be made here: there is a strong likelihood that in the cases of the latter three sites, the scope of the excavation was an important limiting factor in the (seeming) lack of ‘precious’ ornament recovery. Although the average of the excavated surface of these thirteen ‘super settlements’ amounted to 13,681m², the excavations of those three sites were smallest (all under 5,000m² of excavated surface), unlike the rest of these sites, which approached 10,000m²—or exceeded this size.⁴⁶ It is in fact very well possible that later, additional excavations at these three sites may recover ‘precious’ ornaments as well. Therefore there is a strong possibility that the association between large-scale, stable Middle Jōmon settlements and the presence of precious ornament like jadeite

⁴⁶ The excavation size of Sori site was 2500m², Kawashiri 4170m² and Kaminarimatsu 3400m². The minimum value was 2500m² and the maximum (Kaminakamaru and Shimomizo site group) was 36,036m².

and amber is even stronger than is apparent here; more research is necessary to further assess this hypothesis.

The previous two statistical analyses have shown that the presence of stone ornaments in general—and jadeite and/or amber in specific—is generally accompanied by that of various site characteristics associated with more important settlements: conditions which are less common at sites without ornament finds.

The previous chapters have dealt with the conditions behind production, and behind the various levels of variability in distribution patterns: intersite (site characteristic variability) and interregional (environmental variability). This research has demonstrated the different aspects related to the circulation and subsequent consumption of beadstone ornaments. The next chapter will shed more light upon the conditions behind another vital aspect of beadstone exchange, and the biography of the 'exotic' pendant: its consumption. Chapter Seven will focus on the 'intrasite' variability in the contexts in which pendants made of various materials have been found, in order to assess whether jadeite and amber ornaments have received 'preferential' treatment over ornaments made of less rare materials. The analysis will address both (1) the location of the pendants, and (2) the physical condition in which they have been deposited.

CHAPTER SEVEN: THE CONSUMPTION OF EXOTIC ORNAMENTS DURING THE MIDDLE JÔMON

7.1. CONSUMPTION OF STONE ORNAMENTS: CONTEXT VERSUS MATERIAL

7.1.1 Middle Jômon stone ornament occurrences in the Central Japan sample

Quite a few of the sample sites in the Chûbu Mountains, West Kantô Plains and East Kantô Peninsula were in possession of Middle Jômon stone ornaments: this research is based on data of 156 pendant-shaped ornaments, in various forms and stages of production: finished pendants, recycled earrings or unfinished items,⁴⁷ that were found divided over 55 sites—no less than 31% of the sample total of 175 sites. In several cases, more than one ornament (sometimes including various materials) was found at the same site. However, even at the sites where they are present, the number of such stone ornaments is low enough to indicate that these were scarce items, and not accessible to everyone. The previous two chapters have dealt with the dynamics of circulation; the fifth chapter described the beadstone distributions and placed them in a spatial frame (on regional, inter-regional and inter-site levels); the sixth chapter has statistically tested the relation between the presence of a stone ornament, and the nature of a site, as represented by a number of characteristics (e.g. location, settlement size and stability, habitation history, participation in ritual activities and ability to acquire or exchange certain desirable goods), and indicated the importance of strategic location and settlement stability. This chapter however focuses on the consumption of the ornaments *after* they have arrived at a site, by considering *contexts* at the site itself: it is assumed that the way stone ornaments were regarded and treated can to some extent be surmised from the way they ended up in the archaeological record, and from the state they were in.

One of the aspects of stone pendants (apart from scarcity or aesthetic appeal) that makes them such a very attractive research topic for archaeologists, is the fact that as either personal or valued items, they very often are found in contexts of deliberate deposition, located in some kind of structure. Such a context both ensures relatively good preservation of the artefact, and gives some information about the consumption of the artefact. In the case of the Jômon, stone ornaments are remarkably often found buried in pits. Most other artefacts (including any type of

⁴⁷ The generic term 'stone ornaments' as applied here includes ornaments in various stages of production: (a) finished pendants, often ellipse-shaped (the majority of items); (b) 'recycled' items of older ornaments, e.g. broken parts of Initial to Early Jômon-style earrings which have been pierced to make them into a pendant; (c) 'unfinished' items, which have been shaped and polished into a certain form but are not (or not fully) pierced, and (d) raw nodules or jadeite pebbles of unprocessed material (only in the case of jadeite). However, only those items expected to belong to the Middle Jômon are included: those found in Earlier or Later Jômon contexts have been excluded.

stone tool) are generally found in abandoned dwelling pits, or without structural context and extremely seldom end up in a pit context.

For example, even arrowheads rarely end up in burial contexts, even though the tool category 'arrowhead' could have been regarded as closely related to the identity of their owner, as a hunter (cf. Wiessner 1983). Occasionally, arrowheads end up in graves, their common use as grave goods is rare. In the case of Nashikubo site, 32 arrowheads (out of a total of 1107 arrowheads found at the site, i.e. 3%) were found divided over 26 pits; however only *one* of these was unequivocally found at the bottom of the pit. The same applied to eight polished adzes divided over seven pits. Such pit contexts of arrowheads and adzes were so rare that none of these were regarded as examples of deliberate burial goods (report 16: 369-71). Discoveries of more than one arrowhead, which were deliberately interred as grave goods are extremely rare.⁴⁸

In contrast, no less than 56 of all 156 ornaments (i.e. 36%, more than one-third of the ornaments treated in this sample) was found in a burial context. Of course there are various possible uses for pits, including storage, and one should not immediately assume a burial context based only on the presence of an ornament. Nevertheless, in the cases under discussion, the excavating archaeologists usually have been able to make a reliable identification based on the distinctive shape, size and location of the pit (usually part of a larger group of such pits, set apart in a distinct section of the site, often in the central 'open space' of the settlement).

The frequent occurrence of stone pendants inside burial contexts—as opposed to other types of stone artefacts—strongly suggests that the value and meaning of those ornaments to the Jōmon people was different from that of most other artefacts. However, within the category of 'stone pendant' several further distinctions can be made, particularly based on *type of material*. Other possible variables may include ornament shape and degree of preservation, but often these are also related to or limited by the type of material (for example due to differences in physical properties like hardness). This section aims to show that not all stone pendants were treated the same way by Middle Jōmon people; it is hypothesised that some materials were accorded far more value than others. Jadeite and amber are usually implicitly assumed to have been prestige objects. Is a distinction between these 'exotic' items and other stone ornament materials archaeologically visible in the Middle Jōmon period; moreover, is it valid to use the term 'prestige object' at all?

⁴⁸ One exceptional example is the well-preserved Middle Jōmon burial of a middle-aged male who was buried with 13 arrowheads near his head at Dōnokaizuka site in Niigata prefecture (Harada 1988: 135-6).

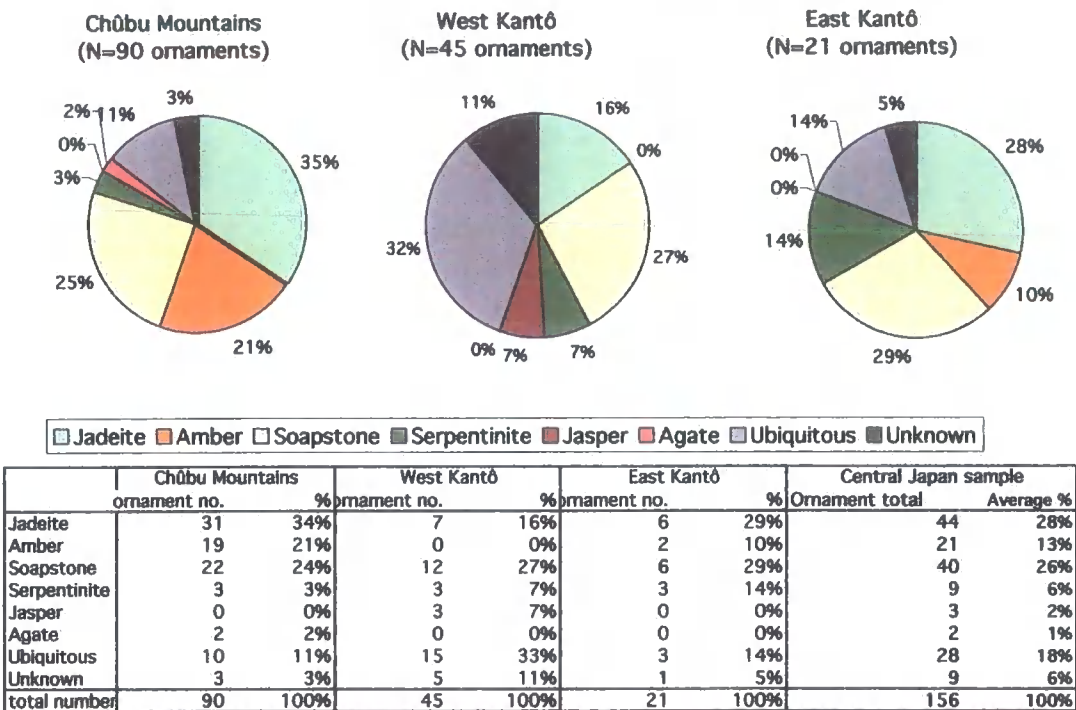
7.1.2 Different stone ornament materials

Eight categories of material are recognised here, which can be again subdivided into two or three major groups, based on various shared circulation characteristics. **Appendix B** gives a list of all contexts of ornaments per site, based on material; **Appendix A1** shows the characteristics of all sites where stone ornaments were present, as well as the number and type of ornament materials found at each site. **Graph 7** shows the differences in frequency of occurrence per material type, sometimes depending on the interregional distributions of the eight material categories.

- i. **jadeite** is the most frequently occurring material used for Middle Jōmon stone ornaments in the sample, despite the scarcity of this resource: 44 items (including 34 finished pendants, three unfinished (partially pierced) pendants, and seven unprocessed nodules) at 23 sites;
- ii. **soapstone** is the next most commonly found ornament material: 40 items at 21 sites. Soapstone ornaments in the sample include eight unfinished items, five recycled earrings and 27 finished pendants in various forms;
- iii. **amber** items are found at only eight sites within the sample, but because multiple items were found at two sites, the total number within the sample amounts to 21 ornaments. As an organic material, amber preserves less well than the other materials in the sample, and most items were severely damaged. However, all items show evidence of piercing, and were presumably all finished beads;
- iv. **serpentinite** ornaments appear to be less common in Central Japan during the Middle Jōmon than their polished adze counterparts; however nine ornaments (three recycled earrings and six pendants) were found at nine sites;
- v. **'ubiquitous'** is an umbrella term covering a variety of materials, which are commonly used as materials for tools. These 'common' stone materials are widely distributed, and are locally available near most sites; most often used for ornaments are: igneous materials like tuff, pumice and andesite; sedimentary rocks like sandstone, mudstone and shale; some metamorphic rocks like schists and hornfels. However, sandstone and tuff (also frequently used in the production of polished stone adzes) are the most frequently used 'local' material. This category covers quite a lot of stone ornaments: 28 items at 16 sites; mostly pendants of various forms, and one earring part.
- vi. **'unknown'** refers to the nine ornaments (found at nine sites) of which the material was unrecorded. This category includes one 'recycled' earring, but also three unfinished and five finished pendants. It is quite unlikely that this category includes distinctive, 'high-profile'

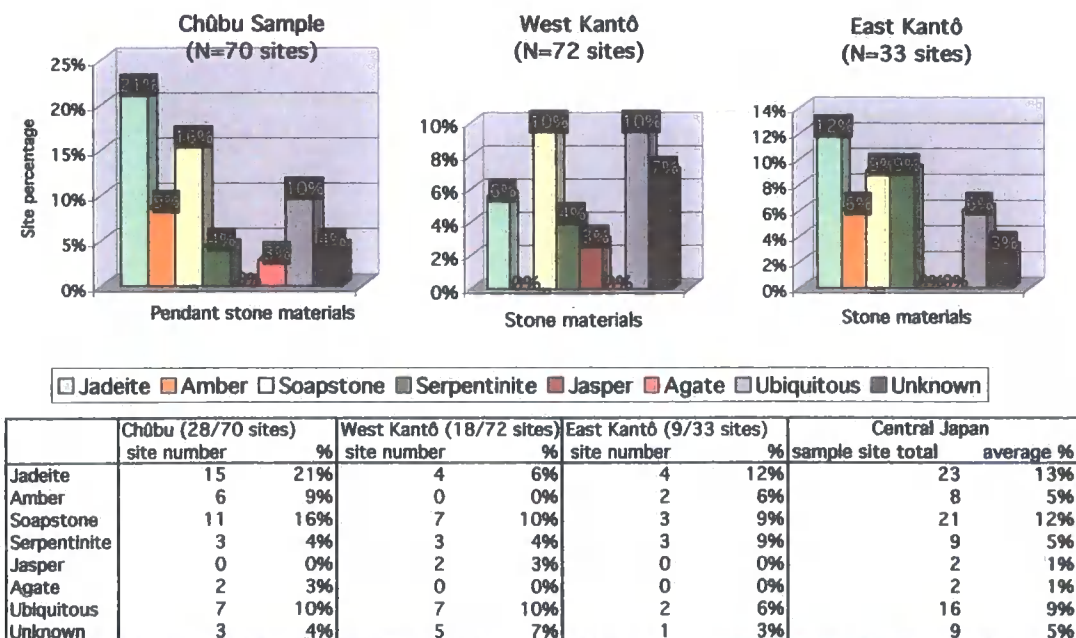
Graph 7 Regional differences in distribution and use of MATERIALS for Middle Jōmon pendants

At the 175 sample sites, a total of 156 stone and amber pendant-related ornaments was found, divided over 55 sites. Here a regional comparison in material use is carried out, based on artefact numbers per region. The materials used for pendants have been divided into the following categories: Jadeite; amber; soapstone; serpentinite; jasper; agate; ubiquitous (i.e. locally available) and unknown (where material had not been recorded in the site report)



Graph 8 Differential distribution and use of stone pendant materials: Percentage of distribution SITES per region

Within the Chūbu sample, a total of 28 sites contained pendants; 18 sites in the West Kantō sample and nine sites in the East Kantō sample. The graphs show the sample site percentage of ornament distribution within each region, broken down for each stone pendant material.



materials like jadeite or amber.⁴⁹ Together with the ‘ubiquitous’ category, this type covers almost a quarter of all stone ornaments in the sample;

vii. **jasper** and

viii. **agate**. The latter two, types of chalcedony, appear to be least commonly used ‘bead stone’ ornament materials during the Middle Jōmon: the sample merely includes three jasper items (two pendants, one recycled earring) at three sites, and two agate items (one pendant, one recycled earring) at two sites, respectively.⁵⁰

The graphs in **graph 8** (previous page) show a comparison of *relative* occurrences of the different stone ornament materials within the sample sites of the three regions: Chūbu Mountains, West Kantō Plains and East Kantō Peninsula. The first series of (pie) graphs shows the relative ornament item numbers per region, whereby the percentage of each material type reflects this material’s ratio within the ornament total representing this region. The second series of (column) graphs focuses on the number of occurrences (i.e. sites); the distribution site percentage is achieved by dividing the number of distribution sites of a material type by the total number of sample sites representing that region.

Within this Central Japan sample there appear to be considerable differences in the Middle Jōmon distribution of certain materials between the regions, both in terms of number of ornament items and number of sites where they occur. Jadeite is found most frequently in the Chūbu Mountains (where it occupies over a third of the Chūbu stone ornament total in the sample), whereas it appears to be relatively very rare in the West Kantō area (only 16% of all ornaments in the West Kantō sample, occurring at only 6% of the 72 sample sites). Within this sample, amber is not represented at all in the West Kantō, whereas soapstone and ‘local’ ornaments on the other hand are the most commonly found stone ornament material categories. Jasper is only distributed in the West Kantō, and agate only in the Kōfu Basin in the Mountain area; however the occurrences of these materials within the sample are so rare as to be insignificant compared to the other materials. It is possible that these regional differences in material distribution reflect the state of the exchange networks at the time; alternatively, these relative occurrence frequencies may be a characteristic of this particular sample. In any case, in this section, only the internal micro-contextual differences at the consumption sites are considered.

⁴⁹ Such an oversight is highly improbable, not least because archaeologists have a vested interest in such discoveries. Unusual or precious finds always generate increased media and public interest in an excavation (which in turn leads to more financial stimuli and research time); moreover, as described in the previous research section, there is a long history of research into large pendants in Japan, especially in the case of jadeite.

⁵⁰ In contrast to its scarce Jōmon period use, jasper—next to jadeite—later came to play an essential, political role during the state formation of the Kōfun (Mounded Tomb) Period (ca.300-600AD), as bead material distinguishing and supporting the elite (Barnes 1986, 1987).

7.1.3 Expectations of differential occurrence in special deposits

As mentioned above, it is expected that different types of stone ornament material are represented differentially in ‘special’ contexts. Two underlying assumptions are made:

- ornaments that were regarded differently, were probably also treated in a different way. One way in which this treatment is expected to be visible archaeologically, is presence in special deposits—in the case of the Middle Jōmon of Central Japan, which lacked large structures, the closest one can come to a ‘deliberate deposit’ which expresses particular value, would be either inclusion in a mortuary context (as a grave good), or a hoard. Therefore it is expected, that if a certain type of object occurs more frequently in such a context than other, comparable items, this reflects a different (perhaps higher) value.
- Following Helms (1988, and supported by numerous archaeological studies) it is assumed that ‘exotic’ items which were acquired from distant places would be considered more valuable than comparable items made of more common material, because of an inherent mystique quality. Moreover, the value of such ‘exotic’ items is expected to increase even further if the item (or material) was not only scarce and exotic in spatial terms, but also aesthetically pleasing and had some distinct and unusual properties that were absent in other materials.

Following this, it is hypothesised that the more exotic and unique the material, the higher the value, the more special the treatment and the more frequent its occurrence in a ‘special’ context. As we have seen in the third chapter, which summarised beadstone research, **jadeite** is a mineral which was not only extremely rare during the Middle Jōmon (limited as its known source area was at that time to the ‘Jadeite Coast’ area of the Japan Sea area), but also generally distinguishes itself by its mysterious, translucent white-green colour, and its extreme hardness—as probably one of the hardest substances known to the Jōmon people. **Amber** on the other hand, was also difficult to acquire during the Jōmon period. Moreover, its natural properties include extremely lightness (to the point of floating), warmth to the touch, and giving off an electrical charge when rubbed. Moreover, its transparent, warm colours lend it a vivacious beauty of its own. For these reasons, it is expected that jadeite and amber—which have been greatly valued world-wide through history for their respective qualities—were regarded by the Jōmon people in a different way from stone ornaments which were comparatively less exotic, less attractive, and lacked the qualities unique to jadeite and amber. Therefore it is hypothesised that this added value is reflected in treatment and context, and the occurrences of jadeite and amber inside ‘special’ contexts will be far more frequent than that of the other materials.

To a lesser degree, **soapstone**, **serpentinite** (as well as **agate** and **jasper**) share some of the properties of jadeite and amber. First, these materials may function quite satisfactorily as beadstone: when processed and polished these materials can become shiny and quite attractive.

Due to the relative softness of these materials, making them into ornaments is relatively easy. Secondly, particularly soapstone and serpentinite were already involved in a long-standing tradition of ornament production: during the Initial and Early Jōmon periods, a production area at Shirouma, near the Japan Coast, fashioned these materials into earrings (see **fig. 14**), which—considering the early period—had a wide distribution span. Thirdly, the general colouring may have been perceived as fulfilling some kind of standard: soapstone and particularly serpentinite may have a greenish sheen or colour (like jadeite), whereas agate and jasper fall more in the yellow-brown-red spectrum (similar to amber). Finally, these materials are also difficult to acquire compared to ubiquitous stone—the limited sources include areas at or near the Jadeite Coast—although several claims are made that other potential sources of serpentinite and soapstone were also exploited during this time (e.g. Yamamoto K. 1989: 96, Shibata 1990: 150-6), which would have made these materials more accessible. Although the ‘exoticity’ in terms of scarcity, aesthetic appearance and unique tactile characteristics of these materials is not on a par with jadeite and amber, these materials were probably regarded to some extent as ‘valuables’, and are expected to occur in burials occasionally.

Least expected inside burial contexts are the ornaments made of ‘ubiquitous’ materials, like sandstone, tuff, shale, mudstone etc. This is not just due to an assumption that — particularly as some of these materials are relatively rough-grained—such ‘common’ materials would make unattractive ornaments. On the contrary, it is likely that with sufficient polishing and grinding, these materials could be made very smooth and shiny (although their colouring may perhaps have been somewhat less striking than that of ‘traditional’ beadstone materials).⁵¹ However, the problem with ubiquitous materials is that they are easily available close to home, have familiar properties, do not require particular skill to process (particularly for someone who is already accustomed to making tools), and more importantly, are also used for the production of ‘ordinary’, utilitarian items like everyday tools. For all these reasons, the ‘ubiquitous’ items are entirely a-exotic, and lacking in esoteric quality. Following Helms, Appadurai etc, in terms of long-distance exchange networks this makes them comparatively much less desirable as ‘valuables’ than the other materials, and this is expected to be reflected in the context of deposition.

Based on these expectations, next a comparison will be made among the different types of ornament material, to determine whether there is evidence of differentiation in context occurrence and frequency.

⁵¹ In fact, the jadeite production site Sakai A included several Late Jōmon ornaments made of such ‘common’ materials as slate, mudstone, sandstone and tuff, which indicates their potential suitability as ornaments.

7.1.4 Differentiating between types of context in the Middle Jōmon

In the case of ornament finds from the Middle Jōmon period in the sample area, stone ornament contexts can be differentiated in only three types: mortuary (burial pit), house (fill or floor) and cultural layer (non-structural presence within the settlement). This Middle Jōmon sample does not include any examples of pendants in hoards, storage pits, nor in contexts unrelated to a settlement site. Apart from inhumation pits, clear evidence of specific ritual structures associated with the settlement (i.e. foundation pits, or 'shrines', cf. Chapman 2002) was absent. It is argued here that for determining *deliberate* deposition, the *grave context* is the most useful context. In all the other cases, it is unclear whether items were accidentally lost or discarded on purpose. House contexts are ambiguous: most artefacts (including ornaments) are found in the secondary fill, after the pit dwelling was abandoned. The artefacts could have arrived here either through 'natural' site formation processes, or by deliberate intent, whereby later inhabitants of the village disposed of waste in empty house pits.⁵²

Occasionally, when house floor contexts are very well preserved (for example in cases of very sudden abandonment due to fire, flood, disease etc.), artefacts are found on (or very close to) the floor. Within this sample, there are a few examples of ornaments found on/close to the house floor as well, though unfortunately not clearly associated with specific containers (storage vessel) or other house features (pits, fireplace, postholes, *umegame* burial jar). Such finds are most useful for determining the relative date of use of an artefact (i.e. more or less contemporaneous with the house, which can be dated through pottery typology). However, it remains unclear whether the ornament was intended to be on that house floor, or whether this context was also the result of coincidence; its 'place' in the house cannot be reconstructed. For these reasons, this analysis will focus mainly on the burial context.

7.1.5 A comparison of settlement context ratios among stone ornament materials (N=156)

The following charts show the result of the differences in context between the various stone materials. The bar chart **graph 9** shows the numbers per context of each material (indicating differences in general occurrence); the pie charts in **graph 10** depict the percentages per material type. In descending order, the frequency of burial occurrence among the stone material types is as follows:

1. amber: 90% (18 out of 20 items, at five sites);
2. jadeite: 55% (24 out of 44 items)

⁵² Although some Japanese studies have tried to distinguish pattern differences to determine whether such secondary house fill deposition was deliberate or not (i.e. Kobayashi 1974), this is outside the scope of this research.

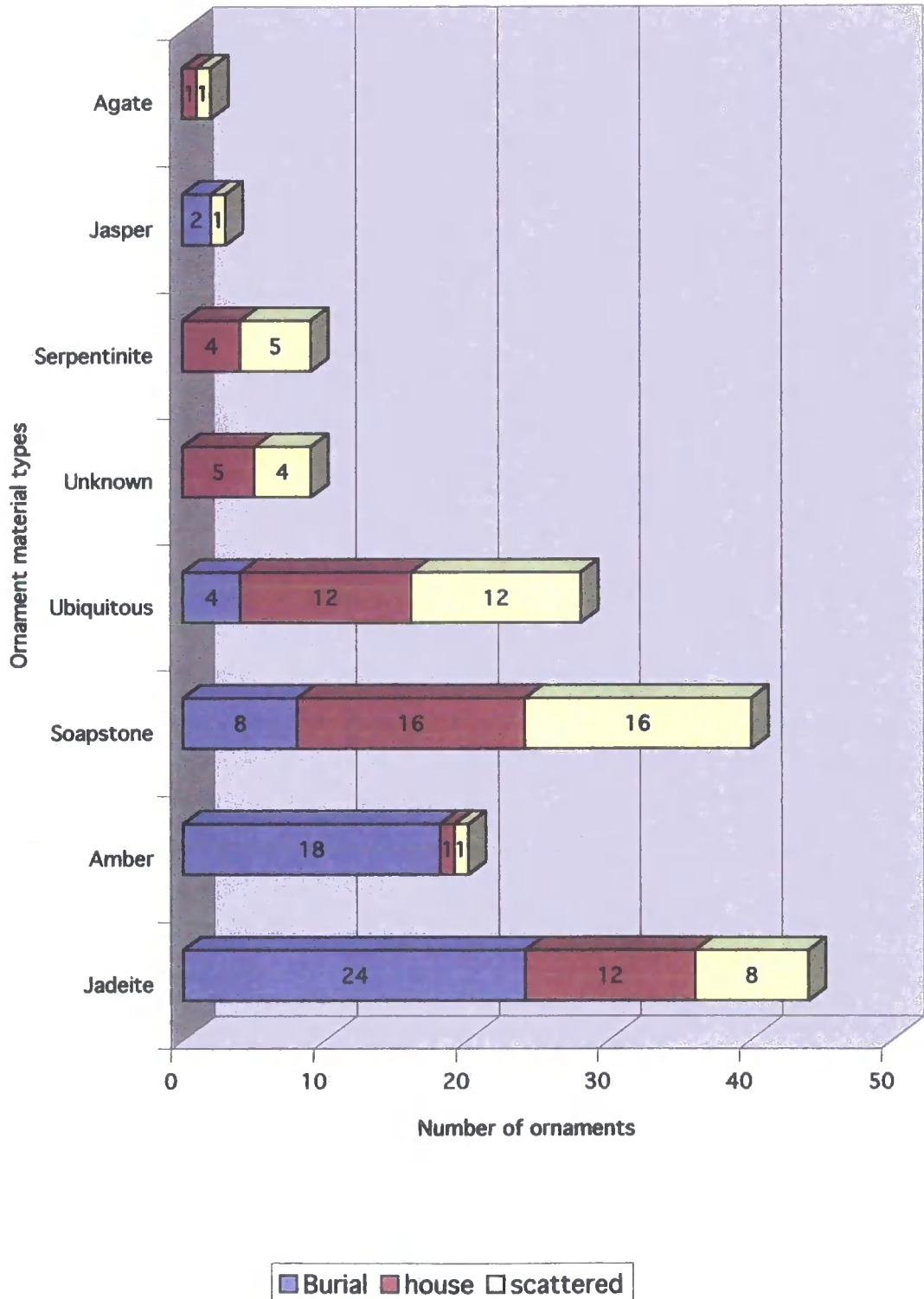
3. jasper/agate 40% (2 out of 5 combined items)
4. soapstone: 20% (8 out of 40 items)
5. ubiquitous: 14% (4 out of 28 items)
6. serpentinite and 'unrecorded' materials: no recorded occurrence in burial pits among the nine examples.

This result appears to support the expectation that jadeite and amber were probably regarded in a different way: these ornaments are found considerably more often in burials than the other materials, namely in more than 50% of their occurrences in the sample. The frequent find of particularly jasper inside burials (both cases involving a pendant at a site in the West Kantô Coastal area of Kanagawa prefecture) is rather surprising; however, because of the very rare occurrences of jasper and agate, this result cannot not be regarded as very representative. The larger the sample, the more reliable and representative the result is; therefore the results concerning jadeite, soapstone, 'ubiquitous' and amber ornament finds are regarded as comparatively more reliable than the other materials which are represented in the sample by less than ten examples.

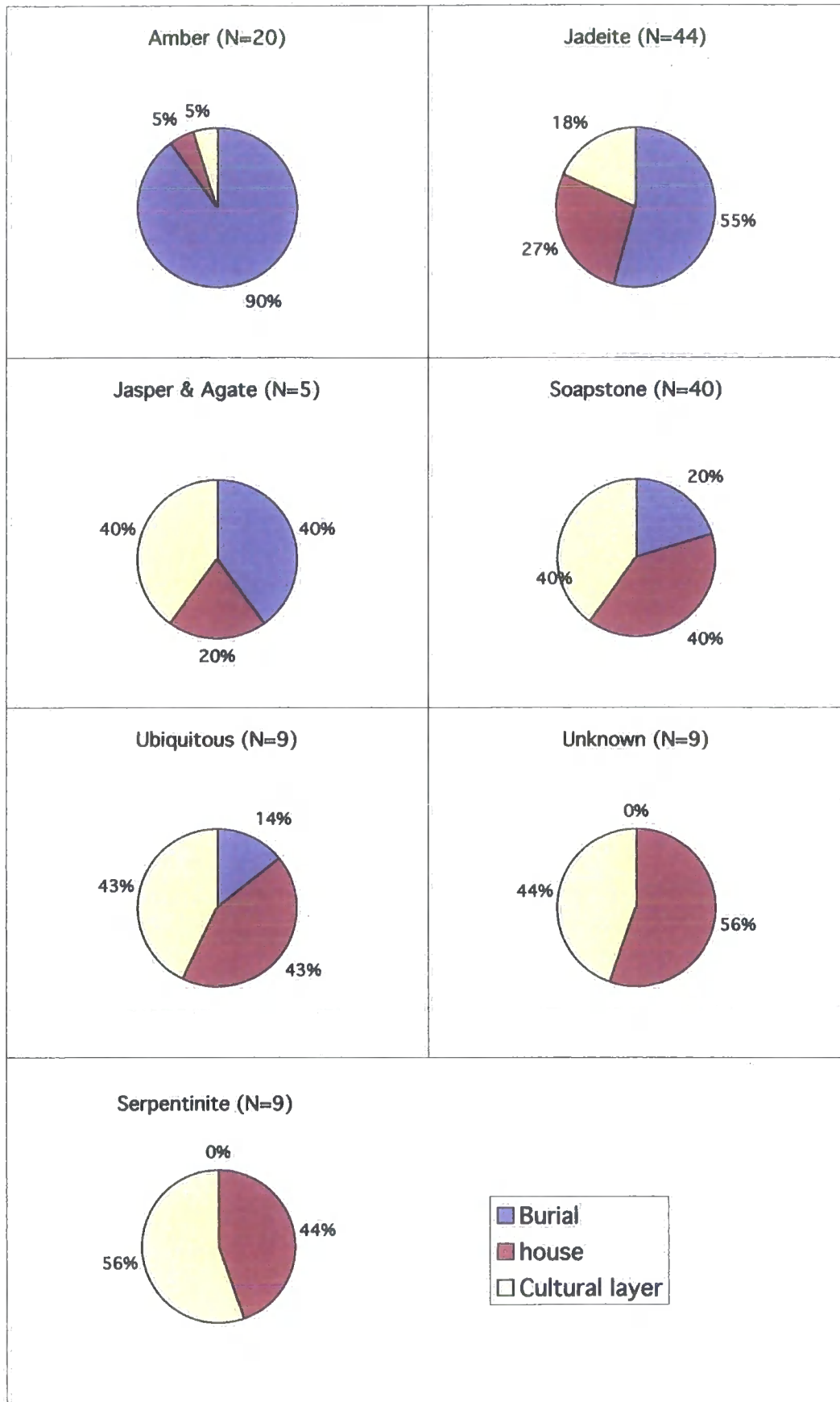
Furthermore, it is remarkable that ubiquitous stone ornaments are still found relatively often in burials—at a ratio not much lower than soapstone—and that serpentinite is not represented in burial at all. This suggests that the 'value' gap between relatively common 'beadstone' materials and ubiquitous stone materials may not have been extremely wide during the Middle Jômon; at least considerably narrower than that between the more exotic materials jadeite and amber and the other bead stone materials (with the possible exception of jasper in the Kantô). Because of this contextual distinction, in the second part of statistical section on distribution site characteristics (carrying out the chi-squared test *within* the 55-site stone ornament site sample), the sites will be divided into those with jade and/or amber pendants, and those without.

Now that the hypothesis that jadeite and amber were considered more valuable than other ornament materials has been partially supported by their more frequent presence in structured depositions like grave contexts, the evidence of consumption of **jadeite** and **amber** is investigated more deeply on other levels.

Graph 9 The relation between ornament material types, and the contexts (burial, dwelling, scattered) in which Middle Jōmon stone ornaments are found (N=156)



Graph 10 The ratios of contexts per stone ornament material



7.2 A CLOSER LOOK AT THE CONTEXTS OF JADEITE ITEMS

7.2.1 The difference between jadeite axes and ornaments

During the Middle Jōmon, jadeite circulated in various forms: as finished pendants, as raw material (i.e. unprocessed pebbles) and as polished axes. How do those different types of jadeite relate to each other? Did they have the same function, and the same value? Were they treated the same way? Was distribution contemporaneous or were there temporal differences in use between various items at one site? In order to find this out, all individual jadeite items found in the Central Japan sample area will be compared according to spatial and temporal context. Although some archaeologists consider jadeite polished adzes a non-utilitarian status object, just like jadeite pendants (Teramura 1995: 139), here a distinction is made between polished axes and ornaments (or raw material). The former are treated as ‘exotic adzes’ together with the serpentinite ones which were also manufactured in the Jadeite Coast area. The reason for this distinction is that—based on the rather limited information available—there appears to be very little difference in context and treatment between such jadeite celts and ‘ordinary’ ones made of more widely available materials. Within the sample, there are extremely few examples of polished adzes within a mortuary context; only a tiny portion of these is made of serpentinite, and none of them of jadeite. On the other hand, as we have just seen, in the case of ornaments, such contrasts do exist between ornaments made of ‘exotic’ stone and those made of generally available materials. At the eight sample sites where Middle Jōmon jadeite polished adzes were reported, these items were usually damaged, and recovered from similar, randomly scattered contexts, like other discarded polished adzes and utilitarian objects. Therefore, although these objects were produced at the same locations, it is assumed here that in the distribution areas these jadeite axes served a different purpose (whether utilitarian, ceremonial or both) from ornaments: both in a social and functional way. An exception for this distinction is made if there is clear evidence that instead of abandonment at the end of its use life, an attempt was made to convert the jadeite axe into a pendant, namely by piercing it. In this case, it is assumed that the item started a new phase of its use life, taking on a new meaning and function.

On the other hand, the majority of jadeite and amber pendants is recovered from special and distinct contexts indicating deliberate deposition. As we have seen in the preceding section, Middle Jōmon jade and amber finds are most frequently located in burials.⁵³ This is particularly striking since similar-looking pendants made of alternative materials are recovered considerably less frequently from such specific contexts.

⁵³ There are no records of Middle Jōmon ‘hoards’ with ornaments located in for example a pottery vessel—although such contexts are known for other items, like polished adzes. For example, a ‘hoard’

7.2.2 Contextual differences among different types of non-utilitarian jade

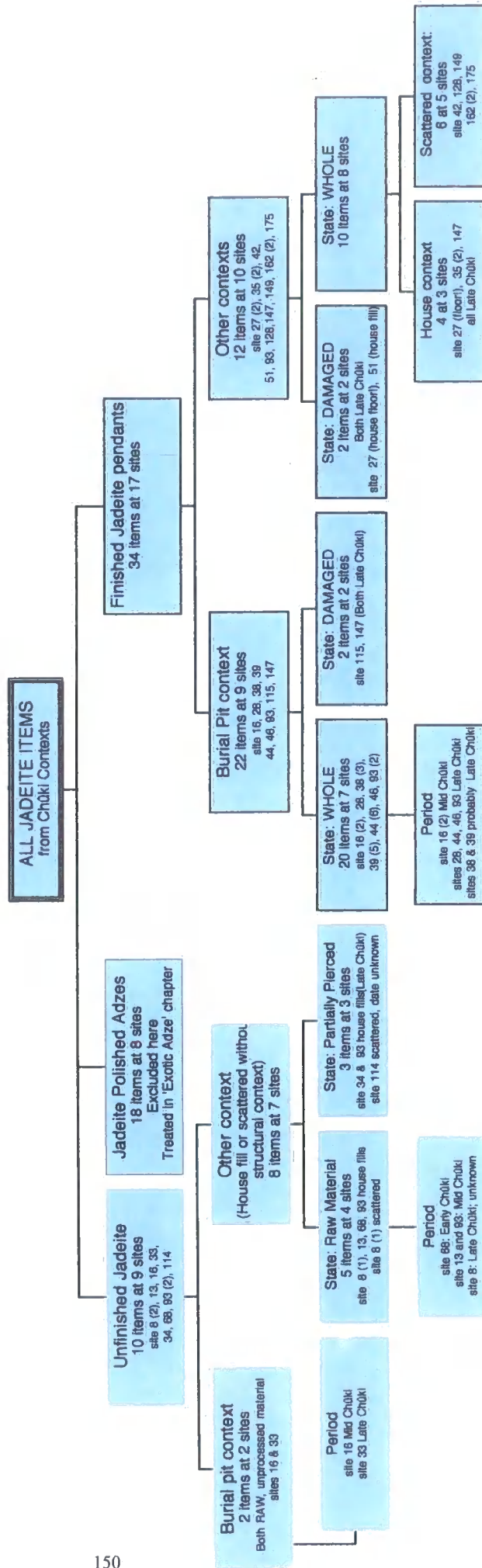
All Middle Jōmon jadeite was found at permanently inhabited settlements, in the close vicinity of people's everyday life. This simple observation may be important in itself, as it indicates a close connection to the arenas of Jōmon social life. Within the sample there were no examples of jadeite discoveries from non-residential or special purpose sites; what is more, as was described in Chapters Five and Six, jadeite was generally associated with the larger, more stable settlements. However, not all circulating jadeite belonged to the same stage of manufacture, and on that basis, among the 44 items of sample site jadeite from Middle Jōmon contexts, a further distinction can be made: (1) unprocessed material (seven items); (2) partially finished pendants (three items) and (3) finished pendants (34 items). In the latter case, the majority was found well-preserved and without damage; only four pendants were broken or chipped.

Apart from differences in form, processing stage and condition, the difference in context and treatment is also remarkable. It is suggested here that—in addition to differences in local customs—factors like manufacture stage and condition at the time of deposition may have been relevant to the way the items were perceived by the Middle Jōmon people. This may partially be reflected in the manner of deposition of these jadeites: the more an item was valued as a symbol of personal prestige, the more likely it was to end up in a very specific context, for example inside a personal burial, as grave good. Thus, if indeed a connection exists between a jadeite item's condition or type, and its presence or absence within a specific context like a burial, this could indicate that the Middle Jōmon people applied different regimes of value to different 'categories' of jadeite artefacts. An overview of the relation between jadeite item category, context of discovery and degree of completeness is given in **graph 11** (next page).

(1) **Unprocessed jadeite** The parallel circulation of jadeite raw nodules (*genseki* in Japanese) to finished items has been pointed out (Harada 1988). In the sample, unprocessed items (small pebbles, frequently smooth) are found at eight sites, including two items at Kōike-Hitotsuya (site 8). Of the nine items, only two items were found in a clear structural (namely, burial) context: at Nashikubo site, which contains more examples of jadeite (no. 16; burial estimated at mid to late Middle Jōmon) and the lower Ina site Nakahara (no. 33; Late Middle Jōmon context). The other items are found in the secondary fills of dwelling pits (four

consisting of six beautiful, pristine polished adzes in a large beautiful ceramic vessel (from the Final phase of the Middle Jōmon) was found at Musashinodai site (no. 92) in Tokyo.

Graph 11: Overview of Middle Jōmon jadeite artefacts from the sample sites, classified according to type, spatial context when discovered, state of manufacture or stage of production and temporal context.



examples) or randomly around the settlement (three items). The rather broad time span covered by the items is remarkable: from the start of the Middle Jōmon to possible mid Late Jōmon, which shows that this ‘parallel exchange’ may have continued for a relatively long time. This distribution is densest in the Chūbu Mountains, especially in the larger Matsumoto Basin, but the oldest example is found in a early Middle Jōmon house pit at Tsukakoshikita A (site 68a) in the Kōfu Basin. At the Matsumoto Basin site Hiraide (site 16) and West Kantō site Koigakubo (site 93), raw material was recovered from Mid Middle Jōmon houses; at Koike, from a Late Middle Jōmon (ca. Kasori E2) house fill. Not included among examples of Middle Jōmon jadeite circulation are Kitamura (site 3) and Tsubonouchi (site 7) the pebbles were found without structural context, and they may have belonged to the *Late Jōmon* period.⁵⁴ During the Middle Jōmon, there is an interesting contrast to the relatively dense distribution of raw material in the upper Matsumoto Basin—at the expense of finished items, except at Nashikubo site), whereas on the other side of the Suwa Lake and the Yatsugadake Mountains, it appears that consumption focussed exclusively on finished items. As the ‘raw material’ category has not noticeably been altered by human hands,⁵⁵ and therefore does not actually qualify as ‘artefact’, there is a distinct possibility that many items have been overlooked at excavations, and that the actual distribution scale of unprocessed jadeite may be much larger than is apparent here. More research and careful monitoring for raw material at excavations is necessary.

(2) **Partially finished pendants** This definition includes items which have been shaped and polished like pendants, but with a hole that has not been pierced all the way through. These are relatively rare: only three were found, all belonging to the Late Middle Jōmon; one in the Ina Valley (site no. 34, Kōshinbara), two in the West Kantō (sites 93 and 114: Koigakubo, Taima). The Ina Valley item has the shape of a small axe (6.5x x1cm). This item is unbroken, but has some light surface damage. Unfortunately no data about use wear analysis is available, and therefore it is unclear whether it was once a functional adze. The failure to pierce the item properly suggests this may be the case; if a local attempt was made to convert the object into a pendant, technical knowledge of piercing would have been lacking. The pendant was located in the (secondary fill) of a Late Middle Jōmon pit house belonging to the period with the locally highest population density (≈ Kasori E 2). The Koigakubo item, also recovered from a Kasori E 2 pit dwelling fill, was more seriously damaged, but probably had a more common bonito shape.

⁵⁴ At both sites, Late Jōmon habitation evidence is predominant, and other jadeite items (unprocessed as well as pendants) were found in clear Late Jōmon contexts. On the other hand, raw material was found in Middle Jōmon contexts at the nearby Koike settlement, indicating the possibility of earlier circulation among Matsumoto Basin settlements.

⁵⁵ Smooth surfaces may have been polished naturally, through the force of the rivers eroding the jadeite outcrop. The establishment of criteria to distinguish the results of these conditions from human agency would be very useful for future research.

The Taima site item, an undamaged bonito shape, was recovered without any structural context, but considering the habitation span of the settlement probably also belonged to the Late Middle Jōmon.

In these three cases, the failure to complete the hole—technologically, the critical stage of the conversion into a pendant—suggests that the attempt was undertaken locally, without the appropriate skills. Alternatively, if (some of) such items were Jadeite Coast production failures, they may have been exchanged at a lesser value than unflawed pendants. In any case, although the sample is too small to be conclusive, the fact that none of these three examples was found in a burial context hints that they may have been valued less (or differently) than completed pendants. It may be worth noting that Koigakubo, a relatively large settlement that flourished throughout the Mid and Late Middle Jōmon periods, contained more jadeite items (one pebble in a Mid Middle Jōmon house fill; two Late Middle Jōmon pendants within one Kasori E 1 burial), whereas both Taima and Kōshinbara (as well as neighbour 33, Satomi V, containing a raw pebble) were neighbours of a larger, ‘richer’ contemporaneous settlement, which contained more beadstone pendants: Kaminakamaru (site 115; one jadeite pendant, plus various made of other materials) and Masunoshinkiri (site 35; two jadeite, one soapstone pendants), respectively. This situation possibly points to a form of *redistribution*, whereby a large-scale ‘core’ settlement which gives some jadeite ‘scraps’ to some of its satellites.

(3) **Finished pendants** are the most common form of imported jadeite: the sample included 34 items at 17 sites, of which again a majority was distributed in the Chūbu Mountains—24 pendants at 10 sites. As distribution **maps 7-9** show, there are quite a few sites—Nashikubo, Tsujisawaminami, Masunoshinkiri, Tanabatake, Tateishi, Idaira/Todonomiya, Koigakubo, Takanekido and Kusakari (nos. 16, 27, 35, 38, 39, 44, 93, 147 and 162)—with multiple items of jadeite; as it happens, these are often settlements with a larger number of contemporary houses, and/or a longer habitation span. The greatest jadeite pendant concentration is found in the Suwa Lake and Yatsugadake area.

In contrast to unprocessed jadeite and unfinished pendants, which are rarely found as grave goods, the majority of jadeite pendants (22 items = 64%) was discovered in a *burial context*. **Figure 25** illustrates the grave pit context of a jadeite pendant at Nashikubo site. Of the remaining 12 pendants, six items (18% of jadeite pendants) were found without structural context at five settlement sites, and six more pendants were recovered from dwelling pits at four sites.

Burials The jadeites found as grave goods were usually inside burial pits located in the central open space of the village; despite the general lack of preserved human remains, these

contexts are usually interpreted as burials in the site reports.⁵⁶ Frequently, a settlement has more than one burial containing jadeite: within the sample, this includes sites Nashikubo, Tanabatake, Tateishi and Idaira (sites 16, 38, 39, 44) in the Mountain area. At a number of sites there are particularly ‘rich’ graves containing multiple jadeite items, such as at Tateishi site (three Final Middle Jōmon burial pits with jadeite, including one with three pendants), Idaira (site 44: five Late Middle Jōmon pits, including one with two items) in the Suwa Lake/Yatsugadake area and Koigakubo near the Tama River in West Kantō (site 93: one Kasori E1 pit with two jadeite pendants). Why were these graves particularly favoured? The first explanation that comes to mind is that the ‘owners’ of the jadeite were particularly successful people, which is reflected in the burial goods they took to their grave (cf. Saxe 1970).

However apart from the presence of jadeite, even in the extreme case of multiple items, these burials show no other signs of conspicuous wealth or social differentiation according to sex, occupation or social or ceremonial status. The burial pits with jadeite are in the same general location as the other graves, and have similar forms and sizes. Other grave goods—if present at all—are extremely scarce, consisting of pottery, and/or a few tools: often simple subsistence tools like a grindstone or chipped stone adzes. In this sample, jadeite pendants in burials were not associated with polished adzes or arrowheads, nor with hoards of useful material like obsidian or chert, nor with any other ornaments made of clay, shell or stone. Although other stone or amber pendants may occur at the same site, even nearby, these are not found in a single grave with jadeite. Ritual artefacts are also lacking.⁵⁷ Due to lack of bones, there is no information on the sex of the jadeite owners; it is unknown whether jadeites were associated exclusively with either men or women during the Middle Jōmon. Therefore, personal ownership may not be the answer. Perhaps an alternative explanation can be found within the characteristics of the settlement—as a reflection of the community, rather than the individual. Chapter Six has demonstrated the relation between certain site characteristics (size, stability, ability to maintain long-distance contacts) and ornament distribution by means of statistics.

Dwelling pits Six pendants (including two damaged ones) were found inside houses. At Masunoshinkiri, Kashiranashi and Takanekido (sites 35, 51 and 147) the pendants were probably not located on the house floor but in the secondary fill, suggesting these jadeites were probably lost or discarded after the dwelling fell into disuse. However, at Tsujiawaminami site,

⁵⁶ Examples of such interpretations concern Nashikubo site (report 16, page 547-8), Tateishi site (report 39, page 118), Idaira site (part of Todonomiya site group; report no. 44, page 235-6); Hōjō site (report 46b, page 60) and Koigakubo site (report 93c, page 76).

⁵⁷ Nevertheless at Tanabatake, two burials with jadeites and one with amber were found within a five meter range of the pit where the perfectly preserved “Tanabatake Venus” clay figurine was buried in the centre of the settlement. This may not be coincidence if this figurine is interpreted as representation of some kind of totemic guardian spirit, but it is impossible to know whether Late Middle Jōmon inhabitants were still consciously aware of the (older, Earlier Middle Jōmon) figurine’s presence.

a relatively large-scale settlement which—like many Ina sites—nevertheless flourished during a relatively short period (only the first half of the Late Middle Jōmon), more subtle temporal differences in use of the pendants could be observed. Two jadeite and one soapstone pendants were each found on house floors; these dwellings were not used contemporaneously, but belonged to successive phases, as pottery style changes indicated. Associated with these houses, the damaged pendant belonged to the earliest phase of the Late Middle Jōmon (Kasori E 1), whereas the well-preserved pendant belonged to early Kasori E 2, and the much smaller soapstone pendant to later Kasori E 2. This evidence that only one pendant was in use at any time, suggests that pendants belonged to one person (or family) within the community with a specific, possibly authoritative role (whether ritual or secular); the wearing of the pendant may have conferred or symbolized this position. On the other hand, the owner- (or guardian-)ship of such ornaments does not seem to have had much effect on everyday living conditions, which appear to be average. At Tsujisawaminami, the houses in which the ornaments were found, did not differ specifically from other contemporaneous houses—they were neither larger in size, nor contained larger numbers of artefacts, nor showed special conditions like obsidian caches or other rare artefacts.

‘Scattered’ Jadeites are found at five sites: Chinowada, Shiomidai, Arayashiki Kaizuka, Kusakari Kaizuka (two pendants) and Higashinagayamano (sites 42, 128, 149, 162 and 175). Remarkably, most jadeites without structural context are located in the Kantō Plains, particularly in Chiba. The area along Tokyo Bay is particularly known for its *kaizuka* (shell mounds). Chiba jadeites are generally found at the larger of such settlements, where many human remains have been exceptionally well-preserved due to the calcium deposits of the shells. A good example is Kusakari Kaizuka (section B) in Ichihara-city (site 162), which has both Mid and Late Middle Jōmon burials. Since personal ornaments made of bone and antler were found with many human remains, the absence of stone ornaments like jadeites as grave goods was particularly striking. Despite their lack of structural context however, these jadeite pendants were beautifully made, well-preserved and undamaged. The rarity of jadeite grave goods in the Coastal area⁵⁸ suggests that jadeite pendants may not have been regarded as personal prestigious ornament for an individual, who was later to be buried with these items, but may have had a more communal use—perhaps as part of ritual ceremonies. In any case, local archaeologists regard the very presence of jadeite (‘which is rare even at large-scale settlements’) as proof that Kusakari Kaizuka must have been a very important settlement indeed (report 162a, p. 545).

⁵⁸ There is only one example of a jadeite pendant in a pit context, found at Takanekido site (no. 147), among the East Kantō sample—in this one case, it is not certain whether it involves a burial or storage context: the pit was small and contained several net sinkers; moreover, the jadeite pendant was very small and a-typically irregular-shaped—probably damaged.

There is only one example of a jadeite pendant in a pit context, found at Takanekido site (no. 147), among the East Kantô sample—in this one case, it is not certain whether it involves a burial or storage context: the pit was small and contained several net sinkers; moreover, the jadeite pendant was very small and a-typically irregular-shaped—probably damaged. The socio-economic implications of these contexts will be further discussed in Chapter Eight.

7.2.3 The physical appearance of jadeite pendants

Finally, something can be said about the shape and appearance of the Middle Jômon pendants in themselves. These were very simple: the forms were very basic (probably close to the original shape of the pebble), with a surface polished very smooth. The absence of obvious decoration is noteworthy: unlike examples from jadeite and nephrite pendants from New Zealand, Mexico and China (Clarke 1988, see **fig. 15**),⁵⁹ the Middle Jômon ornaments were neither carved in particular complex shapes, nor decorated with incised patterns. In fact their general form appears to have been relatively homogeneous. The great majority of jadeite ornaments had a more or less elongated and/or oval shape, and would fit into Yawata Ichirô's old category of 'bonito'-shaped. It appears that this was the most representative (and perhaps most preferred) form; most of the pendants in the sample conform to this general type. In three cases, the shape could be described as more (tri)angular than oval, and—besides the unfinished 'adze' pendant at Kôshinbara—in two cases the jadeite looked vaguely like an axe-shape, with a broad bottom and a narrower top. However, bonito-like pendants were represented at all sites; cases of slight form variety were usually found at sites with multiple jadeite pendants—e.g. at Masunoshinkiri, Tanabatake and Tateishi. Among the sample from the Chûbu and Kantô regions, no examples of the larger, ball-shaped 'ojime' type were found. This type is sometimes found in Middle Jômon contexts, for example at Sannai-Maruyama site in Aomori, it coexists with the bonito type (see **fig. 4B**).

How can this apparent preference for relative simplicity of form and surface be explained? In the case of jadeite, after all a very hard material and very difficult and time-consuming to work,⁶⁰ technology may have been a limiting factor: other jadeite and/or nephrite consuming societies favouring much more intricate pendant forms, such as the Maori, Shang and Maya, had comparatively more socially complex systems, with greater social stratification and therefore craft specialization. Some groups of Alaskan Inuit, perhaps the only other hunter-

⁵⁹ Incidentally, Clark's oversight of Jômon jadeites was telling of the general lack of knowledge about this topic in western archaeology.

⁶⁰ For example, it was estimated that it would take four weeks to saw a blank for a Maori nephrite adze blade out of the stone, and six more weeks to shape and polish the material (Clark 1988: 38). No speculation is made about the production time for an intricately carved, sacred *heitiki* ornament (ibid., plate F), but undoubtedly that took much longer.

gatherers to work jadeite apart from the Jōmon, fashioned jadeite into adze blades used in exchange (Clarke 1988), and apparently did not make purely ornamental shapes.

In the case of the Middle Jōmon people, the jadeite shapes may be due to a combination of technological limitations and ‘form recognition’: once the pendants had been introduced and accepted as ritual attributes, people came to have certain associations and expectations, and probably demanded particular recognisable shapes. Certain groups that wanted to distinguish themselves from other groups may have favoured different shapes, for example oval bonito-shape versus the flattened ball variety.

Of course, such trends only lasted for a certain time. Already during the Late Jōmon, a few ‘experimental’ ornament shapes were appearing (**fig. 18B**); however, these are rare, and made of softer materials than jadeite. In the Final Jōmon period, jadeite was fashioned into the more intricate ‘curved’ beads, which sometimes appears to resemble zoomorphic shapes (see **fig. 18A**); it is possible that experience and advancing technology also allowed for these more ‘difficult’ shapes.

7.2.4 Jadeite pendant characteristics

Based on these data some preliminary points can be made about finished jadeite pendants in Central Japan:

- Jadeite pendants were most frequently recovered from burial pit contexts in the Suwa Lake~Yatsugadake and West Kantō areas, whereas in the Ina Valley, they were often located in dwelling pits. A possible explanation is that abandoned houses were perhaps used as graves—as was custom at Kusakari site—but at this time such a suspicion cannot be confirmed. In contrast, in the Coastal area pendants were rarely used as grave goods.
- Unlike the unprocessed nodules which were recovered from a broader time span ranging from Early Middle Jōmon to Late Jōmon, the majority of datable large jadeite pendants appears to have been recovered from Late Middle Jōmon contexts, with the possible exception of Nashikubo, where the jadeites were provisionally dated to the Mid Middle Jōmon. This does not necessarily mean that the pendants were acquired during this time period; it is very well possible that jadeite ornaments were in use for a long time until their final deposition.
- There was no great variety in form: most jadeites had an oval, ‘bonito’ shape. Only three items were slightly more (tri)angular in shape, and Yawata’s ‘adze’-shape was found among only two finished pendants (both at Tanabatake), and one partially finished item at Nakahara (no. 34). The samples did not contain any examples of the large round ‘*ojime*’ cylindrical shape, nor any truly ‘irregular’ shapes.

It seems that the jadeite pendants were generally treated with care and respect: the majority has been recovered in a more or less perfect state. Only four items out of 34 were broken or had sustained some minor damage, which assumedly happened prior to deposition, because of the hardness of the material and the high ‘survival’ rate. Due to the small number of the sample in general and the scarcity of damaged pendants in particular, it is hard to draw any conclusions, but it appears that in the Chûbu Mountain area, only undamaged items were used as grave goods, whereas some Kantô Plain sites were less picky: two damaged items were found in burials (sites 115 and 147). If this does reflect a regional difference, it stands to reason that relative distance to the source area and ease of acquisition formed a factor.

7.3. A CLOSER LOOK AT THE CONTEXTS OF AMBER PENDANTS

7.3.1 Sites with amber pendant in the sample

Unfortunately the sample contains rather fewer examples of amber ornaments: twenty-one items, distributed over eight sites: Nashikubo (no. 16), Tanabatake (no. 38), Tateishi (no. 39), Kabutsuppara (no. 48), Kanenoo (no. 59), Ichinosawa-nishi (no. 65), Mukaihara (no. 158) and Higashinagayamano (no. 175), see amber distribution **map 9**. Unlike jadeite and stone pendants, amber is not a mineral but a fossil resin, and far more vulnerable to destruction through environmental conditions. This factor may also have adversely affected the number of amber finds, perhaps leading to a bias in our perception of its circulation and use. In this section, the contexts of 20 amber ornaments at seven sites will be discussed.⁶¹

7.3.2 Spatial contexts

Interestingly, amber appears to have been used as a grave good even more than jadeite: 18 of the 20 items were recovered from a burial pit context—in words, 90%. One pendant was found inside the secondary fill of a house, one was without structural context. These rates suggests that amber pendants were valued highly as a personal ornament and prestige good. Like jadeite, the majority of amber is concentrated around the Suwa Lake area and Yatsugadake area (sixteen items, divided over sites 16, 38, 39 and 48). There were no amber examples from the Ina Valley and Northern part of the Matsumoto Basin, but instead distribution extends deeper into Yamanashi, such as at Kanenoo and Ichinosawanishi (sites 59 and 64) in the Eastern part of the Kôfu Basin. The sample also lacked examples of amber from the West Kantô Plain, but two items were found at Chiba sites: Higashinagayamano and Mukaihara (sites 175 and 158).

Multiple items were found at only two sites: Nashikubo (eight items in four burials) and Kabutsuppara (seven items, two burials). Burial contexts will be further treated below.

⁶¹ Due to copying omissions, the context of the amber pendant at Ichinosawanishi (site 65) is unfortunately unknown.

Unfortunately, due to bad conservation, the condition of the amber items is often very poor (particularly fragmented at Nashikubo, Kabutsumpara and Kanenoo), but from the sample it appears that circulation was limited to finished pendants, not unprocessed nodules or failures.

7.3.3 Temporal contexts

Judging from the temporal contexts, it appears that amber circulation flourished during a somewhat earlier part of the Middle Jōmon than that of jadeite. The presence of Early Middle Jōmon pottery in the amber grave context at Kabutsumpara site indicates that amber circulation already extended to the Yatsugadake Mountain area at that time; at Nashikubo the estimated date on the basis of pottery inclusion was Early to Middle Middle Jōmon (report 16: 547). At Kanenoo (site 59), the amber was also found inside a Mid Middle Jōmon context (a house fill). Within Chiba itself, amber also circulated during this period: at Higashinagayamano (only ca. 30km removed from the source area) an amber pendant was found inside a pit with pottery from the final stages of the Mid Middle Jōmon.⁶² However, some Suwa Lake contexts suggest that amber was still very much in circulation during the latter part of the Middle Jōmon: the pendant grave good at Tanabatake—like the jadeites—was assigned to the Late Middle Jōmon (report 38: 672), and the pit containing the Tateishi material, on the basis of stratigraphy, was thought to belong to the Final Middle Jōmon~Start Late Jōmon (report 39: 128). The temporal context of the Mukaihara item in Central Chiba is unclear: half of the dwellings at this small-scale settlement and special purpose site belong to the Early Jōmon, the rest to the Late Middle Jōmon, each grouped at different ends of the site; moreover earlier Middle Jōmon pottery is also present. Since particularly during the Late Middle Jōmon this site was used for extensive arrowhead production (report 158), it is possible that the amber pendant was also associated with this period.

7.3.4 Amber ornament condition and shapes

The vulnerability to natural oxidation processes does not only present problems regarding the accurate representation of the original distribution in the archaeological record. A related problem is the condition of the recovered amber ornaments, which is generally very poor. Almost all examples in the sample are broken; at some sites, the beads were particularly fragmented (e.g. at Nashikubo, Kabutsumpara and Kanenoo), so that little can be learned about their original appearance. More or less undamaged amber pendants have only been recovered from Tanabatake and Higashinagayamano sites. Nevertheless, judging from these sample items it appears that circulation was limited to *finished* pendants, not unprocessed nodules or failures: all items seem to have been pierced properly. It also appears that—unlike for example the

Mesolithic amber from Scandinavia (see **fig. 16**)—Jōmon Middle Jōmon amber was relatively simple in shape and plain of surface (see **figures 17 (no. 225), 20 and 21**), without elaborately carved (animal) forms or incised decorative patterns. In fact, the shapes of the ‘undamaged’ pendants in the sample appear to be quite uncomplicated; it is likely that not a great deal of modification of the original unprocessed pebble took place. The Higashinagayamano item is vaguely cone-shaped; the Tateishi items is an irregular ball-shape. Some of the preserved beads at Kabutsuppara have a distinct square quality. It appears therefore that there is a considerable variety in forms and shapes, unlike the relative standardisation that appears to have applied to the jadeite pendant forms. This might either be related to the quality and shape of the amber material (which is far more brittle than jadeite, and perhaps therefore more difficult to fashion into pre-determined shapes), or to the amber producers, who may have carried out amber production as a *very* occasional activity and were relatively inexperienced. Temporal differences may also be related to form. Unfortunately, due to the small size of the sample, insufficient data was available at present.

7.3.5 Social and subsistence background to the amber contexts (preliminary)

Unlike jadeite pendants, amber has occasionally been found in association with another ornament within the same context: at Nashikubo site, one pit contained (the remains of) no less than five amber pendants, together with a soapstone pipe-shaped bead. The apparent fact that amber and jadeite pendants do not occur in same context is underlined by the Nashikubo report, remarking that there are differences in shape, depth and size between pits with jadeite and pits with amber (report 16: 379). Contacts with the East Kantō area are likely; Earlier Middle Jōmon Atamadai pottery influences from this area were reported at Tanabatake (report 38) and Nashikubo (report 16).

The conditions surrounding amber production at Awashimadai site have suggested a strong connection with specialised hunters, who may have distributed these ornaments as prestige symbols to other hunters (Uchiyama unpublished MA dissertation). Is there any visible evidence of such a connection reflected in the contexts of amber circulation and consumption? Again, due to the rather small number of amber items and distribution sites in the sample, no firm conclusion can be drawn as yet. Sadly, there are no clear-cut examples of burials with amber *and* arrowheads to conveniently support this theory, although at Nashikubo site, two of the pits with amber also contained some obsidian debitage.⁶³ However, preliminary research suggests that there are links with arrowheads and obsidian. Amber items are generally found at

⁶² This pit was explicitly interpreted as a mortuary context (report 175: 89).

sites where arrowheads played a more important role than average: the percentage of arrowheads among the total toolkit assemblage at amber distribution sites is relatively high compared to most other sites in the same region. This applies to six out of the eight sample distribution sites; at the remaining two sites, (Kabutsuppara and Ichinosawanishi) the information on arrowhead quantities was incomplete. In the Chiba Peninsula area, the role of arrowheads in subsistence is overall higher than in the Mountain area, but at Higashinagayamano and Mukaihara, the arrowhead percentages are still higher than average for that region. Unfortunately the sample is too small to carry out a statistically valid comparative chi-squared analysis.

Moreover, as the statistical section 6.3 has demonstrated, there is also a link between presence of obsidian and exotic ornaments (both jadeite and amber): exotic ornaments were frequently found at sites where obsidian arrowheads prevailed, and so far seem to rarely occur at sites where they are scarce. Finally, amber has also been found at sites which are known for their intensive (perhaps even specialised) obsidian exploitation and production of obsidian arrowheads, such as Nashikubo, Tanabatake and to a lesser degree Tateishi site. In this respect, the concentration of amber in the Yatsugadake-Suwa Lake area—which has the most advantageous access to good-quality obsidian resources—is telling. Moreover, in this respect, the presence of an amber ornament at Mukaihara, a very small-scale settlement with very few houses but characterised by an intensive Middle Jōmon period arrowhead production, cannot be a coincidence. Therefore, as a preliminary conclusion, there does indeed appear to be a link between the presence of amber ornaments and arrowheads (or the production thereof), which is more obvious than that between, say, arrowheads (or obsidian) and jadeite ornaments. At this point, it is very tempting to assume that the Yatsugadake amber is derived from Awashimadai, in return for high-quality obsidian for arrowheads, and that these were exchanged among hunters and/or arrowhead producers (who may be the same people). However, although less likely due to the distance, theoretically the Yatsugadake amber could also be derived from the Kuji source in the Tōhoku area; moreover recent analysis has shown that the Awashimadai obsidian was largely acquired from the Kōzu Island source on the Izu islands: 96% of 52 samples (180d). Nevertheless, Uchiyama's hypothesis about a link between specialised hunters (or arrowhead producers) and amber consumption as an identifying symbol is a very interesting one. Further research is necessary to deepen our still relatively superficial understanding of the relationship between amber and specialised subsistence activities.

⁶³ These pits had a diameter of ca. 1 metre, and contained a core and some flakes. From the provided information it is unclear whether these objects entered the pit at the same time; of course these occurrences may very well be unrelated.

CHAPTER EIGHT: THE SOCIO-ECONOMIC BACKGROUND OF EXOTIC ORNAMENT EXCHANGE

The previous chapters in the case study looked at the archaeological circumstances that shed light on the lifecycle of the exotic pendants, from production to circulation to consumption. Within the framework of the site sample, this study concentrated on the contexts surrounding these activities involving exotic stone, and has quantified those contexts. The results have suggested that stone ornaments occupied a different place in Middle Jōmon society than other stone artefacts: they are more frequently found in burials, and usually limited to the larger settlements. Most of all, this applied to jadeite and amber pendants; it appears that these were indeed 'valuables', as is often assumed. However, these results were acquired within the framework of the site sample. The following chapter adds some more information, in order to see whether the results from the sample hold up, and to get a more complete view of the social contexts of exotic ornament exchange.

8.1 POSSIBLE MOTIVATIONS FOR BEADSTONE PRODUCTION

8.1.1 Hokuriku Jadeite Coast

These beadstone and polished adze production sites have been extensively researched by for example Yamamoto Masatoshi and Abe Asaei (adzes) and Teramura Mitsuharu (jadeites), describing site features, reconstructing the locations and stages of the production, and identifying temporal stylistic differences. Moreover they have pointed out that (1) large-scale but part-time production—clearly exceeding local consumption—at permanent core settlements started during the Middle Jōmon, and circulation quickly expanded beyond the Hokuriku throughout the Chūbu and Kantō regions, (2) during the Late Jōmon and Final Jōmon, despite the general depopulation of Central Japan, the production & distribution of both adzes and pendants increased drastically due to increased demand throughout Japan. It has been suggested that the start of large-scale production of polished adzes in the Middle Jōmon was due to the increased need for lumbering and wood-working tools by Central Japan's rapidly expanding population (Yamamoto 1989: 64). Conversely, the extension and intensification of production and circulation during the Late and Final Jōmon, are regarded as a response to the general decline in both population density and number of settlement sites: long-distance exchange networks became essential to 'balance the distribution of resources' in East Japan (Abe in press: final page).

As described earlier, at these Beadstone Production sites at the Hokuriku 'Jadeite Coast' various items from other regions were present from the Middle Jōmon onwards, like pottery, materials like obsidian and possibly some ideas, in the form of clay figurines (Maeyama 1985).

However, the relatively modest presence of such interregional evidence is rather puzzling, even to the excavators. In contrast to the 'Amber Coast' production site Awashimadai, which appears to have declined after the Middle Jōmon, production of both ornaments and polished stone axes continued during the Late Jōmon and Final Jōmon; if anything, the scale of production and distribution even increased. The wide distribution shows the continuing and urgent demand for these objects, which is easy to understand: the craftsmanship of these goods is excellent, and apart from the mysterious beauty of jade and even serpentinite after it is polished, the very scarcity of these materials must have imbued the objects with even more value. Moreover, exchange in hunter-gatherer economies like the Jōmon is usually based on reciprocity, and the research of Mauss (1925) and others (e.g. Appadurai 1986) has shown that something equally important is always expected in return. Which exchange commodity did they receive that we have overlooked, and that can explain the motivation for a continued, intensive production and export of commodities to other regions, which increased even further after the Middle Jōmon?

It is possible that one important reason for these activities lies in the Japan Sea Coast environment, and the conditions for survival of the community. Life at this location of the Japan Sea coast probably could be very harsh. It is interesting that the marine transgression of the Early Jōmon climatic optimum (ca. 6000BP), which provided lagoons with very advantageous freshwater fishing conditions at the southern Japan Sea Coast,⁶⁴ apparently did not have the same beneficial effect in the Jadeite Coast area: the first evidence of longer-term *habitation* in this area dates from the start of the Middle Jōmon (Toyama Board of Education 1987). It has been suggested that living conditions became more suited to sedentary living during the Middle Jōmon (Yasuda 1980: 99); sites like Sakai A, Chōjagahara and Teraji thrived especially during the mid and late Middle Jōmon.

This difference with the more southern areas may have been due to location and unique climate conditions. As **figure 1B** and **map 4** show,⁶⁵ there is only a very narrow strip of flat land of—at most—a few kilometres between the sea and the Hida Mountains. Caught between the Japan Sea and the steep mountains, a combination of warm south-western currents and cold winter winds from the Northwest from Siberia causes extremely high precipitation—especially in winter, when the land in this 'yukiguni' (snowland) is covered by thick layers of snow (Yasuda 1980: 96-7). The area was extremely isolated during winter, and perhaps an important part of the adze and bead production activity was carried out during this time, inside the dwellings. In spring and summer, the quick flow of the rivers (swollen with melt water) rushing to the sea from the Hida Mountains, frequently overflowed, as is shown by the fact this area

⁶⁴ At the southern Japan Sea Coast, large communities like Torihama Kaizuka in Fukui profited six months a year from freshwater carp and clams in the newly formed lagoons (Uchiyama 2002)

⁶⁵ Courtesy of Uchiyama Junzo.

consists almost exclusively of alluvial fan sediments (Naruse 1985: 64). As a positive side effect, these wild rivers allowed Jōmon people easy exploitation of stone resources by loosening pieces of serpentinite and jadeite from the rock outcrop, polishing them into pebbles and carrying them along to the beach. On the other hand, frequent floods and sedimentation may have ultimately contributed to the deterioration of food resources in this isolated area.

Jōmon subsistence was based on a combination of hunting, fishing and gathering plant foods; this is reflected at the composition of the tool kits at the Jadeite Coast sites, which included arrowheads, net-sinkers, chipped stone adzes, grindstones and saddle querns. Pollen analysis carried out in Toyama prefecture has shown that *evergreen* forests were formed along the Japan Sea coast during the climatic optimum, providing plant foods including nutritious acorns (Oota 1992: 125). Much research has been carried out on techniques of tannin extraction and processing of evergreen acorns (Watanabe 1975; Matsuyama 1981). Because of the considerable yield in carbohydrate and starch, such plant resources formed an essential food staple during the Jōmon (Sasaki 1991: 136-42).

However, pollen analysis has shown that after the Early Jōmon climatic optimum the climate deteriorated in Japan (Tsukada 1974: 177-8); eventually the cumulative effects of increased cold and precipitation undermined the environment and its carrying capacity, which probably caused the depopulation of the Chūbu central mountain area during the Late and Final Jōmon (e.g. Koyama 1978: 7). This post-Early Jōmon climatic deterioration has also been observed in the Japan Sea Coast and Hokuriku area, by increased cold (indicated by rapidly falling sea levels: Wada 1972, Fuji 1975), and precipitation (Yasuda 1990: 170-1). It is possible that environmental degradation started to strain local subsistence resources in this isolated region rather soon. On the basis of the limited data available to me, I have hypothesised the following scenario.

First, it is possible that the excessive flooding and subsequent sedimentation in the bay may ultimately have had an adverse affect on marine life habitats and thus fishing conditions, as it did along the southern Japan Sea Coast after the Early Jōmon (Uchiyama 2003/in press).⁶⁶ Moreover, unlike the Pacific Coast inhabitants, the Japan Sea Coast did not have shell fish resources at their disposal, because the latter coast 'lacks development of tidelands for the deep water and the small change in sea level by tidal movement in the area' (Takahashi et al. 1998: 54). Secondly and perhaps more importantly, pollen analysis from post-Early Jōmon sites in Toyama has indicated that the soil gradually became impoverished due to the excessive flooding and increased sedimentation, leading simultaneously to an increase in cedar trees and a decline

⁶⁶ It has been suggested that at the Southern Japan Sea Coast, human environmental mismanagement—like over-cutting of trees to clear space or create an environment to attract game animals like boar and

of the evergreen broadleaf forests (Oota 1992: 125). There is evidence that the inhabitants started to rely on nuts from *deciduous* broadleaf forests instead (ibid). Botanical evidence at archaeological sites is very scarce, but the importance of deciduous nuts is indicated by the presence of carbonised deciduous nuts like chestnuts (*kuri*), walnuts (*kurumi*) and acorns (*donguri*) at various Japan Sea sites ranging from Middle Jōmon until Final Jōmon (Watanabe 1975: 30-33); including walnuts, acorns and horse chestnuts (*tochinoki*) at the Final Jōmon section of Teraji site (ibid: 31-2). Moreover, the presence of the large rectangular long Middle Jōmon house with big fireplaces at Hokuriku sites like Fudodo site, Asahi-machi in Toyama (near Sakai A), has been interpreted as a communal nut leaching and processing location (ibid: 228-35). Such deciduous nuts could be acquired from further inland, higher into the mountains. However, it is likely—considering the impoverished soil—that these deciduous plant food sources sometimes had to be imported over relatively large distances. Perhaps the presence of certain structures, such as large storage pits at Chōjagahara site (Chōjagahara Site Museum 2000) is significant in this regard.

Of course these facts are still limited, and more botanical and zoological research is necessary, but it could be possible that the harsh environment and potential geographical isolation (perhaps combined with the gradual deterioration of various subsistence bases) may have been an important factor motivating the Hokuriku Jadeite Coast inhabitants in continuing and expanding their large-scale production efforts. The population may have depended on long-distance exchange contacts with more economically stable sites in distant regions to supplement potential *food* shortages. Particularly *deciduous nuts*, which despite a higher tannin level have greater nutritional value than evergreen nuts (Sasaki 1991: 141-2) may have played an important role in this exchange. Moreover, the maintenance of social contacts would also have been of vital importance, considering the geographically isolated position of this area, especially during the winter. Of course, after supplementing subsistence goods to take care of the more immediate necessities, one of the most important needs in outside relations would have been to exchange marriage partners, to ensure the healthy survival of the community. Moreover, isolated communities also have a great psychological need for news from the outside—ordinary ‘gossip’ as well as practical ideas such as new technologies and ideologies—especially after having been cut off for a whole winter season. In short, it could be argued that the inhabitants of this isolated area had a vested interest in maintaining the interest of ‘outside’ groups for engaging in exchange contacts, in order to ensure their own survival, in more ways than one.

As for the meaning attached to the ornaments at the production site: current western thinking on exchange has emphasised the fact that ascribed value usually increases with

shika deer—may be partially responsible for creating similar flooding conditions (Uchiyama 2003/in print). It is possible that this also happened here.

distance to the source, investing the object with an exotic image which is considered highly attractive (cf. Appadurai 1986; Weiner 1992, Helms 1988). However, the fact that at Sakai A site the only two finished bonito pendants remaining at this production settlement were (a) found in (separate) burial pits; (b) were undamaged and in perfect condition, to me indicates that these pendants were also valued highly by their own makers, and not just produced for exchange with other areas.

8.1.2 Chiba Amber Coast

On the other hand, the situation appears to have been very different at the amber production site Awashimadai at Chôshi-city. Unfortunately, not that much information is known about this site; most of the finds so far have been recovered from waste disposal areas. No remains of a more permanent Middle Jômon settlement have been found so far; only one Early Jômon house pit and a shell mound on the higher parts, and another rubbish deposit area at the lowland peat bog. I assume that this scarcity of structural finds is largely due to the relatively small scope of the excavations, and consider it likely that some form of more permanent residential area was present in the immediate vicinity. After all, the evidence so far suggests that most large-scale Middle Jômon production activities appear to have taken place within 'settlement' contexts. Such settlements were located in close proximity (within a few km) to the source area: the beadstone production at the Jadeite Coast sites; the obsidian processing at Chûbu settlements like Nashikubo and Tanabatake, are only a few examples among many. However, pottery fragments show that the site was in use from the end of the Early Jômon until the start of the Late Jômon. Life in this Pacific Coast area arguably was a good deal easier than along the Japan Sea Coast. Although the inhabitants of Awashimadai had the option of marine resource exploitation (including shell fish), the organic remains at the waste disposal area indicate that the majority of protein was acquired from land mammals like deer and wild boar. Moreover, in this relatively flat area, potential isolation was not among the possibilities. If one looks more closely at the beadstone production evidence, it is clear that—as Naumann (2000) pointed out—many mistakes were made during production. Moreover, the finished pendants and beads were often not very sophisticated in form. Standardization of shape seems to have been absent, suggesting that production was carried out by several people, not all of them equally skilled. In all, it appears that production activities were not extremely intensive, and not carried out by specialists with specific knowledge. It is therefore likely that the motivation for ornament production was less serious than in the Jadeite Coast area; although the latter inhabitants were also merely part-time producers, they appear to have invested a great deal more time and effort in their products. This can be seen from both the relatively well-made, well-polished appearance of pendants and adzes (an activity which takes much time), the quantity of debitage at the sites,

and the relatively more wide-spread distribution of the jadeite. It appears that the amber producers were in a relatively more advantageous position, less dependent on the maintenance of long-distance exchange relations. However, demand for their product was nevertheless high, which probably placed them in a good position with regard to interregional exchange. This is also indicated by the presence of two jadeite items at or near the site, obsidian from two sources,⁶⁷ area and interregional pottery. In any case, so far the data concerning Awashimadai site is still very limited; further excavation results from this site are eagerly anticipated, as they may shed more light on the circumstances around this production site and its associated settlement.

8.2 ADDITIONAL EVIDENCE ON CENTRAL JAPAN DISTRIBUTION NETWORKS: CIRCULATION AND CONSUMPTION

8.2.1 Sampled circumstances

This section discusses the sample results from the case study, as discussed in the previous four chapters. These analyses confirmed the hypotheses that (1) stone ornaments were usually distributed under special circumstances—mostly at large-scale, stable sites with a habitation history that include earlier parts of the Middle Jōmon, but flourished most during the Late Middle Jōmon, and various other signs of prosperity like the presence of other interregional goods and ritual activities. (2) compared to stone ornaments made of less rare materials, ‘exotic’ pendants like jadeite and amber were more frequently found in special circumstances: both in larger, more important sites, and in special deposits like mortuary contexts. (3) amber was particularly often found at sites with a special emphasis on obsidian exploitation and/or arrowhead production, suggesting a symbolic link with hunting activities.

However, Ando’s theory about a relation between jadeite pendants and serpentinite polished adzes could not be confirmed—in the Mountain area sample, data for various promising sites were missing, whereas in the Kantō area, there appeared to be a strong link with stone ornaments; just not necessarily with jadeite.

How representative was this sample of sites? Before trying to draw a tentative conclusion about the nature of distribution in the various areas, the validity of the image presented through the sample descriptions is assessed. This is done by referring to as much data concerning ‘other’ beadstone sites as were available, taken from information in museum catalogues, articles, books and other secondary sources. Unfortunately, it is likely that the cases of stone ornament finds, that attract most attention, are those that contain very rare items like

⁶⁷ The Izu island source was mostly used (96% of 52 item sample); only two items (one Earlier and one Late Middle Jōmon) belonged to the Nagano source (report 180d:).

jadeite or amber. Therefore, it should not be assumed that finds of pendants made from other, more common materials were rare or absent— probably quite the contrary. In any case, the focus of this dissertation is primarily on amber and jadeite distribution.

8.2.2 Additional jadeite and/or amber ornament distribution sites in the Chûbu Mountain area

I did not come across any references to jadeite or amber sites North of the Matsumoto Basin; more research is necessary to decide whether (and if so, why) this area was ‘skipped’ in the jadeite distribution, as Andô suggested. However, in the case of the Southern Matsumoto area just north of Suwa Lake (around Shiojiri), the sample showed that jadeite finds often were located in Early to Mid Middle Jōmon contexts, therefore seeming to pre-date those south of the Suwa Lake and in the Yatsugadake area. However, following several article references, it turns out that fully produced jadeite pendants also appeared in Late Middle Jōmon contexts in the Shiojiri area, namely at Uekido and Kakisawahigashi sites (Shiojiri Board of History 1995: 45-8, 67-8; Okamura 1993: 75). These sites, which were modestly excavated during road construction,⁶⁸ are both expected to form large-scale circular villages, have a relatively short-term habitation with maximum expansion during the earlier part of the Late Middle Jōmon (Kasori E 1~2) and contain large amounts of ornamental pottery and clay objects like dogû. In both cases, jadeite pendants were found in one Late Middle Jōmon burial in the centre of the village: no less than five inside a single burial pit at Uekido.⁶⁹ Significantly, a map of the site depicts an obsidian cache (ibid: 67), which suggests obsidian production activities—possibly sufficient to trade with other areas. Therefore it seems that these later sites managed to consolidate the early success of sites like Nashikubo in establishing exchange connections.

As for the nearby Ina Valley, Andô reported that at least 20 sites were in possession of jadeite ornaments. Unfortunately, that statement can not be assessed right now, due to lack of data, but perhaps of related interest is the conviction of ‘Jadeite Coast’ expert Yamamoto Masatoshi that the Ina Valley was an important distribution area for serpentinite polished adzes from that area (personal communication, 2002). More information is necessary to determine whether amber was also distributed in the Ina Valley, or whether it was limited to the Yatsugadake sites.

The prevalence of large quantities of rare stone ornaments in the Yatsugadake area is supported by Nakahara site at Chino, located only 1km away from Tanabatake site, which

⁶⁸ Uekido (3,250m² excavated) yielded 28 houses and 37 pits dating from the end of the Mid Middle Jōmon to the Late Middle Jōmon; at Kakisawahigashi (1,500m²) 23 Late Middle Jōmon houses and 130 pits were found (Shiojiri Board of History 1995: 45-8, 67-8).

contained both *amber* and *jadeite* ornaments, all found in Late Middle Jōmon burials (Okamura 1993: 75, Chino Togariishi Museum 1996: 61, report 038: 672). This indicates that the ‘amber route’ to the Chūbu area—although possibly on a smaller scale than jadeite circulation—was not limited to the Earlier half of the Middle Jōmon but continued in a quite stable manner, from the Early through to the Late Middle Jōmon period. Examples of more sites are awaited eagerly (on my part at least).

In the sample, the jadeite distribution in Kōfu Basin seemed to have been extremely sparse, compared to the higher sites in the Yatsugadake—despite the fact that the exchange route between Yatsugadake and the Kantō Plains had to pass through the Kōfu. Nevertheless, it is known that the jadeite route did not skip the Eastern Kōfu Basin entirely: a large jadeite pendant was found in a Late Middle Jōmon burial context at the Middle Jōmon settlement site Sankō (Okamura 1993: 78, Andō 1995b: 224), at Misaka which is located only ca. 5km away from Shakadō.

Although not much information is available on the exact size of these settlements, and the presence of other artefacts, resources and attributes indicating participation in long-distance exchange, on the whole, this additional information supports the impression that rare ornaments are generally found at large-scale stable Middle Jōmon settlements. Judging from their very general descriptions (‘large circular settlements with burials in central open space’) these distribution sites do seem to conform—at least partially—to Kobayashi’s (1992a) definition of an influential core settlement. These references also confirm that jadeite (and amber) finds tend to be extra concentrated around the Suwa Lake area, at sites in the vicinity of good-quality obsidian sources. Moreover, the majority of these jadeite and amber finds appears to have been found at fairly stable, large-scale sites that were occupied throughout the Middle Jōmon but flourished especially during the Late Middle Jōmon. *Almost all jadeite and amber finds were recovered from (Late Middle Jōmon) burials, usually located in the centre of the settlement.* Although in the Yatsugadake area in particular, jadeite and amber are sometimes found at the same sites, perhaps even both belonging to the Late Middle Jōmon, it seems that they are never found in exactly the same context—for example within the same burial.

8.2.3 Additional references to the Kantō area.

The image depicted by the sample sites gives the strong impression that jadeite finds in Tokyo and Kanagawa were much more rare than in the Mountain area, and amber finds were

⁶⁹ The recipient of such a unusually high number of jadeite grave goods is believed to have held an important social position, possibly with ‘magical’ connotations (Shiojiri Editorial Board for Shiojiri Municipal Records 1995: 47).

practically absent. Well, there are several more examples of both types of beadstone; to what extent is it true that jadeite and/or amber were more commonly found in the Chûbu? .

Recently, a Middle Jômon *jadeite* was discovered at the very interesting Tama New Town no. 72 site located in the southern Hachiôji area. This settlement site, with more than 200 dwelling pits, is considered to be one of the largest Middle Jômon settlements in the Tama area, and was continuously inhabited throughout the Middle Jômon. Apart from a large cylindrical [*ojime*-shaped] jadeite pendant (believed to ‘symbolize the power and influence of the settlement’), it has several other artefacts indicating contact with other regions: a rare pyramid-shaped clay object, very large quantities of dogû and sekibô (Tokyo Centre for Buried Treasures 1996: 6). Moreover, judging from illustrations, there existed considerable contact with the Chûbu area beyond the Kôfu Basin: one of the clay figurines faces appears to have *Sori*-style or *Karakusamon*-style features, and a *Karakusamon* burial jar was buried upside-down—as was the custom in the Central Mountain area. However, such evidence of *Karakusamon* pottery or traditional influences is extremely rare in the Kantô.

This particular case definitely conforms to the hypothesis that jadeite is more commonly found inside a larger, more influential sites. Unfortunately, with the information available it is hard to determine whether other West Kantô jadeites were found under similar circumstances. Other references to Middle Jômon jadeite finds in the West Kantô area (where no information about contemporaneous settlements was available) include: an unprocessed nodule surface-collected at a private property (Mr. Shizuo Saitô) in Fuchû (Tokyo Centre for Buried Treasures 1995: 131); a pendant at Tadao site, Machida city, where a Kasori E figurine was also found (ibid: 132); a large pendant located in a Middle Jômon pit at Mitaka Middle School no. 5, at Mitaka (Okamura 1993: 81); two large pendants from a Middle Jômon pit at Takikubo site, Kokubunji (Andô 1995b: 224); a pendant found in a Mid~Late Middle Jômon house fill context at Arakamiyama site at Takamori, Lower Ina Valley (Andô 1995b: 225)

In any case, **Amber** was more commonly found at the West Kantô than the sample analysis indicates. A well-known example is the well-preserved, beautifully made amber pendant found in a burial pit at the Middle Jômon site Mukaigô, Tachikawa-city (Wada et al. 1995: 57; Tokyo Centre for Buried Cultural Properties et al. 1993: 24)—located on the northern bank of Tama River, some 2 km northwest of Nanyôji site and near Koigakubo site (nos. 84 and 93). Although not fully excavated, this site is believed to have characteristics of a large-scale settlement (ibid: 26; ibid: 7); the settlement has a circular plan, flourished from the Mid to Late Middle Jômon, and included ritual objects such as Late Middle Jômon Kasori E-style figurines. Possible connections with the Chûbu area are indicated by the presence of large jars of *Sori*-style pottery in addition to the ubiquitous Kasori E-style (ibid: 131). A report about nearby Koigakubo site describes the location of 293 burial pits in the central open space of Mukaigô

settlement, and finds the distribution of the Late Middle Jōmon pits comparable to that at Koigakubo (report 93c: 75). Since the jadeite pendants at the latter site were discovered inside a Late Middle Jōmon pit, it is possible that the amber pendant at Mukaigō also belonged to the Late Middle Jōmon.

Another recent example of a West Kantō amber pendant find is Higashikaitō in Hadano, Kanagawa, where both a jadeite *and* an amber pendant were each found in Mid Middle Jōmon burials at (Kanagawa Prefectural Centre for Buried Cultural Properties 1997: 4). In previous Awashimadai reports, references were to a few Tokyo sites such as Narahara site and Inume site (site report 180b; report 180c). More references to amber finds in the **East Kantō** include Ariyoshikita Kaizuka in Chiba, along the Tokyo Bay, where two amber pendants were found in burial contexts (Okamura 1993: 83), and Aranodai, like Awashimadai relatively close to the source area, where undefined quantities of amber were reported to be found (1973, site report 180b). The proximity to both Awashimadai and the amber source area of the latter site is intriguing; more information could determine whether it was also involved in amber production. This list is very short, but allegedly more West and East Kantō amber sites are named in the latest (2000) Awashimadai report.

Within the sample of jadeite in the East Kantō, it became apparent that jadeite circulated especially among coastal settlements (generally large-scale settlements with a longer habitation span), in the form of finished pendants. In contrast to the Mountain area cases, however, most of these pendants—although well-made and well-preserved, and conforming to the general ‘bonito’ shape most representative of Middle Jōmon jadeites—were not associated with burials. Instead, frequently these pendants were recovered without structural context from the general Middle Jōmon cultural layer. So far, additional references to East Kantō jadeite finds could not be found—with the exception of two finds at Awashimadai—but this is no doubt due to the very limited information available and not necessarily to absence as such.

Is there a chance that this apparent finding in the site sample is biased by this particular site sample, or could it possibly reflect a somewhat different attitude towards jadeite pendants prevalent among Coastal Kantō settlements? It is difficult to judge, based on the small size of this sample. However, a rather reliable ten-year-old review of Jōmon burial practices,⁷⁰ made no mention of any examples of jadeite pendants burial goods in the East Kantō during the Middle Jōmon—but did record cases from later periods, namely at Late Jōmon and Final Jōmon sites (Okamura 1993). Therefore, unless strong evidence to the contrary is offered, it seems reasonable to accept that it apparently was not customary among large-scale settlements in this

⁷⁰ The accuracy of this article with regards to (pre-1993) finds of jadeite burial contexts is likely to be quite reliable, since all relevant examples from the sample site jadeites had indeed been duly recorded there.

region to include jadeite pendants as burial goods. One good reason for this reluctance could be the fact that this would remove the precious jadeite from circulation among the living. Apart from one example at Takanekido site (which is ambiguous), Middle Jōmon jadeite pendants from the East Kantō were found in a non-structural context. This does not necessarily mean that jadeite pendants were valued less than for example in the Mountain area. Another interpretation includes the possibility that in this region jadeite—which was more difficult to acquire than in the Mountain area—was not regarded as personal prestige ornament for a relatively high-ranking individual, to be buried with this person, but may have had a more inalienable, communal use, perhaps as part of ritual ceremonies benefiting the entire settlement.

Generally, the Kantō site supplement—although woefully incomplete—also gives a slightly broader idea of precious ornament distribution than hinted by the sample analysis. Most cases in the Chūbu Mountain area and West Kantō Plains refer to burial contexts for both jadeite and amber, which is in agreement with the conclusion reached in the contextual sample analysis. More research is necessary to see if these sites also conform to the ‘large influential core settlement’ profile such as Tama New Town 72 and (to a slightly lesser degree) Mukaigō.

8.3 THE SOCIAL CONTEXT OF EXOTIC ORNAMENTS IN MIDDLE JŌMON EXCHANGE NETWORKS

8.3.1 The roles of different types of beadstone in society

Traditionally, jadeite and amber distributions have been investigated most extensively—understandably so, because world-wide (even today) these materials have been valued because of their scarcity, unique properties as well as aesthetic beauty, and it is easy to assume that this has always been the case. More importantly, due to the limited production loci, their subsequent movements are easier to follow than those of other materials, including soapstone and serpentine. As we have seen, the preoccupation with jadeite and amber has been justified to some extent, as distinctions in both consumption and circulation contexts indicated a higher value. However, even ornaments made of ‘ordinary’ materials like sandstone and tuff should not be overlooked: although probably locally-made, their relatively frequent occurrence throughout Central Japan suggests that their part in Middle Jōmon society may also have been of some significance. Was it their role to complement or to replace more exotic ornaments? Or did this depend on the specific circumstances of the site?

The large number of sites in the sample with some form of stone ornament suggests that pendants in general played an important part in Middle Jōmon society. When further assuming that—besides their inherent attractiveness—the rarity of jadeite and amber increased their value and therefore the pressure of demand; and by taking generic human nature in account, it seems logical that groups of people (not necessarily individuals) may have competed with each other

to acquire these exotic ornaments and increase their own prestige. Failing this, settlements could have attempted to replace or supplement them with pendants from available materials instead.

There are various aspects which may indicate if alternative stone materials (also including materials like soapstone and serpentinite) could assume a similar role to jadeite pendants: it may be significant whether they are found at the same sites, during the same time periods, in the same contexts and whether they were produced and treated with similar care, or whether—pending the natural properties of the material—they were made to resemble traditional ‘bonito’ shapes. In several cases, they do. Unfortunately, the establishment of relative temporal connections usually is very difficult, especially if one of the ornaments was not located in a datable context (i.e. contained associated pottery). However, contexts such as Tsujisawaminami site, whereby two jadeite and one soapstone pendants were found in consecutive temporal contexts, indicate that the hypothesis that ‘alternative’ ornaments could be used as supplements or surrogates has some validity. Moreover, the fact that one distinctive quality of serpentinite and soapstone may include greenish colour overtones, and agate and jasper, yellow-brownish ones, may be a further support the hypothesis that they may have served as replacements for jadeite and amber ornaments, respectively.

It is assumed here that the scarcity of the material will be related to the value and the treatment of an object. The more exotic the material, the higher the attached value, and the more careful the treatment is likely to be. Looking at each specific case, it can then be established whether ornaments of more common materials were treated with significantly more indifference than ‘exotic’ ornaments, or treated much the same. If it turns out that this role varies per case, perhaps the reasons for such variation can be established through the character of the sites themselves (or, by default, on the supply status from the exchange network), and thus throw a clearer light on fluctuations in Middle Jōmon exchange economics. However, further research is necessary to establish the exact relationship between various types of beadstone materials.

8.3.2 The social role of Middle Jōmon Amber

The overwhelming majority of *amber* pendants has been found inside burial contexts, especially in the centre of large-scale settlements. Although not actually found directly associated with other prestige goods, valuable items like jadeite are also frequently found at the same sites. This is not only the case at the sites in the analysis described before; other references also described such contexts.

These examples confirm the findings from the sample, and add important information about the West Kantō distribution, which may have been under-represented in the sample. From the burial contexts and the description of the attractiveness of the items themselves, there is little doubt that in the West Kantō area amber pendants were also considered as precious

valuables. Relatively close to the amber source in the Chiba Peninsula itself, at Ariyoshikita as well as Higashinagayamano sites, amber was also valued, judging from the burial contexts. However, the highest demand appears to have been from the Mountain area, in terms of temporal consistency (from Early to Late Middle Jōmon), number of sites and number of items.

Temporally, all Central Japan amber finds seem to be largely confined to the Middle Jōmon, until the start of the Late Jōmon at the very latest—even in the Kantō area, which saw a population increase after the Middle Jōmon. What was the reason for this? Until we learn more about the complex processes of amber production and circulation, it is only possible to speculate. Either cultural preferences changed, and there was no longer an urgent demand for amber as a prestige good, or there were problems with supply: exchange networks may have broken down, or sources became exhausted. In any case, Awashimadai site was only occupied until the beginning of the Late Jōmon, and the majority of amber fragments were found associated with Middle Jōmon pottery. Could it be possible that the lack of post-Middle Jōmon amber finds in Central Japan is caused by a possible over-exploitation of the Chōshi source during the Middle Jōmon period, after which the amber source for Central Japan became exhausted?

So how did the exchange networks work? It is probable that the inhabitants of Awashimadai maintained at least some contacts with the Chūbu Mountain area, judging from the finds of Sori pottery. Moreover, some of the obsidian may have also been acquired via this area: Shinshū obsidian is of a high quality and was considered a likely option by early excavators (Ohba 1952: 52). Since the earliest Yatsugadake area finds date from the Early Middle Jōmon onwards, it is likely that this area has consistently been an important relation; amber travelled to the Chūbu via the Tama area and the Kōfu Basin, and several items stayed behind at important settlements. However, the rather early example of amber at Kurawa site in the Izu Islands suggests that the exchange relations may have been maintained with this obsidian supplier also; although more than a hundred km removed, marine contacts between these coastal areas were probably extensive, especially since most inhabitants (especially on the small Izu Islands) were probably dependent on their skill in marine resource exploitation, and the use of a boat or canoe in particular. Therefore it is highly likely that the majority of the obsidian at Awashimadai was actually of Kōzu Island origin.

Surprisingly, considering the differences in material type, the production processes of *amber* pendants appears to have had much in common with those of *jadeite*: the debitage indicates processes of percussion and flaking to acquire the desired form, followed by polishing and piercing. At Awashimadai, the associated presence of amber debitage and bead production tools (including grooved and flat whetstones also in use at Hokuriku jadeite pendant production sites), and a jade pendant—which was probably also derived from the Hokuriku—brings up the intriguing question about possible contact between these pendant production areas on opposite

coasts. Did the East Kantô amber producers perhaps adopt some technological ideas (e.g. polishing techniques; piercing) from the Jadeite Coast sometime during the mid-late Middle Jômon? From a chronological perspective this is possible: the Hokuriku area had a far older tradition of stone ornament production, as well as experience with 'difficult' materials: the first *jadeite* pendant dates from the Early Jômon. Furthermore, contemporaneous Jadeite Coast products—including those circulating at Chûbu and Kantô settlements—are generally 'bonito'-shaped, whereas the style of this Middle Jômon jade pendant is atypical. Furthermore, its spatial context is also peculiar: as the previous analysis has shown, the majority of Middle Jômon jadeite pendants (especially finished, undamaged ones) was found within settlement boundaries, not at special-purpose sites; moreover, jadeite circulation was usually restricted to the larger-scale, more densely populated 'core' settlement sites. Perhaps someone undertook the long voyage for an apprenticeship in bead production, to return with new technology, tools and a self-made jade pendant as model? Such a possibility is particularly intriguing viewed from the perspective of Mary Helms' hypothesis that the acquisition of esoteric knowledge from distant places is a fundamental aspect of long-distance contacts; learning secret skills involved with production of valued products—which may even have had 'supernatural' connotations—would certainly fall in that category (Helms 1988). However, so far I have not come across references to amber finds at the 'jadeite' production sites in the Hokuriku area—although my sample of these was admittedly very small. Hopefully future finds in both areas consisting of items characteristic of the other area will shed a light on these relations, but we may never know for certain.

Finally, Uchiyama's theory of amber circulation among prestigious hunters is a very likely one. First, a similar theory was also proposed for Mesolithic Scandinavian amber circulation (Nash 1998), in a society with a very similar economic basis to that of the Jômon. In the case of those Scandinavian examples, the occurrence of beautifully carved three-dimensional representations of desirable prey animals like elk, boar and duck certainly reinforces the association with hunting, and possession of these items suggests an element of 'magic' (e.g. as 'hunting amulet') as well as a possibility for distinguishing one's social position.

Second, with regard to the Middle Jômon sample, at most of the sample distribution sites, relatively large ratios of arrowheads and/or quantities of obsidian were found. This relative predominance of arrowheads and/or obsidian debitage was particularly obvious at large-scale settlements like Nashikubo and Tanabatake (both with advantageous access to obsidian sources) and Higashinagayamano—as well as at sites which were relatively smaller but still relatively near to obsidian sources—but also evident at the much smaller site Mukaihara, where despite only a few house remains, plenty of evidence of arrowhead production was found. Such evidence, although very limited, tentatively suggests that there probably *was* a connection with

hunting, though possibly an indirect one. It would be highly interesting to examine this possible association with hunting activities at other contemporaneous amber distribution sites in Central Japan. This would be particularly pertinent in relation to Western Kantô Plain sites around Tokyo: although this area had less direct access to obsidian (and the ratio of obsidian among arrowhead totals varied according to location), analysis—particularly in those cases where a larger sample was used—has indicated that various sources were used (Suzuki in Report 097, 1975: 120-3), possibly simultaneously; moreover, smaller, locally competing networks involving *chert* arrowheads may have been in operation to supplement obsidian arrowheads (Kôjô 1999).

Third, the particular properties of amber may also be relevant to a 'hunting' association, in a more symbolic, magical sense. Admittedly, this link owes more to speculation and is therefore more tentative than the previous ones, since it cannot be actually proven that Jômon people thought along such lines. Nevertheless, Fraquet may have hit upon an essential aspect of the potential esoteric value of amber, when she pointed out—albeit in connection to 'Primitive man' during the European Palaeolithic—that considering typical amber characteristics like colour, lightness, warmth and static electricity it was no surprise that this material was so attractive for use in hunting amulets (Fraquet 1988: 5).⁷¹ Amber is indeed always warm to the touch—perhaps it could be argued it feels almost 'alive'—at least compared to other mineral ornaments. Its clear but vibrant colours (sometimes even reddish) may reinforce this impression, creating another association with (animal) life. Moreover, its ability to 'attract' things may have made it particularly attractive for use as a kind of 'hunting amulet', attracting prey animals through sympathetic magic. In this latter context, the fact that many amber sites also contained jadeite, but—as far as I know— never within the same burials, is very interesting. In this context, the few finds of jasper and agate are perhaps more understandable. As suggested before, the colouring (yellow, reddish or brown) of these chalcedonite minerals is highly suggestive of that of amber; in fact amber and agate are often confused (site report 180c). If agate and jasper were indeed reminiscent of amber, perhaps this is related to the rather surprising presence of jasper pendants in Coastal West Kantô mortuary contexts in the sample, at Hazawadaidô and Kaminarimatsu sites.

Amber and jadeite are frequently found at the same sites (Nashikubo, Tanabatake, Tateishi and Higashinagayamano, but never together in the same (mortuary) context. The

⁷¹ Interestingly, the possible impact of such unique material properties has rarely been considered fully in archaeological discussions on the social value of amber (e.g. Shennan 1982, Beck & Shennan 1991, Du Gardin 1993). One possible reason is that the great majority of amber finds in Europe (apart from Scandinavia and closer to the source area) belongs to a much later period—Bronze Age or Iron Age—when the importance of hunting had clearly declined, and speculative associations between material properties and occupation or ownership are perhaps less obvious. In some cases, a reference is made to 'strange properties of the material itself and the unusual nature of its source in the sea'.

difference might be related to different temporal factors; in several cases amber appears to predate jadeite in datable contexts. Alternatively, 'owners' of jadeite and amber were not the same type of people; perhaps the distinction was based on social role and occupation. After all, large-scale settlements, with their higher population density, require the presence of skilled people for various tasks, and it is highly possible that the most able and respected ones wished to visually distinguish themselves with such ornaments.

Perhaps there is one more 'mystic' characteristic which is shared by jadeite and amber. Although from opposite geographical locations, during the Middle Jōmon both ornaments were usually acquired through collection of loose pebbles at the beach: jadeite because it is transported there by fast-flowing rivers, amber because it floated unto the beach from its marine deposits. It is no coincidence that both source areas described in this thesis are generally referred to by archaeologists as 'Jadeite Coast' and 'Amber Coast'. Watery origins have added mystique and value to precious beadstone throughout the world. As we have seen, according to Maori myth, jadeite was a beautiful fish which transformed into stone after being caught by a cultural hero on his way to New Zealand (Clark 1986). And as pointed out by Helms, during the Roman period the marine origin of amber—cast upon the shore after storms—was probably a factor which greatly added to its mystique and value (Helms 1988). Of course this idea is partly speculation, but it is nevertheless highly likely that for the Jōmon people a similar awe was associated with these 'water-born' materials. After all, for their subsistence the coastal Jōmon people always depended heavily on marine resources like salmon (e.g. Akazawa 1986, 1999). Perhaps this is the reason that jadeite and amber appear to be equally valued in areas close to their respective source, as at distant distribution sites. The esoteric power and value may have been perceived in a different way, but it was present near the source as well, as the finds of the two jadeite finished pendants in burials at Sakai A and the undamaged amber grave good at Higashinagayamano site (ca. 30km from Awashimadai) indicate.

8.3.3 The social role of jadeite pendants

Jadeite pendants in Central Japan are most concentrated in the Central Mountain area of Japan, in areas where obsidian exploitation took place. The great majority of jadeite pendants is found in Late Middle Jōmon contexts—frequently related to burials. Earlier Middle Jōmon jadeite items are generally found in general settlement contexts. This indicates an increased tendency to use jadeite as burial good during the Late Middle Jōmon. Amber, on the other hand, was also found in mortuary contexts during the Earlier Middle Jōmon. Moreover, unlike amber, jadeite is also frequently found in the Ina Valley, which did not have a connection with obsidian exploitation or production. Arrowheads occupy a relatively very low ratio in the toolkit in this

area, whereas tools for plant collection and processing (especially grindstones and querns) are very common.

Jadeite pendants are frequently found in burial contexts, particularly in the Yatsugadake area and around Suwa Lake, and in the West Kantô area. In the Ina Valley and Chiba Peninsula however, jadeite pendants are usually not found in mortuary contexts, but in a general settlement context. The fact that jadeite is always found in a settlement context (even when not associated with any particular structures) may be significant in itself. Some archaeologists have pointed toward the green colour and unbreakable nature of jadeite, and suggested its magical role in rejuvenation and rebirth of natural resources. Of course this cannot be proven without certainty, but in my opinion it is a good hypothesis, based on the unique properties of jadeite, and its association with settlement contexts (often at sites with a strong tendency towards clay figurine ritual, which may have served a similar purpose).

As for the distribution mechanisms of jadeite pendants, several suggestions have been made. It has been suggested that jadeite ornaments were pooled at core settlements and distributed to smaller satellite sites (Kurishima 1985). Some archaeologists (Kobayashi 1992a, Watanabe 1990) have suggested social differentiation on this basis, whereas Mizoguchi (2002) suggested reciprocal exchange between core and satellite sites, on the basis that co-operation was a necessary aspect of Jômon subsistence, and that any form of hierarchy would have been counterproductive. Ultimately, both are interesting theories but hard to assess on the basis of these data.

There is no evidence of social differentiation between *individuals* during the Middle Jômon; all structures—domestic as well as mortuary—are very homogeneous with regard to location within the settlement, general size (rebuilding of dwellings usually merely indicates family enlargement), shape and associated artefacts. Even burials with multiple jadeite items are not otherwise differentiated. Therefore, use of jadeite as a personal prestige object is just not likely. However, based on the results of my statistical analysis, I feel there is no conclusive evidence that competition between *settlements* was lacking. On the contrary, I believe it was probably quite strong. In general, only the bigger settlement sites have finished jadeite ornaments; if there is evidence of redistribution to related satellite sites (e.g. perhaps from Masunoshinkiri site towards Nakahara and Satomi V sites), it is quite weak: neither ‘satellite’ site possessed finished jadeite pendants, which conformed to the ‘bonito’ type.

Unfortunately concrete proof is still lacking, but I believe that perhaps the most likely context for jadeite pendant exchange is one that resembles certain aspects of the ‘*Kula*’ exchange of Melanesia: a valuable which circulated among sites in Central Japan, in order to create a social context for other types of exchange—social, ideological as well as economic. During the Late Middle Jômon, jadeite ornaments were no longer potentially dangerous alien

valuables, but had become ‘domesticated’ (cf. Chapman 2002) since their circulation started in the Early Jōmon period, several hundred years ago. Even more so, it is likely that many of the pendants were originally acquired during the first half of the Middle Jōmon, since many sites included small quantities of Hokuriku-style pottery from that phase. During this long period, these jadeite pendants no doubt built up their own personal biographies, and became associated with the prosperity of the larger sites that kept them. There are two reasons for this interpretation: (1) jadeite is one of the hardest objects known to Jōmon people, (2) jade colour is said to turn more intense and more green over time; both qualities may have been esteemed by the Jōmon, who relied on stability and replenishment of the natural (especially floral) environment, as shown by the predominance of plant processing tools in most site tool kit assemblages.

Especially in the context of the Later Middle Jōmon, when the population had increased exponentially, the establishment of good inter-site and interregional relationships would have been vital in order to ensure that in case of emergency, alternative resources could be acquired. In the context of jadeite circulation, ‘member’ sites carried out exchange relations—although they may not have enjoyed giving up the ornaments due to its magical and esoteric histories, and may have kept the best ones for themselves (cf. Weiner’s 1992 concept of ‘keeping while giving’ of inalienable valuables) context. This may explain why two of the jadeite ornaments at distant East Kantō large-scale core sites like Kusakari and Higashinagayamano were relatively poor in quality. Moreover, I would suggest that the frequent occurrence of jadeite in mortuary contexts was not merely evidence of a ‘personal’ grave good of a powerful shaman. Instead, considering the lack of other signs of personal role or rank differentiation, it is at least equally plausible to have been an attempt to withhold this valuable item from further circulation to other settlements, by sending it to the ‘next world’ with the deceased ritual expert: engaging in *exchange relations with the ultimate ‘Other’*. In this sense, including undamaged jadeite valuables in mortuary contexts may have been a form of sacrifice in order to ensure continued regeneration of natural resources and general prosperity, perhaps complementary to the ceremonial practices involving clay figurines, which are usually found at the same sites.

8.3.4 The roles of jadeite and amber pendants

In summary, it has been suggested here that jadeite pendants may have functioned as a kind of regeneration amulet of the natural world, and were probably kept by ritual leaders. As—possibly inalienable—valuables, jadeite *finished* pendants may have entered into exchange relations between the larger settlements, to facilitate other kinds of interaction. A competitive element to these exchanges among the large-scale settlements is very probable.

It is possible that the meaning of amber was complementary to that of jadeite: an amulet ensuring the continuation of faunal resources, through successful hunting, and was kept by leading hunter specialists—perhaps as another form of esoteric knowledge.

It goes without saying that further research is essential to assess the hypotheses stated above. Particularly further identification of the role of subsistence patterns and its relation with the presence of exotic ornaments are expected to give vital clues to the context of exotic ornament exchange in the Middle Jōmon period. Furthermore, comparisons with social contexts in other regions, and other periods may shed more light on the development of the changing role of jadeite ornaments in the Later Jōmon, inside mortuary contexts that *are* distinguished from others, by containing other valuables (Okamura 1993; Nakamura 2000), and the possible contribution of jade exchange to an increasing social differentiation. In these periods, the association with serpentinite adzes also appears to have become stronger (cf. Bausch forthcoming); however developments during the Later Jōmon lie beyond the scope of this dissertation.

CONCLUSION

This research set out to concretely investigate the dynamics behind exchange networks during the Middle Jōmon, and concentrated on the social and economic context of the exchange of exotic pendants in particular. The use of statistics allowed a quantification of the occurrences, explaining the background of the different distribution patterns. The results from the previous chapters have suggested that 'exotic' pendants like jadeite and amber occupied a special place in Middle Jōmon society; compared to other types of ornaments, their distribution was often limited to the larger, long-lived settlements, with evidence of other interregional contacts and ritual activities. Sites located at potential trade routes—particularly those close to the main rivers—were in a strategic position. Sites in the vicinity of other desirable stone materials, like the Mountain area obsidian, were also in a favoured position for the long-distance acquisition of exotic ornaments; for example, sites around the Suwa Lake and Yatsugadake managed to acquire more jadeite and more amber than any other area within the Central Japan sample.

The statistics showed some relation with variables. Sites with a long-term stable habitation were more likely to obtain exotic ornaments and other exchange items, probably because of long experience and long-standing contacts with other areas. Obsidian appears to have been a strong factor in the acquisition of 'exotic' ornaments, whereas there was no evidence that serpentinite adzes—although produced at the same sites as jadeite pendants—were associated with the circulation of the jadeite. It is likely that a ceremonial context was created for exotic ornament (and probably other types of exchange): most sites with 'exotic' ornaments contained evidence of either clay figurines or phallic stone rods, or both.

However, there were some temporal differences: most amber appears to have belonged to the Earlier part of the Middle Jōmon, whereas most jadeite—especially those found inside mortuary contexts—were located in Late Middle Jōmon contexts. Of course, interregional exchange was highly complex, and a great many items were exchanged—between relatively nearby sites, but also those further away. The knowledge of the range of exchange items is still relatively superficial; most studies tend to concentrate on a single exchange good or material, like obsidian or jadeite or sanukite. For example, it is highly possible that these Mountain sites also exchanged plant foods like nuts in addition to obsidian—this would explain the relatively high occurrence of jadeite in the Ina Valley, which is not as close to the obsidian source area—but concrete evidence for such exchange is still lacking.

Furthermore, the depositional context in which these 'exotic' pendants were found also set them apart from other artefacts: amber and jadeite were more frequently located in mortuary contexts than any other item (including other types of ornaments), indicating a special position. At the same time, however, there was little else to distinguish the supposed 'owner' of these

items, socially: burials and houses were in the same general location as other, contemporaneous structures; moreover, no other distinguishing goods were found in their immediate context. In the case of jadeite, finished pendants received a different treatment from other jadeite items, such as adzes and unprocessed nodules. It appears that finished pendants were perceived in a special way. However, this did not necessarily occur with increasing distance; interestingly, at the production sites, jadeite ornaments were also treated in a different way: both finished items at Sakai A site were found inside burials.

Finally, it has been suggested that the exchange (or rather circulation) of at least jadeite may have mainly functioned to create a social context for other types of exchange among large-scale settlements. During the Late Middle Jōmon, when increased population density suddenly put heavy pressure on the environment, the development of long-distance social networks (as a kind of security net) that created relations with more distant communities utilising different ecological niches, probably became an important aim for large-scale settlements.

There are various needs for future research. First and foremost, it is important to create more holistic reconstructions of exotic item networks, by taking more factors in consideration. In this research, site characteristics such as house numbers, length of habitation, presence of ritual evidence and of exotic materials from other areas have been used. However, one important and relevant aspect of settlements was excluded, due to lack of information: concrete evidence about subsistence was outside the scope of this dissertation. In future, research including all possible evidence about subsistence patterns (composition of the tool kit, but also making use of all available faunal and botanical recovery techniques) would provide a better picture of interregional exchange networks. For example, with the help of more elaborate subsistence data at sites, scarcity or surplus of certain food stuffs may help to interpret the presence of certain long-distance exchange items.

Furthermore, much could be gained from a study which integrates various kinds of exchange items, and incorporates more than one exchange type: materials for subsistence, for utilitarian tool purposes, for ritual objects, for objects with a special social function. It is highly possible that the value of some exchange items did not stay constant, but that its 'regime of value' changed in different spatial or temporal contexts.

Finally an intensive comparison between Middle Jōmon and Late Jōmon exchange networks and practices would add a great deal of information about changes in social reproduction within the Jōmon. Despite the occurrences of jadeite and amber in some mortuary contexts, there is no real indication of social differentiation during the Middle Jōmon; however preliminary research indicates that this more-or-less 'egalitarian' quality may have changed after the Middle Jōmon,

particularly in Northern Japan. In a forthcoming article (Bausch forthcoming [in Japanese]) I have suggested that the changing social reproduction during the Later Jōmon may have been affected by long-distance exchange, and vice versa. However, this was based on preliminary data, and there is an urgent need for further research.

In order to do such research, high standards of recording information are very important. It remains essential to record artefact materials and locational contexts within the sites. It is suggested here that only by paying greater attention to contexts, can the social meaning of Middle Jōmon exchange be properly understood. But this contextual approach includes various levels: the circumstances at the production site, during its circulation, and at the distribution site, where consumption (and ultimately deposition) finally takes place.

BIBLIOGRAPHY

ABE, Asaei. (In press). Axe trade in the Jōmon (in English). In C. Janik., S. Kaner & A. Matsui (eds.), *From the Jōmon to Star Carr*. Oxford: BAR.

ABE, Asaei. 1987. Masei sekifu seisan no yōsō [Aspects of the production of polished axes], Considerations I: Chapter 6, In Teramura, Aoki & Kanaseki (eds), *Shiseki Teraji Iseki* [Teraji site report; site no. 179], pp. 353-72. Niigata: Oomi Municipal Board of Education.

AIKENS, C.M. & DUMOND, D.E. 1986. Convergence and common heritage: some parallels in the archaeology of Japan and Western North America. In R.J. Pearson, G.L. Barnes & K.L. Hutterer (eds.) *Windows in the Japanese Past: studies in archaeology and prehistory*, , pp. 163-77. Ann Arbor: Univ. of Michigan.

AIKENS, C. Melvin & HIGUCHI, Takayasu. 1982. *The Prehistory of Japan*. New York: Academic Press.

AKAZAWA, Takeru. 1986. Hunter-gatherer adaptations and the transition to food production in Japan. In M. Zvevibel (ed.), *Hunters in Transition*, pp. 151-165. Cambridge: Cambridge University press.

AMMERMAN, Albert J. & POLGLASE, Christopher. 1993. New evidence on the exchange of obsidian in Italy. In C. Scarre and F. Healy (eds.), *Trade and Exchange in Prehistoric Europe. Proceedings of a Conference held at the University of Bristol, April 1992*, pp. 101-107. Oxford: Oxbow Books.

ANDŌ, Norikazu. 1995a (first published in 1982). Hisui [Jade]. In S. Katō, T. Kobayashi & T. Fujimoto (eds.), *Jōmon Bunka no Kenkyū vol. 8, Shakai to Bunka* [Society and Culture: Studies on Jōmon Culture vol. 8], pp. 180-192. Tokyo: Yūzankaku.

ANDŌ, Norikazu. 1995b (first published in 1982). Hisui taishū [Large pendants made of jadeite]. In S. Katō, T. Kobayashi & T. Fujimoto (eds.), *Jōmon Bunka no Kenkyū vol. 9, Jōmonjin no seishinbunka* [The Spirituality of Jōmon People: Studies on Jōmon Culture vol. 9], pp. 218-30. Tokyo: Yūzankaku.

APPADURAI, Arjun. 1986. Introduction: commodities and the politics of value. In Appadurai (ed), *The Social life of things*. Cambridge: Cambridge University Press.

BARNES, Gina L. 1986. 'Jiehao', 'tonghao': peer relations in East Asia. In C. Renfrew & J. Cherry (eds.), *Peer Polity Interaction and Socio-political Change*, pp. 79-92. Cambridge: University Press.

BARNES, Gina L. 1987. The role of the 'be' in the formation of Yamato state. In E. Brumfield & T.K. Earle (eds.), *Specialization, Exchange and Complex Societies*, pp. 86-102. Cambridge: Cambridge University Press.

BARNES, Gina L. 1993. *China, Korea and Japan: The Rise of Civilization in East Asia*. London: Thames and Hudson.

- BARNES, Gina L. & KANER, Simon. 1990. The Jōmon Period in Japan: a Western-language bibliography. In G. Barnes (ed.), *Hoabinhian, Jōmon, Yayoi, Early Korean States. Bibliographic reviews of Far Eastern Archaeology 1990*, pp. 49-62. Oxford: Oxbow Books.
- BARNES, Gina and OKITA, Masaaki. 1999. Japanese archaeology in the 1990s. *Journal of Archaeological Research* 7: 349-395.
- BARRETT, John C. 1994. *Fragments from Antiquity: An archaeology of Social Life in Britain, 2900-1200 BC*. Oxford: Blackwell.
- BAUSCH, I.R. 2004. Hisui no umi no monogatari: Jōmon no daikōekimō to hisui kaigan no shakaiteki inpakuto [A tale of the Jadeite Coast: long-distance exchange networks and the social impact of the Japan Sea Coast]. In H. Kanaseki, S. Nakai, J. Uchiyama & K. Takahashi (eds.), *Higashi Ajia no kaiyō kankyō to Nihonkai engan bunka* [The Oceanic Environment of East Asia and the Japan Sea coastal cultures]. Toyama: Katsura-shōbo.
- BAUSCH, I.R. (In press). Some considerations on Jomon serpentinite polished adze and jadeite ornament production sites along the Japan Sea Coast. *Bulletin of the International Jōmon Culture Conference* 1.
- BAUSCH, I.R. (In press). Fragmentation practices in Central Japan: Middle Jōmon clay figurines at Shakadō. In J. Chapman & E. Banfy (eds.).
- BAUSCH, I.R. unpublished. Clay Figurines and Ritual in the Middle Jōmon Period—a case study of the Shakadō site in the Kōfu Basin. 1994 MA dissertation, University of Leiden, Netherlands.
- BECK, Curt & SHENNAN, Stephen. 1991. *Amber in Prehistoric Britain*. Oxbow Monograph 8. Oxford: Oxbow Books.
- BINFORD, L. R. 1962. Archaeology as Anthropology. *American Antiquity* 28/2: 217-225.
- BINFORD, L. R. 1980. Willow smoke and dog's tails: hunter-gatherer settlement systems and archaeological site formation. *American Antiquity* 45: 4-20.
- BINFORD, L. R. 1981. *Bones: Ancient Man and Modern Myths*. Studies in Archaeology. New York, London: Academic Press.
- BINFORD, L. R. 1983. *In Pursuit of the Past*. London: Thames and Hudson.
- BOURDIEU, Pierre. 1977. *Outline of a theory of Practice*. Cambridge University Press.
- BRADLEY, Richard & EDMONDS, Mark. 1993. *Interpreting the Axe Trade. Production and exchange in Neolithic Britain*. Cambridge: Cambridge University Press.
- BRAUN, David P. 1986. Midwestern Hopewellian exchange and supralocal interaction. In C. Renfrew and J.F. Cherry (eds.), *Peer Polity Interaction and Socio-political Change*, pp. 117-126. Cambridge: Cambridge University Press.
- CARNEIRO, R.L. 1962. Scale Analysis as an instrument for the study of cultural evolution. *Southwestern Journal of Anthropology* 18: 149-169.
- CHAPMAN, John. 2002. Domesticating the exotic: the context of Cucuteni-Tripolye exchange with steppe and forest-steppe communities. In K. Boyle, C. Renfrew and M. Levine (eds.),

Ancient Interactions: east and West in Eurasia, pp. 75-91. McDonald Institute Monographs. Oxford: Oxbow Books.

CHINO-CITY TOGARIISHI ARCHAEOLOGICAL MUSEUM (eds.). 1996. *Togariishi Kôkokan Zuroku* [Togariishi Museum Catalogue]. Nagano Pref., Chino-city: Togariishi Archaeological Museum.

CHOJAGAHARA SITE ARCHAEOLOGICAL MUSEUM (eds.). 2000. *Umoreru daishuraku chojagahara—hisui no furusato* [Site museum brochure: The buried large settlement Chojagahara—the home of jadeite]. Oomi-city: Chôjagahara Chôjagahara site museum.

CLARK, Grahame. 1965. Traffic in stone adze and axe blades. *The Economic History Review* 18:1-28.

CLARK, Grahame. 1988. *Symbols of excellence: precious materials as expressions of status*. Cambridge: University Press.

CLAY FIGURINE RESEARCH GROUP (eds.). 1996. *Chûbu Kôchi wo torimaku Chûki no dogû* [Middle Jômon clay figurines surrounding the Central Mountain highlands]. (4th Dogû Symposium). Nagano: Nobukazu Shoseki Shuppancenter.

DALTON, George. 1977. Aboriginal economies in stateless societies. In T. Earle & J. Ericson (eds.), *Exchange systems in Prehistory*, pp. 191-210. London: Academic Press.

DU GARDIN, Colette. 1993. The circulation of amber in Prehistoric Europe. In C. Scarre and F. Healy (eds.), *Trade and Exchange in Prehistoric Europe. Proceedings of a Conference held at the University of Bristol, April 1992*, pp. 131-133. Oxford: Oxbow Books.

EARLE, Timothy. 1982. Prehistoric economics and the archaeology of exchange. In Earle & Ericson (eds.), *Contexts for Prehistoric Exchange*, pp. 1-12. NY: Academic Press.

EARLE, T.K. & ERICSON, J.E. (eds.) 1977. *Exchange Systems in Prehistory*. NY: Academic Press.

EARLE, T.K. & Ericson J.E. 1977. Exchange systems in archaeological perspective. In Earle & Ericson (eds.), *Exchange systems in Prehistory*, pp. 3-12. NY: Academic Press.

EARLE, T.K. & ERICSON, J.E. (eds.) 1982. *Contexts for Prehistoric Exchange*. NY: Academic Press.

EDMONDS, Mark. 1993. Towards a context for production and exchange: the polished stone axe in earlier Neolithic Britain. In C. Scarre and F. Healy (eds.), *Trade and Exchange in Prehistoric Europe. Proceedings of a Conference held at the University of Bristol, April 1992*, pp. 69-85. Oxford: Oxbow Books.

ESAKA, Teruya (ed.). 1973. *Kodaishi Hakkutsu 2: Jômon doki to kaizuka* [Excavating Prehistory vol. 2: Jômon pottery and shell middens]. Tokyo: Kodansha.

ESAKA, Teruya & WATANABE, Makoto, 1988. 'Pendant to Nekuresu' [Pendants and Necklaces]. In *Sôshingu to kokkakusei gyôgu no chishiki*, pp. 5-26. Kôkogaku Series no. 13. Tokyo Bijutsu.

- FAWCETT, Clare. 1996. Archaeology and Japanese Identity. In D. Denoon, M. Hudson, G. McCormack & T. Morris-Suzuki (eds.), *Multicultural Japan: Palaeolithic to Postmodern*, pp. 60-77. Cambridge University Press.
- FLETCHER, Mike & LOCK, Gary E. 1994. *Digging numbers—elementary statistics for archaeologists*. Oxford: Oxford University Committee for Archaeology.
- FRAQUET, Helen. 1987. *Amber* (Butterworths gem books). London: Butterworth.
- FUJI, Norio. 1975. Hokuriku no kaigan-sakyu [Coastal dunes in Hokuriku]. *Dai Yonki Kenkyū* 14/4: 195-220.
- FUJIMORI, Eiichi. 1970. *Jōmon Nōkō* [Jōmon agriculture]. Tokyo: Gakuseisha.
- FUJITA, Fujio. 1983. 'Jōmon ~ Kōfun jidai no gyokusei sōshingu—seisan to ryūtsu' [Beadstone ornaments from the Jōmon to the Kōfun periods- their production and circulation]. *Kikan Kōkōgaku* 5: 30-4.
- GAMBLE, Clive. 1993. Exchange, foraging and Local Hominid Networks. In C. Scarre and F. Healy (eds.), *Trade and Exchange in Prehistoric Europe*, pp. 35-44. Oxford: Oxbow.
- GIDDENS, Anthony. 1979. *Central Problems in Social Theory: Action, Structure and Contradiction in Social Analysis*. MacMillan Education: Basingstoke and London.
- GIDDENS, Anthony. 1981. *A Contemporary Critique of Historical Materialism: Vol. 1 Power, property and the State*. Contemporary Social Theory, series editor: A. Giddens. MacMillan Press: London and Basingstoke.
- GOMI, Shingo. 1993. Kohakusei suishoku ni tsuite [Concerning the amber pendants]. In S. Yamamoto and S. Gomi (eds), *Yamanashiken Kitakyōma-gun Oizumi-mura Kabutsuppara iseki gaihō, 4th chōsa* [sample site report 48b], pp. 15. Nakamichi: Yamanashi Board of Education.
- GREGORY, C. A. 1982. *Gifts and commodities*. London etc: Academic Press
- GRIBBLE, C.D. (rev). 1988. *Rutley's Elements of Mineralogy, 27th edition*. London: Unwin Hyman.
- HABU, Junko. 2001. *Subsistence-Settlement Systems and Intersite Variability in the Moroiso Phase of the Early Jōmon Period of Japan*. International Monographs in Prehistory.
- HARADA, Masayuki. 1995. *Dōgu. Nihon no Bijutsu no. 345* [Clay Figurines; 'Japan Fine Arts' series, no. 345]. Tokyo: Yoshibundō.
- HARADA, Masayuki. 1988. Jōmonjin no yosoi [The personal adornment of the Jōmon people]. In T. Kobayashi (ed.), *Jōmonjin no Dōgu. Kodaishi Fukugen 3* [Tools of the Jōmon people: Reconstruction of Ancient Times vol. 3], pp. 121-127; 130-136. Tokyo: Kōdansha.
- HARUNARI, Hideji. 1986. Rules of residence in the Jōmon period, based on the analysis of tooth extraction. In R. Pearson, G. L. Barnes, K. Hutterer (eds.), *Windows on the Japanese Past*, 293-310. Ann Arbor: Centre for Japanese Studies, University of Michigan.
- HAYASHI, Kensaku. 1993~95. Jōmon jidai: Jōmonjin no Ryōiki [Jōmon period: Territories of the Jōmon people] (a range of articles). *Kikan Kōkōgaku* 40: 89-96 ; 41: 89-96; 42: 87-94; 43: 91-98; 44: 95-102; 45: 93-99; 46: 89-96.

- HELMS, Mary W. 1988. *Ulysses' Sail. An ethnographic odyssey of power, knowledge and geographical distance*. New Jersey: Princeton University Press.
- HODDER, Ian. 1982a. *Symbols in Action- Ethnoarchaeological Studies of Material Culture*. Cambridge: Cambridge University Press.
- HODDER, Ian. 1982b. Towards a contextual approach to prehistoric exchange. In J. Ericson and T. Earle (eds.), *Contexts for Prehistoric Exchange*, pp. 199-211. New York: Academic Press.
- HODDER, Ian & LANE, Paul. 1982. A contextual examination of Neolithic axe distribution in Britain. In J. Ericson and T. Earle (eds.), *Contexts for Prehistoric Exchange*, pp. 213-35. New York: Academic Press.
- HODDER, I. & ORTON, C. 1976. *Spatial Analysis in Archaeology*. Cambridge: University Press.
- HUDSON, Mark & YAMAGATA, Mariko. 1992. Introduction to Kobayashi Tatsuo's "Regional organization in the Jōmon period". *Arctic Anthropology* 29/1: 82-85.
- IKAWA-SMITH, Fumiko. 1986. Pleistocene and Holocene Technologies. In Pearson et al. 1986: 199-216. Ann Arbor: Centre for Japanese Studies, Univ. of Michigan.
- IMAMURA, Keiji. 1996. *Prehistoric Japan: new perspectives on insular East Asia*. London: UCL Press.
- JOHNSON, Matthew. 1999. *Archaeological Theory: an introduction*. Oxford: Blackwell.
- JONES, Sian. 1997. *The Archaeology of Ethnicity. Constructing identities in the past and present*. London & New York: Routledge.
- KANAGAWA PREFECTURAL CENTRE FOR BURIED CULTURAL PROPERTIES (eds.). 1988. *Sagamihara-shi Shindo iseki chōsa no gaiyō* [Interim report on the excavation of Shindo site, Sagamihara-city]. Kanagawa: Prefectural Centre for Buried Cultural Properties.
- KANAGAWA PREFECTURAL CENTRE FOR BURIED CULTURAL PROPERTIES (eds.). 1997. *Mimikazari to Kodai no Mōdo* [The fashion of earrings in ancient times] (museum catalogue). Kanagawa: Prefectural Centre for Buried Cultural Properties.
- KANER, Simon. 1990. The Western-language Jōmon: a review. In G. Barnes (ed.), *Hoabinhian, Jōmon, Yayoi, Early Korean States. Bibliographic reviews of Far Eastern Archaeology 1990*, pp. 31-48. Oxford: Oxbow Books.
- KANER, Simon. 1996. Beyond ethnicity and emergence in Japanese archaeology. In D. Denoon, M. Hudson, G. McCormack & T. Morris-Suzuki (eds.), *Multicultural Japan: Palaeolithic to Postmodern*, pp. 46-59. Cambridge University Press.
- KANEYAMA, Yoshiaki. 1992. 'Jōmonjidai: Sekizai' [Jōmon period: stone materials]. In A. Ono, H. Harunari, & S. Oda (eds), *Zūkai, Nihon no jinrui iseki*, pp. 78-81. Nihon daiyonkigakkai. Tokyo: Tokyo Daigaku Shuppankai.
- KANEYAMA, Yoshiaki. 1998. 'Shūrakukan no kōryū to kōeki' [Exchange and trade between settlements]. *Kikan Kōkōgaku* 64: 59-63.

- KATO, Shinpei; KOBAYASHI, Tatsuo & FUJIMOTO, Tsuyoshi (eds.). 1995 (first published in 1982). *Jōmon Bunka no Kenkyū* [Studies of the Jōmon period] 10 volumes; second edition. Tokyo: Yuzankaku.
- KATO, Shinpei. 1987. The Jōmon culture. In K. Tsuboi (ed.), *Recent Archaeological Discoveries in Japan*, pp. 24-36. Paris: UNESCO.
- KIDDER, J.E. Jr. 1966. *Japan Before Buddhism*. Thames and Hudson: London
- KIDDER, J.E. Jr. 1991. *Ritual in the Late Jōmon Period* (paper). Tokyo: International Christian University.
- KOBAYASHI, Tatsuo. 1974. Behavioural patterns reflected in pottery remains—the Jōmon period. *Arctic Anthropology* XI-supplement: 163-70.
- KOBAYASHI, Tatsuo. 1983. Jōmonjidai ryōiki-ron [Theories of Territory in the Jōmon Period]. in *Nihon Shigakuronshū* (Published In Honour of Dr. Sakamotou Tarō), 03-19. Tokyo: Yoshikawa Hiroshi Bunkan.
- KOBAYASHI, Tatsuo. 1986. Genshi shūroku [Earliest Settlements]. In *Nihon Kōkōgaku* 4, Chapter 2. Tokyo: Iwanami Kōza. 38-73.
- KOBAYASHI, Tatsuo. 1986b. Trends in administrative salvage archaeology. In R.J. Pearson, G.L. Barnes & K.L. Hutterer (eds.), *Windows in the Japanese Past: studies in archaeology and prehistory*, pp. 491-496. Ann Arbor: Univ. of Michigan.
- KOBAYASHI, Tatsuo (ed.). 1988. *Jōmon Doki Taikan vol. 2 + 3: Chūki I + II* [General view of Jōmon pottery, vol. 2 and 3: Middle Jōmon part I and II]. Tokyo: Kōgakkan.
- KOBAYASHI, Tatsuo. 1992a. Patterns and levels of social complexity in Jōmon Japan. In C.M. Aikens and Song Nai Rhee (eds.), *Pacific Northeast Asia in Prehistory. Hunter-fisher-gatherers, Farmers, and Sociopolitical Elites*, pp. 91-6. Washington State University Press.
- KOBAYASHI, Tatsuo. 1992b. Regional organization in the Jōmon period. Translated and introduced by M. Hudson & M. Yamagata. *Arctic Anthropology* 29/1: 82-95.
- KOBAYASHI, Tatsuo. 1996. *Jōmonjin no sekai. Asahi Sensho* 557 [The world of the Jōmon people. Asahi Sensho series no. 557]. Tokyo: Asahi Shinbunsha.
- KOBAYASHI, Yasuo et al. 1995. 'Jōmon jidai no seikatsu to bunka' [Life and culture in the Jōmon period]. In Shiojiri Shishihensan Iinkai (eds.) 1995, *Shiojiri no genshi*, pp. 139-154. Shiojiri Shishihensan Iinkai.
- KODANSHA (ed.). 1991. *Japan: a Bilingual Atlas*. Tokyo, NY & London: Kodansha International.
- KOIKE, Hiroko. 1986. Prehistoric hunting pressure and paleobiomass: an environmental reconstruction and archaeozoological analysis of a Jōmon shellmound Area. In Takeru Akazawa and C.M. Aikens (eds.), *Prehistoric Hunter-Gatherers in Japan: new research methods*, pp. 27-53. Tokyo: University of Tokyo Press.
- KOJŌ, Yasushi. 1999. Jōmonjidai ni okeru cha-to no kōkan soshiki [The organization of the exchange of chert in the Jōmon period]. *Kōkōgaku Kenkyū* 45:89-100.

- KOYAMA, Shuzo. 1978. Jōmon subsistence and population [In English]. *Senri Ethnological Studies* 2:1-65.
- KOYAMA, Shuzo. 1981. A quantitative study of wild food resources: an example from Hida [In English]. In S. Koyama & D.H. Thomas (eds.), *Affluent Foragers. Pacific Coasts East and West*, pp. 91-115. Osaka: National Museum of Ethnology.
- KURISHIMA, Yoshiaki. 1985. 'Kōgyokusei taishu no kōdai na bunpuken'. [The wide distribution sphere of jadeite large beads]. *Kikan Kōkōgaku* 12: 39-42.
- LEE, Richard B. 1968. What Hunters Do for a Living, or, How to Make Out on Scarce Resources. In R. B. Lee & I. DeVore (eds.), *Man the Hunter*, pp. 30-48. Chicago: Aldine.
- LUCY, Sam. 1998. *The Early Anglo-Saxon Cemeteries of East Yorkshire. An analysis and reinterpretation*. Oxford: British Archaeology Reports, British Series 272.
- MAEYAMA, Kiyooki. 1985. Niigata-ken Chōjagahara isseki—hisuigensanchi no iseki [Chōjagahara site, Niigata prefecture: site in the jadeite source area]. In M. Tozawa (ed.), *Jomon no iseki—higashi nihon-hen* [Jōmon sites in Eastern Japan], pp. 475-82. Tokyo: Yūhikaku.
- MALINOWSKI, Bronislaw. 1922. *Argonauts of the Western Pacific : an account of native enterprise and adventure in the archipelagoes of Melanesian New Guinea*. London: G. Routledge.
- MATSUI, Akira. 1996. Archaeological investigations of anadromous salmonid fishing in Japan. *World Archaeology* 27: 444-460.
- MATSUSHITA, Wataru. 1982 [1995]. Kōhaku [Amber]. In S. Katō, T. Kobayashi & T. Fujimoto (eds.), *Jōmon Bunka no Kenkyū vol. 8, Shakai to Bunka*, pp. 193-204. Tokyo: Yūzankaku.
- MATSUYAMA, Toshio. 1981. Nut gathering and processing methods in traditional Japanese villages. In S. Koyama & D.H. Thomas (eds.), *Affluent Foragers. Pacific Coasts East and West*, pp. 117-139. Osaka: National Museum of Ethnology.
- MAUSS, Marcel. 1974 (first published 1925). *The Gift: forms and functions of exchange in archaic societies*. London: Routledge & Kegan Paul.
- McBRYDE, Isabel. 1979. Petrology and prehistory: lithic evidence for exploitation of stone resources and exchange systems in Austria. In T. Clough and W. Cummins (eds.), *Stone Axe Studies*, pp. 113-124. London: Council for British Archaeology.
- McBRYDE, Isabel and HARRISON, Graham. 1981. Valued goods or valuable stone? Consideration of some aspects of the distribution of greenstone artefacts in southeastern Australia. In F. Leach and J. Davidson (eds.), *Archaeological Studies of Pacific Stone Resources*, pp. 183-208. Oxford: British Archaeological Reports.
- MIZOGUCHI, Kōji. 2002. *An Archaeological History of Japan: 30,000 B.C. to A.D. 700*. Philadelphia: University of Pennsylvania Press.
- MIZUNO, Masayoshi. 1974. Dogū saishiki no fukugen [The reconstruction of clay figurine ceremonies]. *Shinano* 26/4: 12-26.

- MULLER, Jon. 1987. Salt, chert and shell: Mississippian exchange and economy. In E. Brumfield and T. Earle (eds.), *Specialisation, Exchange in Complex Societies*, pp. 10-21. Cambridge: University Press.
- NAGAMINE, Mitsukazu. 1986. Clay Figurines and Jōmon Society. In R. Pearson, G.L. Barnes, K. Hutterer (eds.), *Windows on the Japanese Past*, pp. 255-265. Ann Arbor: Centre for Japanese Studies, University of Michigan.
- NAKAMURA, Oki. 2000. Saishū shūryōmin no fukusō kōi—Jōmon bunka [the burial traditions of Hunter-gatherers: the Jōmon culture]. *Kikan Kōkōgaku* 70:19-23.
- NARUSE, You. 1985a. Karyū no heiya to kaigan no satai: Niigata heiya [Downstream of the plains and sandbelt of the coast: Niigata Plain]. In S. Kaizuka, Y. Naruse, Y. Ohta (eds.), *Nihon no Heiya to Kaigan*, [The plains and coasts of Japan], pp. 56-63. Tokyo: Iwanami.
- NARUSE, You. 1985b. Kōzan to Shinkai no aida no heiya [The plains between high mountains and deep seas]. In S. Kaizuka, Y. Naruse, Y. Ohta (eds.), *Nihon no Heiya to Kaigan* [The plains and coasts of Japan], pp. 63-71; Tokyo: Iwanami.
- NASH, George. 1998. *Exchange, Status and Mobility: Mesolithic portable art of southern Scandinavia*. BAR International series no. 710. Oxford: British Archaeology Reports.
- NAUMANN, Nelly. 1975. Some Remarks concerning Jōmon Religion. *Minzokugaku Kenkyū* 39: 277-297.
- NAUMANN, Nelly. 2000. *Japanese Prehistory. The material and spiritual culture of the Jōmon period*. Wiesbaden: Harrassowitz Verlag.
- NOGUCHI, Yoshimaru. 1952. Sekkijidai no kohaku ni tsuite [Concerning stone age amber]. *Kōkōgaku Zasshi* 38: 65-7.
- NOGUCHI, Yoshimaru. 1973. Awashimadai iseki 1973 nenchōsa no igi [The significance of the 1973 Awashimadai survey]. In *site report no. 176b*, pp. 10. Chōshi-city: Chōshi Municipal Board of Education.
- NOGUCHI, Yoshimaru and ESAKA, Teruya. 1979. *Kodaishi Hakkutsu 3: Dogū geijutsu to shinkō*. [Excavating Prehistory vol. 3: the art and spirituality of clay figurines]. Tokyo: Kodansha.
- OGAWA, Hidefumi. 2002. Images of Jōmon hunter-gatherers represented by Japanese archaeology. In H. Stewart, A. Barnard & K. Omura (eds.), *Self- and Other-Images of Hunter-Gatherers*, Senri Ethnological Studies 60, pp. 183-9. Osaka: National Museum of Ethnology.
- OHBA, Iwao (ed.) 1952. *Chiba-ken Chōshi-shi Awashimadai Sekki Jidai Iseki Chōsa Hōkoku*. [The excavation report of Chiba Prefecture Chōshi-city Awashimadai Stone Age site]. Chōshi: Chōshi-city Koseishiminkan.
- OKADA, Yasuhiro. 1995. Aomori Sannai-Maruyama iseki [Sannai-maruyama site in Aomori prefecture]. In T. Kobayashi (ed.), *Jōmonjidai ni okeru shizen no shakaika* [The socialisation of nature during the Jōmon period], pp. 10-29. Supplement 6 of *Kikan Kōkōgaku*. Tokyo: Yūzankaku.
- OKAMURA, Michio. 1993. 'Maisō ni kakawaru ibutsu no shutsudo jōtai kara mita Jōmonjidaino bosōrei' [Jōmon period funerary customs, as seen from the context of artefacts

- connected with burial] In M. Tanaka, and M. Sahara (eds.), *Ron'en Kôkogaku*, pp. 47-119. Tokyo: Tenzanya.
- OKAMURA, Michio. 1995a. Hinatabayashi B. In Bunkachô (eds), *Hakkutsu sareta Nihon Rettô: 1995 Shinhakken Kôko Sokuhô*. [Excavations in the Japanese archipelago in 1995: a quick report of new discoveries], pp. 12-3; 68. Tokyo: Asahi Shinbun.
- OKAMURA, Michio. 1995b. Sannai Maruyama [Sannai-Maruyama site]. In Bunkachô (eds), *Hakkutsu sareta Nihon Rettô: 1995 Shinhakken Kôko Sokuhô*. [Excavations in the Japanese archipelago in 1995: a quick report of new discoveries], pp. 20-8; 71-3. Tokyo: Asahi Shinbun.
- ONO, Masafumi. 1985. Yamanashi-ken Shakadô iseki-gun: Dogû to Jômonjin no Shinkô [The Shakadô site group in Yamanashi pref: clay figurines and the belief of Jômon people]. In M. Tozawa (ed.), *Jômon no iseki* [Jômon sites], pp. 399-406. Tokyo: Yuzankaku.
- OTA, Michio. 1992. Toyama no syoyoujirin [Evergreen forests in Toyama]. *Tenji Risaachi Bokku-sizensi/tenmon* [Exhibition Research Book: Natural history and astronomy], pp. 25. Toyama: Science Museum.
- PEARSON, R., BARNES, G.L. & HUTTERER, K. (eds.). 1986. *Windows on the Japanese Past: studies in archaeology*. Ann Arbor: Center for Japanese Studies, Univ. of Michigan.
- PÉTREQUIN, Pierre, JEUDY, Françoise & JEUNESSE, Christian. 1993. Neolithic quarries, the exchange of axes and social control in the southern Vosges. In C. Scarre and F. Healy (eds.), *Trade and Exchange in Prehistoric Europe. Proceedings of a Conference held at the University of Bristol, April 1992*, pp. 45-60. Oxford: Oxbow Books.
- PIRES-FERREIRA, Janet W. 1976a. Obsidian exchange in formative Mesoamerica. In K. Flannery (ed.), *The Early Mesoamerican Village*, pp. 292-306. New York: Academic Press.
- PIRES-FERREIRA, Janet W. 1976b. Shell and iron-ore mirror exchange in formative Mesoamerica, with comments on other commodities. In K. Flannery (ed.), *The Early Mesoamerican Village*, pp. 311-28. New York: Academic Press.
- PIRES-FERREIRA, Janet W. & FLANNERY, Kent V. 1976. Ethnographic models for formative exchange. In K. Flannery (ed.), *The Early Mesoamerican Village*, pp. 286-92. New York: Academic Press.
- PLOG, F. 1977. Modeling economic exchange. In T. Earle & J. Ericson (eds.), *Exchange systems in Prehistory*, pp. 127-140. London etc: Academic Press.
- POLANYI, Karl. 1957. The economy as instituted process. In K. Polanyi, C.M. Arensberg & H.W. Pearson (eds.), *Trade and Market in the Early Empires*, pp. 243-270. Glencoe, Illinois: Free Press.
- RENFREW, Colin. 1975. Trade as action at a distance: questions of integration and communication. In Sabloff & Lamberg-Karlovsky (eds.), *Ancient Civilization and Trade*, pp. 3-60. Albuquerque: Univ. Of New Mexico Press
- RENFREW, Colin. 1977. Alternative models for exchange and spatial distribution. In Earle & Ericson (eds.), *Exchange systems in Prehistory*, pp. 71-90. London etc: Academic Press.
- RENFREW, Colin. 1993. Trade beyond the material. In SCARRE, C. and HEALY, F. (eds.), *Trade and Exchange in Prehistoric Europe*, 5-16. Oxford: Oxbow Books.

- RENFREW, C. & BAHN, P. 1991. *Archaeology: Theory, Method and Practice*. London: Thames and Hudson.
- RICQ-de BOUARD, Monique. 1993. Trade in Neolithic jadeite axes from the Alps: new data. In C. Scarre and F. Healy (eds.), *Trade and Exchange in Prehistoric Europe. Proceedings of a Conference held at the University of Bristol, April 1992*, pp. 61-67. Oxford: Oxbow Books.
- ROWLEY-CONWY, Peter. 1983. Sedentary hunters: the Ertebølle example. In G. Bailey (ed.), *Hunter-gatherer Economy in Prehistory—a European Perspective*, pp. 111-126. Cambridge: Cambridge University Press.
- SAHLINS, Marshall. 1974. *Stone Age Economics*. London: Tavistock Publications.
- SASAKI, Fujio. 1982. Jōmonjidai no tsūkonken [The range of intermarriage in the Jōmon period]. *Shinano* 33, 9: 45-73.
- SASAKI, Kōmei. 1991. *Nihonshi Tanjō* [The birth of Japanese history]. (Nihon no Rekishi 1). Tokyo: Shūeisha.
- SAXE, A.A. 1970. *Social Dimensions of Mortuary Practices*. Unpublished PhD dissertation, University of Michigan.
- SCARRE, Chris & HEALY, Frances (eds.). 1993. *Trade and Exchange in Prehistoric Europe. Proceedings of a conference held at the University of Bristol, April 1992*. Oxford: Oxbow (in association with The Prehistoric Society and the Société Préhistorique Française).
- SHENNAN, Stephen. 1982. Exchange and ranking: the role of amber in the earlier bronze age of Europe. In C. Renfrew and S. Shennan (eds.), *Ranking, resource and exchange: aspects of the archaeology of Early European society*, pp. 33-45. Cambridge: University Press.
- SHENNAN, Stephen. 1986. Interaction and change in third millennium BC western and central Europe. In C. Renfrew and J.F. Cherry (eds.), *Peer Polity Interaction and Socio-Political Change*, pp. 137-48. Cambridge: Cambridge University Press.
- SHENNAN, Stephen. 1994 (first published 1989). Introduction: archaeological approaches to cultural identity'. In S.J. Shennan (ed.), *Archaeological Approaches to Cultural Identity*, pp. 1-32. *One World Archaeology* vol. 10. London & NY: Routledge.
- SHIBATA, Akira. 1990. Sekki, reki no sekizai ni tsuite [Concerning the materials of stone tools]. In *Shinten-Oohara iseki*, (site report no. 138), pp. 150-6.
- SHIOJIRI EDITORIAL BOARD FOR SHIOJIRI MUNICIPAL RECORDS (SEBSMR). Shiojiri Shishihensan Iinkai (eds.). 1995. *Shiojiri no genshi* [The origins of Shiojiri city] Shiojiri Municipal Records part II: History]. Shiojiri: Editorial Board for Shiojiri Municipal Records.
- SHIOJIRI MUNICIPAL HIRAIDE SITE ARCHAEOLOGICAL MUSEUM (SMHSAM) Shiojiri shiritsu Hiraide Iseki Kōkogakuhakubutsukan (eds.). 1995. *Jōmon no Mura—Shiojiri no iseki kara* [Jōmon villages: the sites from around Shiojiri city]. Shiojiri: Hiraide Iseki Kōkogaku Hakubutsukan.
- SUZUKI, Masao. 1973. 'Chronology of prehistoric Human activity in Kantō, Japan: part I—Framework for reconstructing prehistoric human activity in obsidian'. *Journal of the Faculty of Science, the University of Tokyo* 5 vol. 4 part 3: 241-318.

- SUZUKI, Masao. 1974. 'Chronology of prehistoric Human activity in Kantô, Japan: part II—Time-space analysis of obsidian transportation'. *Journal of the Faculty of Science, the University of Tokyo* 5 vol. 4 part 4: 395-469.
- SUZUKI, Michinosuke 1994 (1st edition 1991). (Zuroku) *Sekki Nyûmon Jiten: Jômon* [Illustrated Introduction Encyclopedia of Stone Tools: the Jômon period]. Tokyo: Kashiwa (Shobô).
- SYDRIS, Raymond. 1977. Mass-distance measures for the Maya obsidian trade. In T. Earle & J. Ericson (eds.), *Exchange systems in Prehistory*, pp. 91-107. London etc: Academic Press.
- TAKAHASHI, Ryuzaburo, TOIZUMI, Takeji & KOJO, Yasushi. 1998. Archaeological studies of Japan: current studies of the Jomon period. *Nihon Kokogaku (Journal of the Japanese Archaeological Association)* 5: 47-72.
- TERAMURA, Mitsuharu. 1987. Kôgyoku kôbôshi to kôgyokugijutsu—Teraji iseki no kôgyokuseisan wo megutte [Jadeite bead production spots and the techniques of 'cutting beads— focussing on the jade bead production at Teraji site]. In Teramura et al. (eds.) *Shiseki Teraji iseki—Niigata-ken Oomi-machi Teraji iseki hakkutsu chôsa hôkokusho*. [Historical site Teraji: the excavation site report of Teraji site in Oomi-town in Niigata prefecture], pp. 321-338. Niigata: Oomi-machi Kyôikuiinkai.
- TERAMURA, Mitsuharu. 1995. *Nihon no hisui—sono nazu wo saguru* [Japanese Jade—exploring its riddles]. Tokyo: Yoshikawakôbunkan.
- TERAMURA, Mitsuharu, AOKI, Shigetaka & SEKI, Masayuki. 1987. Ketsugo [Conclusions]. In Teramura et al. (eds.), *Shiseki Teraji iseki—Niigata-ken Oomi-machi Teraji iseki hakkutsu chôsa hôkokusho*. [Historical site Teraji: the excavation site report of Teraji site in Oomi-town in Niigata prefecture], pp. 481-6. Niigata: Oomi Municipal Board of Education.
- TOKYO METROPOLITAN CENTRE FOR BURIED CULTURAL PROPERTIES & TOKYO METROPOLITAN BOARD OF EDUCATION (eds., publishers) 1994. *Activities and sites*.
- TOKYO METROPOLITAN CENTRE FOR BURIED CULTURAL PROPERTIES (eds., publ.). 1996. *Jômon Chûki Tama no mura: 1996 no kaimei* [The villages of the middle Jômon period in the Tama area: a companion to the 1996 exhibition].
- TOKYO PREF. BOARD OF EDUCATION & TOKYO METROPOLITAN CENTRE FOR BURIED CULTURAL PROPERTIES (Eds., publ.). 1993. *Tama no Iseki-ten: Hakkutsu Monogatari*. [An exhibition of sites in the Tama area: a story of the excavations]. Tokyo Board of Education.
- TORRENCE, Robin. 1986. *Production and Exchange of Stone Tools—Prehistoric obsidian in the Aegean*. Cambridge etc: Cambridge University Press.
- TSUDE, Hiroshi. 1995. Archaeological Theory in Japan. In P. Ucko (ed.), *Theory in Archaeology: a world perspective*, pp. 298-311. Routledge: London and New York.
- TSUKADA, Matsuo. 1974. *Kafun wa kataru: ningen to shokusei no rekishi* [The pollen story: the history of humans and plants] Tokyo: Iwanami Shoten.
- UCHIYAMA, Junzo. 2002. Torihama Kaizuka ni okeru Jômon jidai Zenki shûryô saishû shakai no seigyô kôzoku ni kansuru tenbô [Developments concerning the Early Jômon hunter-gatherer

society subsistence structure in Torihama Shellmound]. *Kokuritsu Minzokugaku Hakubutsukan Chosa Hokoku* 33: 185-238.

UCHIYAMA, Junzo. 2003. The environmental troublemaker's burden? Jomon perspectives on foraging land use change. In J. Uchiyama, J. Kim and C. Grier (eds.), *Beyond Affluent Foragers*. Oxford: Oxbow.

UCHIYAMA, Junzo. Unpublished. *From Awashimadai to Star Carr: Comparative reconsideration of Star Carr with new zooarchaeological evidence from Jōmon Japan and recent research in the Vale of Pickering*. M.A. in environmental archaeology (double-module), Durham University 1996.

UEMOTO, S., SHIBATA, A. & YAMAMOTO, K. 1994. 'Minami-Kantō no sekki no Sekizai Meishō I & II' [The designation of stone tool materials in South Kantō]. *Nihon Bunkazai Kagakkai no. 11 taikai kenkyū hyōyōshishū*: 101-4.

WADA, Atsuyuki. 1972. Niigataheiya no keiseikatei [Formation process of Niigata Plain]. *Chishitsugaku Ronshū* 7: 77-89.

WADA, Tetsu; ABIKO, Shōji; ITO, Hiroshi; NAKAYAMA, Shinji & OKABE, Toshikazu. 1995. 'Zadankai: Karei naru Jōmon Sekai' [The splendor of the Jōmon world in the Tama area]. *Tama no Ayumi* 78: 1-71.

WARASHINA, Tetsuo. 1995. Hisui-sei tamarui no gensanchi wo saguru [Investigating the place of origin of jade beads]. In Warashina (ed), *Tamarui no genzai sanchi bunseki kara kosatsu suru tamarui no bunpuken no kenkyū—1994 Kagaku Kenkyū hihojokin (ippan kenkyū C) Kenku seika Hokokusho*, [Research of the distribution spheres of beadstone, considered from the beadstone material sourcing analysis—Research results report of the 1994 scientific research expense grant (general research C)], pp. 188-194. Kyoto: Kyoto Daigaku Genshiro Jikkensho.

WARASHINA, Tetsuo. 1999. Tamarui no genzai sanchi bunseki [Analysis of the source areas of beadstone]. In *Rakugawa & Ichinomiya Iseki IV—Shizen Kagaku*, 235-257. Tokyo Tama: Rakugawa & Ichinomiya Iseki Chōsakai.

WATANABE, Anbiro. 1994. Tokushū Ibutsu: Suishoku [Special artefacts: Pendant]. In (site report 075) *Oomachi Iseki—Heisei 4-5 [1992-3] Hakkutsu Chōsa Hōkokusho*, pp. 263-4. Tokyo: Sōka Daigaku.

WATANABE Hitoshi. 1986. Community habitation and food gathering in prehistoric Japan: an ethnographic interpretation of the archaeological evidence. In R. Pearson et al. (eds.), *Windows on the Japanese Past: studies in archaeology*, pp. 229-254. Ann Arbor: Center for Japanese Studies, Univ. of Michigan.

WATANABE, Hitoshi. 1990. *Jōmonshiki Kaisōka Shakai*. [Jōmon Stratified Society]. Tokyo: Rokkō.

WATANABE, Makoto. 1975. *Jōmonjidai no shokubutsushoku* [The plant foods of the Jōmon period]. Tokyo: Yūsankaku.

WATANABE, Makoto. 1983. *Jōmon Jidai no Chishiki* [Knowledge about the Jōmon period] Tokyo: Tokyo Bijutsu.

WEINER, Annette B. 1992. *Inalienable Possessions: the paradox of keeping-while-giving*. Berkeley, LA & Oxford: University of California Press.

- WIESSNER, Polly. 1983. "Style and social information in Kalahari San projectile points". *American Antiquity* 48: 253-276.
- WINTER, Marcus C. & PIRES-FERREIRA, Janet W. 1976. Distribution of obsidian among households in two Oaxacan villages. In K. Flannery (ed.), *The Early Mesoamerican Village*, pp. 306-11. New York: Academic Press.
- WOBST, H. M. 1976. Locational relationships in Palaeolithic society. *Journal of Human Evolution* 5: 49-58.
- YAMAGATA, Mariko. 1992. The Shakadô figurines and Middle Jômon ritual in the Kôfu Basin. *Japanese Journal of Religious Studies* 19:129-38.
- YAMAMOTO, Kaoru. 1989. Jômon jidai no sekki ni tsukawareta ganseki oyobi mono ni tsuite—sekki seisaku ni okeru sekizai no sentaku to sono haikai [Raw material utilization for stone implements in the Middle Jômon period of Japan]. *Chigaku Zasshi* 98/7: 79-101.
- YAMAMOTO, Kaoru. 1990. Space-time analysis of raw material utilization for stone implements of the Jômon culture in Japan. *Antiquity* 64: 868-89.
- YAMAMOTO, Masatoshi. (In press). Jômon jidai ni okeru sekki seisan to ryûtsû—Hokuriku chihô ni okeru jamongansei masei sekifu no seisan wo chûshin ni shite. [The production and circulation of stone tools during the Jômon period, focussing on the production of serpentinite polished adzes in the Hokuriku area] Paper presented at Kôkougaku Kenkyûkai 1997.
- YAMAMOTO, Masatoshi. 1989. Hokuriku in okeru Jômon jidai no masei sekifu [The Jômon period polished axes in the Hokuriku region]. *Jômon Jidai no ki no bunka* [The culture of trees in the Jômon period], pp. 63-80. Tôyama: Kôkougakkai Jômon Jidai Kenkyû group.
- YAMAMOTO, Masatoshi. 1991. Jamongan-sei masei sekifu no seisaku to ryûtsû [The production and circulation of polished stone axes made of serpentinite]. *Kikan Kôkougaku* 35: 55-58.
- YAMAMOTO, Tadanao & MATSUI, Akira. 1988. *Japanese - English Dictionary of Japanese Archaeology* (draft). Nara: Nara National Cultural Properties Research Institute.
- YASUDA, Yoshinori. 1980. *Kankyô Kôkougaku Kotohajime-- Nihon rettô 20,000 nen* [The beginnings of environmental archaeology- 20,000years Japanese archipelago]. NHK books 365. Tokyo: Nihon Hôshô Shuppan Kyôkai.
- YASUDA, Yoshinori. 1990. *Kikou to bunmei no seisui* [The ups and downs of Civilization and Climate]. Tokyo: Asakura.
- YONEDA, Konosuke. 1987. Dogû, Doban Seikakuron [Theories on the characteristics of clay figurines and clay plaques]. In K. Sakurai and H. Sakazume (eds.), *Ronsô. Gakusetsu - Nihon no Kôkougaku vol. 3: Jômon Jidai 2*, pp. 57-94. Tokyo: Yuzankaku .
- YOSHIDA, Atsuhiko. 1986. *Jômon dogû no shinwagaku*. Tokyo: Meichô Kankôkai .
- YOSHIDA, Atsuhiko. 1993. *Jômon shûkyô no nazo*. Tokyo: Daiwa Shobô.

SITE REPORT BIBLIOGRAPHY

NAGANO PREFECTURE (Chûbu Central Mountain area)

001: Hashiba site 橋場

Suzaka Municipal Board of Education (eds.) 1982. *Hashiba Iseki*. [Hashiba site] Suzakashi Maizôbunkazai Hakkutsu Chôsa Hôkoku no. 7.

002: Yotsukaichi site 四日市

Sanada Municipal Board of Education (eds.) 1990. *Yotsukaichi Iseki* [Yotsukaichi site].

003: Kitamura site 北村:

Nagano Prefectural Centre for Buried Cultural Properties (eds.) 1993. *Kitamura Iseki—Chûô jidôshadô Nagano-ken Maizôbunkazai Hakkutsu Chôsa hôkokusho 11: Akashina-chônai*. [Kitamura site: report 11 on the excavations prior to the Nagano prefecture Chûô Expressway construction: sites within Akashina-town].

004: Oomuratsukada site 大村塚田

Matsumoto Municipal Board of Education (eds.) 1992. *Matsumoto-shi Oomura-tsukada iseki—kinkyû hakkutsu chôsa hôkokusho. Matsumoto-shi Bunkazai Chôsa hôkoku 96*. [Matsumoto-city Oomura-tsukada site—excavation report of rescue excavation survey. . Matsumoto Cultural Properties Research Report no. 96].

005: Shôzuma site 生妻

Matsumoto Municipal Board of Education (eds.) 1991a. *Matsumoto-shi Shôzuma iseki—kinkyû hakkutsu chôsa hôkokusho. Matsumoto-shi Bunkazai Chôsa hôkoku 89* [The report of the rescue excavation of Shôzuma site, Matsumoto-city. Matsumoto Cultural Properties Research Report no. 89].

006: Yashômae site 弥生前

Matsumoto Municipal Board of Education (eds.) 1991b. . *Matsumoto-shi Yashômae iseki—kinkyû hakkutsu chôsa hôkokusho. Matsumoto-shi Bunkazai Chôsa hôkoku 88*. [The report of the rescue excavation of Yashômae site, Matsumoto-city. Matsumoto Cultural Properties Research Report no. 88].

007: Tsubonouchi site 坪ノ内

Matsumoto Municipal Board of Education (eds.) 1990. *Matsumoto-shi Tsubonouchi iseki—kinkyû hakkutsu chôsa hôkokusho. Matsumoto-shi Bunkazai Chôsa hôkoku 80*. [The report of the rescue excavation of Tsubonouchi site, Matsumoto-city. Matsumoto Cultural Properties Research Report no. 80].

008: Kôike & Hitotsuya site 小池・一ツ家:

Matsumoto Municipal Board of Education (eds.) 1997. *Nagano-ken Matsumoto-shi Koike Iseki & Hitotsuya Iseki—kinkyû hakkutsu chôsa hôkokusho. Matsumoto-shi Bunkazai Chôsa hôkoku 126*. [The report of the rescue excavation of Kôike and Hitotsuya sites, Matsumoto-city, Nagano Prefecture. Matsumoto Cultural Properties Research Report no. 126].

- 009: Yamakage site 山影:
 Matsumoto Municipal Board of Education (eds.) 1993. *Nagano-ken Matsumoto-shi Yamakage iseki—kinkyū hakkutsu hōkokusho. Matsumoto-shi Bunkazai Chōsahōkoku no. 100*. [The report of the rescue excavation of Yamakage site, Matsumoto-city, Nagano Prefecture. Matsumoto Cultural Properties Research Report no 100].
- 010: Minaminakajima site 南中島
 Matsumoto Municipal Board of Education (eds.) 1991. *Matsumoto-shi Minaminakajima iseki—kinkyū hakkutsu hōkokusho*. [The report of the rescue excavation of Minaminakajima site, Matsumoto-city.].
- 011: Hora site 洞
 Yamagata Municipal Board of Education et al. (eds.) 1970. *Nagano-ken Higashichikuma-gun Yamagata-mura Hora iseki kinkyū hakkutsu chōsa hōkokusho*. [The report of the rescue excavation of Hora site, Yamagata village, Higashichikuma-county, Nagano Pref.].
- 012: Nakajima site 中島
 Nagano Pref. Shiojiri Municipal Board of Education (eds.) 1980. *Nakajima iseki—Nagano-ken Shiojiri-shi Nakajima iseki hakkutsu hōkokusho*. [The report of the excavation of Nakajima site, Shiojiri-city, Nagano Prefecture].
- 013: Hiraide site 平出
 Hiraide Site Research Group & Nagano Prefectural Cultural Properties Preservation Cooperation (eds.) 1977. *Hiraide—Nagano-ken Sōga-mura kodai shūroku iseki no sōgō kenkyū* [Hiraide site: complete research of the ancient settlement site at Sōga-village, Nagano].
- 014: Tokoochūō site 床尾中央
 Nagano Prefecture Shiojiri Municipal Board of Education (eds.) 1995. *Tokoochūō iseki—Heisei 6 nendo kōtsū anzen jisetsutō seibi jigyo Tokoo-Hiraide shussen kōji maizōbunkazai kaizō hakkutsu chōsa hōkoku*. [Tokoo-chūō site: the report of the excavation prior to the road safety construction work on the Tokoo-Hiraide line in 1994].
- 015: Minehata site 峯畑
 Shiojiri Municipal Board of Education (eds.) 1994. *Minehata iseki hakkutsu chōsa hōkoku* [Minehata site excavation report].
- 016: Nashikubo site 梨久保
 Nashikubo Site Research Group (eds.) 1985 *Nashikubo iseki—chūbu sangakuji no jōmonjidai shūrakushi—Nashikubo iseki 5-11 hakkutsu chōsa hōkokusho*. [Nashikubo site: Jōmon settlement site in the Chūbu mountains, report of Nagano Pref. Okaya-city Nashikubo site excavations no. 5-11]. Okaya: Okaya Municipal Board of Education.
- 017: Kaido site 海戸
 Nagano Pref. Okaya Municipal Board of Education (eds.) 1968. *Kaido—Okaya-shi Kaido Iseki no. 2 kinkyū chōsa hōkoku*. [Kaidō: Okaya-city Kaidō site 2].

- 018: Nagazuka site 長塚
Nagano Pref. Okaya Municipal Board of Education (eds.) 1971. *Nagazuka Iseki* [Nagazuka site].
- 019: Kuzushigo site 崩越
Nagano Pref. Kiso county Ootaki Municipal Board of Education (eds.) 1982. *Kuzushigo iseki hakkutsu chōsa hōkokusho*. [Excavation report of Kuzushigo site].
- 020: Misayama site 御謝山
Minowa Municipal Board of Education (eds.) 1979. *Misayama Iseki—kinkyū hakkutsu chōsa hōkokusho* [Report of the rescue excavation of Misayama site].
- 021: Uenobayashi site 上の林
Minowa Municipal Board of Education (eds.) 1981. *Uenobayashi Iseki—(no. 1 & 2) Nagano-ken Kami-Ina-gun Minowa-chō kinkyū hakkutsu chōsa hōkokusho*. [Report of the rescue excavations (1&2) of Uenobayashi site, Nagano pref., Kami-Ina-county, Minowa-town].
- 022: Takagawahara site 高河原
Nagano Prefectural Board of Education (eds.) 1971. *Nagano-ken Chūōdō Maizōbunkazai hōzōchi hakkutsu hōkokusho—Kami-Ina-gun Miyata chiku, Showa 45 nendo* [Report of the rescue excavations prior to the construction of the Nagano Central road: sites at Miyata, Kami-Ina-county, in 1970].
- 023: Harakaito site 原垣外
Harakaito Site Research Group (eds.) 1978. *Harakaito iseki—kinkyū hakkutsu chōsa hōkoku. Hakkutsu chōsa hōkokusho 7*. [Report of the rescue excavation of Harakaito site. Excavation report no. 7]. Komagane: Komagane Municipal Board of Education.
- 024: Shichimengawa (B) site 七免川 B
Komagane Municipal Board of Education (eds.) 1980. *Shichimengawa B iseki* [Shichimengawa B site].
- 025: Maruyamaminami site 丸山南
Ootakiri-ward Archaeological Research Committee (eds.) 1977. *Maruyamaminami iseki. Kinkyū hakkutsu chōsa hōkokusho* [Report of the rescue excavations of Maruyamaminami site]. Komagane: Komagane Municipal Board of Education.
- 026: Hinatazaka site 日向坂
Ootakiri-ward Archaeological Research Committee (eds.) 1980. *Hinatazaka, Akasushiro, Shichimengawa A & B iseki*. [(Interim reports of) Hinatazaka, Akasushiro and Shichimengawa A and B sites]. Komagane: Komagane Municipal Board of Education.
- 027: Tsujisawaminami site 辻沢南:
Komagane Municipal Board of Education et al. (eds.) 1988. *Tsujisawaminami iseki—Majūgahara kōgyōdanchi oyobi Majūgahara Undōkōen zokusei jigyō kinkyū hakkutsu chōsa hōkoku*. [Tsujisawaminami site. Report of the rescue excavation prior to the construction of Majūgahara Industrial Estate and ditto Exercise Park].

- 028: Takamihara site 高見原
Komagane Municipal Board of Education (eds.) 1987. *Takamihara iseki* [Takamihara site].
- 029: Machiya site 町谷
Iijima Municipal Board of Education (eds.) 1975. *Machiya. Ken'ei hoba seibi jimu (Showa 49nendo) maizô bunkazai kinkyû hakkutsu chôsa hôkoku*. [Report of the 1974 rescue excavations prior to the development of Machiya cropfields].
- 030: Kitaharanishi site 北原西
Iijima Municipal Board of Education (eds.) 1980. *Kitaharahigashi & Kitaharanishi. Ken'ei hoba seibi jimu (Showa 54nendo) maizô bunkazai kinkyû hakkutsu chôsa hôkoku* [Report of the 1979 rescue excavations prior to the development of Kitaharahigashi and Kitaharanishi cropfields].
- 031: Okoshi site 尾越
Nagano Prefectural Board of Education (eds.) 1971. *Nagano-ken chûôdô maizôbunkazai kaihôchi hakkutsu chôsa hôkokusho— Kami-Ina-gun Iijima-chôchinai sono 1* [Report on the excavations prior to the construction of Nagano Expressway—sites within Iijima-city, Upper Ina-county, vol. 1].
- 032: Nakiotenpaku site 鳴尾天白
Nagano Prefectural Board of Education (eds.) 1971. *Nagano-ken chûôdô maizôbunkazai kaihôchi hakkutsu chôsa hôkokusho— Kami-Ina-gun Iijima-chôchinai sono 1* [Report on the excavations prior to the construction of Nagano Expressway—sites within Iijima-city, Upper Ina-county, vol. 1].
- 033: Satomi V site 里見 V
Nagano Prefectural Board of Education (eds.) 1972. *Nagano-ken chûôdô maizôbunkazai kaihôchi hakkutsu chôsa hôkokusho— Shimo Ina-gun Matsugawa-chôchinai*. [Report on the excavations prior to the construction of Nagano Expressway —sites within Matsugawa-city, Lower Ina-county].
- 034: Nakahara site 中原 ; Kôshinbara I & II sites 庚申原 I・II
Nagano Prefectural Board of Education (eds.) 1972. *Nagano-ken chûôdô maizôbunkazai kaihôchi hakkutsu chôsa hôkokusho— Shimo Ina-gun Matsugawa-chôchinai*. [Report on the excavations prior to the construction of Nagano Expressway —sites within Matsugawa-city, Lower Ina-county].
- 035: Masunoshinkiri site 増野親切
Nagano Prefectural Board of education et al. (eds.) 1972b. *Naganoken Chûôdô maizôbunkazai kaihôchi hakkutsu chôsa hôkokusho—Shimo Ina-gun Takamori-chôchinai sono 2*. [Report on the excavations prior to the construction Nagano Expressway—sites within Takamori-city, Lower Ina-county, vol. 2].
- 036: Daimyôjinbara site 大明神原
Nagano Shimo-Ina-county Kamisato Municipal Board of Education (eds.) 1990. *Daimyôjinbara iseki III—dochi kairyô sôgô jigyô Daimyôjinbara chiku ni tomonau*

maizôbunkazai hakkutsu chôsa hôkokusho [Daimyôjinbara site III: report of excavation prior to land improvement work in Daimyôjinbara ward].

037: Shirohonya site (帰牛原) 城本屋

Nagano Pref. Shimo-Ina-county Takagi Municipal Board of Education (eds.) 1977. *Kigyûharashirohonya—Jômon Chûki Matsuyô no shûraku wo chûshin wo shita—Sowa 51 nendo Takagimura Kigyûhara chiku nôgyô kôzoku kairyôjigyô maizôbunkazai hakkutsu chôsa hôkokusho* [Kigyûhara-shirohonya site: focussing on a village in the Final stage of the Middle Jômon. Report of the 1976 excavation prior to the repair work on the agricultural structure at Kigyûhara ward, Takagi-town].

038: Tanabatake site 棚畑

Tanabatake Site Research Group (eds.) 1990. *Tanabatake—Yatsugadake seisanroku ni okeru Jômonjidai Chûki no shûraku iseki* [Tanabatake site: Late Middle Jômon settlement site at the foot of the Western Yatsugadake mountains]. Chino: Chino Municipal Board of Education.

039: Tateishi site 立石

Chino Municipal Board of education (eds.) 1994. *Tateishi iseki—heisei 5 nendo ken'ei hoba seibi jigyo chinai ni tomonau maizôbunkazai Kinkyû hakkutsu chôsa hôkokusho* [Tateishi site: report of rescue excavation prior to preparation work on prefectural croplands].

040: Yosukeoneminami site 予助尾根南

Chino Municipal Board of education (eds.) 1980. *Yosukeoneminami iseki* [Yosukeoneminami site].

041: Takabe site 高部

Chino Municipal Board of education (eds.) 1983. *Takabe iseki. Shizukaen shinnyû dôrôkensetsu ni tomonau maizôbunkazai kinkyû hakkutsu chôsa hôkokusho* [Takabe site: report of rescue excavation prior to construction of road into Shizuka park].

042: Chinowada site 茅野和田

Chino Municipal Board of education (eds.) 1970. *Chinowada iseki* [Chinowada site].

043: Izawaone site 居沢尾根 Nagano Prefectural Board of Education (eds.) 1981. *Nagano-ken chûôdô maizôbunkazai hozôchi hakkutsuchôsa hôkokusho—Haramura, sono 4, Showa 51~52*. [Report on the 1976 and 1977 rescue excavations prior to the construction of Nagano prefectural Expressway—sites within Hara-town, vol. 4].

044: Tôdonomiya site 唐渡宮 site group

(includes sub-sites Sakaue 坂上, Idaira 居平, Mukôppara 向原 and Tôdonomiya 唐渡宮)
Fujimi Municipal Board of Education (eds.) 1988. *Todonomiya—Yatsugadake nanroku ni okeru Sori bunka no isekigun hakkutsu hôkokusho* [Tôdonomiya—excavation site report of the Sori-culture site group at the foot of the western Yatsugadake mountains].

045: Sori site 曾利

Fujimi Municipal Board of Education (eds.). 1978. *Sori iseki—dai 3, 4, 5ji hakkutsu chôsa hôkoku* [Sori site: report of the 3rd, 4th and 5th excavation surveys].

YAMANASHI PREFECTURE (Chûbu Central Mountain area)

046: Hôjô 方城 & Oowada site 大和田 第1・2

- a) Oizumi Municipal Board of Education et al. (eds.). 1988. *Yamanashi-ken Kitakyoma-gun Oizumi-mura Hôjô 1 iseki—Ken'ei hoba seibi jigyo ni tomonau maizôbunkazai chôsa hôkoku* [Yamanashi Prefecture Kitakyoma-county Oizumi-city Hôjô 1 site: site report of excavation prior to preparation of prefectural crop-fields].
- b) Oizumi Municipal Board of Education et al. (eds.). 1989. *Yamanashi-ken Kitakyoma-gun Oizumi-mura Oowada & Oowada dai 2 iseki—Ken'ei hoba seibi jigyo ni tomonau maizôbunkazai chôsa hôkoku* [Yamanashi Prefecture Kitakyoma-county Oizumi-city Oowada no. 1 & 2 sites: site report of excavation prior to preparation of prefecture crop-fields].

047: Tenjin site 天神:

Yamanashi Prefectural Board of Education (eds.) 1994. *Yamanashi-ken Kitakyoma-gun Oizumi-mura Tenjin iseki—ken'ei hoba seibi jigyo ni tomonau hakkutsu hôkokusho. Yamanashi Maizôbunkazai Centre hakkutsu hôkokusho no. 97*. [Report of the rescue excavation of Tenjin site, Oizumi-village, Kitakyoma-county in Yamanashi prefecture, prior to the development of prefectural cropfields].

048: Kabutsuppara site 甲ツ原

- a) Yamanashi Centre for Buried Cultural Properties (eds.) 1992. *Kabutsuppara iseki gaihô I: dai 1~3ji chôsa* [Kabutsuppara interim report of excavation surveys no. 1~3]. Yamanashi: Yamanashi Prefectural Board of Education.
- b) Yamanashi Centre for Buried Cultural Properties (eds.) 1993. *Kabutsuppara iseki gaihô II: dai 4ji chôsa—kendô sutdama~Yatsugadake Kôen sen kensetsu ni tomonau hakkutsu chôsa hôkoku* [Kabutsuppara site survey 4; Interim report II of the excavation prior to the construction of the Sudama-Yatsugadake Park Prefectural Road]. Yamanashi: Yamanashi Prefectural Board of Education.
- c) Yamanashi Centre for Buried Cultural Properties (eds.) 1994. *Kabutsuppara iseki gaihô III: dai 5ji chôsa—kendô sutdama~Yatsugadake Kôen sen kensetsu ni tomonau hakkutsu chôsa hôkoku* [Kabutsuppara site survey 5; Interim report III of the excavation prior to the construction of the Sudama-Yatsugadake Park Prefectural Road]. Yamanashi: Yamanashi Prefectural Board of Education.
- d) Oizumi Municipal Board of Education (ed.) 1994. *Yamanashi-ken Kitakyoma-gun Oizumi-mura Kabutsuppara dai 6~7chiten* [Yamanashi Kitakyoma-county Oizumi-village: Kabutsuppara sections 6 and 7].

049: Yanagitsubo A&B site 柳坪:

Yamanashi Archaeological Society (eds.) 1975. *Yamanashi-ken chûôdô maizôbunkazai hozôchi hakkutsu chôsa hôkoku—Kitakyoma-gun Nagasaka, Akeno, Nirasaki chinai*. [Report of rescue excavations prior to Yamanashi Prefecture road works—sites within Kitakyoma-county, Nagasaka, Akeno and Nirasaki cities].

- 050: Nishihara site 西原
Takane Municipal Board of Education (ed). 1987. *Yamanashi-ken Kitakyoma-gun Takane-machi Nishihara & Atarichô iseki—kenei hoba seibi jigyo ni tomonau maizôbunkazai hakkutsu chôsa hôkoku* [Negoya site in Hakushû town Kitakyoma-county, Yamanashi: a report report of the rescue excavation prior to crop field development].
- 051: Kashiranashi site 頭無
Yamanashi Archaeological Society (eds.) 1975. *Yamanashi-ken chûôdô maizôbunkazai hozôchi hakkutsu chôsa hôkoku—Kitakyoma-gun Nagasaka, Akeno, Nirasaki chinai*. [Report of rescue excavations prior to Yamanashi Prefecture road works—sites within Kitakyoma-county, Nagasaka, Akeno and Nirasaki cities].
- 052: Negoya site 根古屋
Hakushû Municipal Board of Education (ed.) 1985. *Yamanashi-ken Kitakyoma-gun Hakushû-machi Negoya iseki—dantaiei hoba seibi jigyo ni tomonau hakkutsu chôsa gaihô* [Negoya site in Hakushû town Kitakyoma-county, Yamanashi: an interim report of the excavation prior to crop field development].
- 053: Yashikisoe site 屋敷添
Yamanashi Prefecture, Akeno Municipal Board of Education (eds.). 1993. *Yashikisoe—ken'ei hoba seibi jigyo ni tomonau Jômonjidai Chûki, Kôki oyobi Heianjidai no shûraku iseki no hakkutsu hôkokusho* [Yashikisoe: excavation report of a settlement site from the Middle and Late Jômon and Heian periods, prior to crop field development].
- 054: Gôzôji site 郷蔵地
Yamanashi Prefectural Board of Education (ed) 1987. *Gôzôji iseki—Shiogawa damu kensetsu ni tomonau hakkutsu chôsa hôkoku* [Gôzôji site: excavation report prior to the construction of Shio River dam].
- 055: Shukujiri site: 宿尻
Yamanashi Prefectural Centre for Buried Cultural Properties (eds.) 1993. *Yamanashi-ken Nirasaki-shi Shukujiri iseki—kendô Anayama teishaba senkakufuku kôji ni tomonau hakkutsu chôsa* [Yamanashi Nirasaki-city Shukujiri site—report of excavation prior to the widening of the Prefectural Road at Anayama lay-by]. Yamanashi: Yamanashi Prefectural Board of Education.
- 056: Ushiroda site 後田 & Kitaushiroda site 北後田
a) Nirasaki Municipal Board of Education (eds.) 1989. *Yamanashi-ken Nirasaki-shi Ushiroda iseki—Ken'ei hoba seibi jigyo ni tonomau maizôbunkazai hakkutsu chôsa hôkoku*. [Yamanashi Nirasaki-city Ushiroda site: report of the excavation prior to the development of the prefectural crop fields].
b) Nirasaki Municipal Board of Education (eds.) 1990. *Yamanashi-ken Nirasaki-shi Kitaushiroda iseki—Ken'ei hoba seibi jigyo ni tonomau maizôbunkazai hakkutsu chôsa hôkoku*. [Yamanashi Nirasaki-city Kitaushiroda site: report of the excavation prior to the development of the prefectural crop fields].
- 057: Sakai site 坂井
Nirasaki Municipal Board of Education (eds.) 1966. *Sakai iseki* [Sakai site].

058: Karamatsu site 唐松

Yamanashi Prefectural Centre for Buried Cultural Properties (eds.) 1996. *Yamanashi-ken Futataba-machi Karamatsu iseki—Futataba-Karamatsu danchi kensetsu ni tomonau hakkutsu hōkokusho*. *Yamanashi-ken Maizōbunkazai Centre Chōsa Hōkokusho 111* [Karamatsu site, Futataba-town, Yamanashi: report of rescue excavation prior to construction on the Futataba-Karamatsu plot. Yamanashi Centre for Buried Cultural Properties report no. 111]. Yamanashi: Yamanashi Prefectural Board of Education.

059: Kanenoo site 金の尾

Yamanashi Prefectural Board of Education (eds.) 1987. *Kanenoo iseki, Kitsunetsuka—Yamanashi-ken chūōjidōshadō maizōbunkazai hozōchi hakkutsu chōsa hōkokusho*. *Yamanashi Maizōbunkazai Centre chōsa hōkokusho 25*. [Kanenoo site and Kitsune Burial Mound: rescue excavations prior to the construction work on Yamanashi prefectural Central Highway. Yamanashi Centre for Buried Cultural Properties report no. 25].

060: Miyanomae site 宮の前:

Yamanashi Prefectural Centre for Buried Cultural Properties (eds.) 1995. *Miyanomae iseki—Yamanashi-ken Keisatsu Honbu e repo-to kensetsu ni tomonau hakkutsu chōsa hōkokusho*. *Yamanashi Maizōbunkazai Centre Chōsa Hōkokusho no. 107*. [Miyanomae site: rescue excavation prior to the construction on Yamanashi prefectural Police Station. Yamanashi Centre for Buried Cultural Properties report no. 107]. Yamanashi: Yamanashi Prefectural Board of Education.

061: Yokobata site 横畑

Yamanashi Prefectural Board of Education (eds.) 1987. *Yokobata iseki, Yajiro iseki—Fuefukigawa nōgyō suiri jigyō ni tomonau hakkutsu chōsa hōkokusho*. [Yokobata and Yajiro sites: excavation site report prior to irrigation works at Fuefuki River]. Yamanashi Buried Cultural Properties report no. 20.

062: Goro site 後呂

Yamanashi Prefectural Centre for Buried Cultural Properties (eds.) 1986. *Ichinosawanishi iseki, Muragami iseki, Goro iseki, Hamaiba iseki—Fuefukigawa nōgyō suiri jimusho ni tomonau hakkutsu chōsa hōkokusho* [Ichinosawa nishi, Muragami, Goro and Hamaiba sites: report of rescue excavations prior to the irrigation office works on Fuefuki River].

063: Uenohara site 上野原

Yamanashi Prefectural Board of Education (eds.) 1987. *Uenohara iseki, Chikōji iseki & Kiritsuke iseki*. *Fuefukigawa nōgyō suiri jimusho ni tomonau hakkutsu chōsa hōkokusho* [Uenohara, Chikōji, and Kiritsuke sites: report of rescue excavations prior to the irrigation office works on Fuefuki River]. Yamanashi Buried Cultural Properties report no. 19.

064: Tateishiminami site 立石南

Sakaigawa Municipal Board of Education (eds.) 1993. *Tateishiminami iseki*. *Sakaigawamura maizōbunkazai hōkusho 9* [Tateishiminami site. Sakaigawa Buried Cultural Properties Report no. 8].

065: Ichinosawa & Ichinosawanishi site 一の沢・一の沢西

- a) Yamanashi Prefectural Centre for Buried Cultural Properties (eds.) 1989. *Ichinosawa Iseki Hôkokusho* [Ichinosawa site report]. Yamanashi: Yamanashi Prefectural Board of Education.
- b) Yamanashi Prefectural Centre for Buried Cultural Properties (eds.) 1986. *Ichinosawanishi iseki, Muragami iseki, Goro iseki, Hamaiba iseki—Fuefukigawa nôgyô suiri jimusho ni tomonau hakkutsu chôsa hôkokusho* [Ichinosawa nishi, Muragami, Goro and Hamaiba sites: report of rescue excavations prior to the irrigation office works on Fuefuki river]. Yamanashi: Yamanashi Prefectural Board of Education.

066: Uenodaira site 上の平

Yashiro Municipal Board of Education (eds.) 1985. *Uenodaira iseki—ken'ei Fuefukigawa engan dochi kairyôjigyô nôdô kakufuku nado ni tomonau hakkutsu chôsa gaihô* [Uenodaira site: interim report on the excavations prior to Fuefuki river shore repairs, broadening of agricultural roads etc].

067: Kitabori site 北掘

Yamanashi Prefectural Board of Education (eds.) 1985. *Kitabori iseki—Yamanashi-ken chûjôjidôshadô maizôbunkazai hozôchi hakkutsu chôsa hôkokusho*. [Kitabori site: report on rescue excavation prior to the construction work on Yamanashi prefectural Central Highway].

068: Shakadô 釈迦堂 site group:

- a) Tsukakoshikita A 塚越北 A & Tsukakoshikita B 塚越北 B subsites:
Yamanashi Prefectural Board of Education (eds.) 1986. *Shakadô 1: Yamanashi-ken Higashiyashiro-gun Ichinomiya-chô Tsukakoshikita A&B chiku—Yamanashi Chûjôjidôshadô maizôbunkazai hozôchi hakkutsu hôkokusho*. [Shakadô 1: the report of the rescue excavation prior to construction of the Yamanashi Central Highway in Tsukakoshikita A and B plots, in Ichinomiya-town, Higashiyashiro-county].
- b) Sankôjindaira 三口神平 subsite: (3 volumes: text, illustrations and photographs)
Yamanashi Prefectural Board of Education (eds.) 1987. *Shakadô 2: Yamanashi-ken Higashiyamanashi-gun Katsunuma-chô Sankôjindaira chiku—Yamanashi Chûjôjidôshadô maizôbunkazai hozôchi hakkutsu hôkokusho*. [Shakadô 2: the report of the rescue excavation prior to construction of the Yamanashi Central Highway in Sankôjindaira plot, in Katsunuma-town, Higashiyamanashi-county].
- c) Noronohara 野呂原 subsite: Yamanashi Prefectural Board of Education (eds.) 1987. *Shakadô 3: Yamanashi-ken Higashiyashiro-gun Ichinomiya-chô Noronohara chiku—Yamanashi Chûjôjidôshadô maizôbunkazai hozôchi hakkutsu hôkokusho*. [Shakadô 3: the report of the rescue excavation prior to construction of the Yamanashi Central Highway in Noronohara plot, in Ichinomiya-town, Higashiyashiro-county].

069: Miyanomae site 宮の前

Nishikatsura Municipal Board of Education (eds.) 1993. *Miyanomae iseki hakkutsu chôsa hôkoku* [Report of the excavation of Miyanomae site].

070: Furuyadonichinoue site 古宿道の上

Makioka Municipal Board of Education (eds.) 1981. *Furuyadonichinoue iseki—Nishiho Hoikuen kensetsu ni tomonau shikiishi jukyôshi no hakkutsu chôsa hôkokusho*.

[Furuyadomichinoue site: report of excavation of the stone-paved dwelling prior to the construction of Nishiho Nursery School].

TOKYO PREFECTURE (West Kantô Plains)

071: Kamoppara site かもっぱら

Itsuka-city Kamoppara Site Excavation Survey Group (eds.) 1978. *Kamoppara. Tokyo-to Nishi-tamagun Itsuka-shi Kamo shojû iseki hakkutsu chôsa hôkusho*. [Kamoppara—Tokyo West Tama Itsuka-city Kamoshjû sites excavation site report].

072: Yamanesakaue site 山野坂上

Tokyo Hamura Municipal Sewerage and Hamura City road 296-277line site Research Group (eds.) 1980. *Hamura-machi Yamanosakaue iseki—chôdô 296sen Oyobi Chôdô 277sen Iseki*. [Hamura-city Yamanosakaue site- a site on city road 296 and 277 line].

073: Ninomiya site 二宮

Akigawa Municipal Board of Education (eds.) 1978. *Ninomiya iseki 1976. Akigawa-shi maizôbunkazai Chôsa hôkokusho dai 5 shû*. [Ninomiya site 1976. Tokyo Akigawa-city Buried Cultural Treasure survey report no. 5].

074: Nagasawa site 長沢

Fussa Municipal Board of Education (eds.) 1978. *Fussa-shi Nagasawa iseki. Tokyo-to Fussa-shi Bunkazai Chôsa hôkoku 9*. [Fussa-city Nagasawa iseki. Tokyo Pref. Fussa-city Buried Cultural Treasure Survey Report 9].

075: Ryûshinji-higashi site 龍津寺東

- a) WADA, Tetsu (ed). 1991. *Ryûshinji-higashi II*. Tokyo: Akishima Municipal Board of Education.
- b) WADA, Tetsu (ed). 1992. *Ryûshinji-higashi III*. Tokyo: Akishima Municipal Board of Education.

076: Oomachi site 大町

Sôka University (eds.). 1994. 1994) *Oomachi iseki- Heisei 4 & 5 nendo Hakkutsu Chôsa Hôkokusho* [Oomachi site: report of excavations in 1992 and 1993]. Tokyo: Sôka University.

077: Odano site おだの

Odano Site Excavation Committee (eds.) 1996. *Odano iseki Hakkutsu chôsa hôkoku. Tokyo-to Hachiôji-shi*. [Odano site Excavation Report, Tokyo Hachiôji-city]. Tokyo Hachiôji-city: Odano Site Excavation Committee.

078: Bentenbashi-nishi site 弁天橋西

Hachiôji-city Bentenbashinishi Site Excavation Committee (eds.) 1992. *Bentenbashi-nishi Iseki Hakkutsu Chôsa Hôkoku*. [Tokyo Hachiôji-city Bentenbashi-nishi site excavation report].

079: Ishikawa-Amano (section D) site 石川天野

KURATA, Yoshirô (ed.). 1983. *Tokyo Hachiôji-shi Ishikawa-Amano Iseki 1982 nendô chôsa*. [Tokyo Hachiôji Ishikawa-Amano site, 1982 survey]. Tokyo Hachiôji-city: Hachiôji Ishikawa-Amano Site Excavation Committee.

080: Kunugita site 櫛田

- a) Hachiôji-shi Kunugita Site Survey Group (eds.) 1976. *Kunugita Iseki-gun—1975 Nendo Chôsa hôkoku*. [Kunugita site group: 1975 survey report].
- b) Hachiôji-shi Kunugita Site Survey Group (eds.) 1977. *Kunugita Iseki-gun—1976 Nendo Chôsa hôkoku*. [Kunugita site group: 1976 survey report].
- c) Hachiôji-shi Kunugita Site Survey Group (eds.) 1979. *Kunugita Iseki-gun—1978 Nendo Chôsa hôkoku*. [Kunugita site group: 1978 survey report].

081: Shimoterada site 下寺田

KATOU, Shinpei & HATTORI, Satoshi (ed.) 1975. *Shimoterada & Yasuishi Iseki. Tokyo-o Hachiôji Shimoterada oyobi xx ishi iseki no hakkutsu chôsa*. [Tokyo Hachiôji-city Shimoterada & xx site: excavation survey]. Tokyo: Hachiôji Shimoterada Site Excavation Committee.

082: Minami-Hachiôji no. 28 site 南八王子 no. 28

Hachiôji South Section Site Excavation Committee (eds.) 1991. *Minami-Hachiôji Chiku Iseki Chôsa Hôkoku 7*. [Minami-hachiôji section site survey report 7].

083: Hirayamabashi site 平山橋

NAGAMINE, Kôichi et al. (eds.) 1974. *Hirayamabashi iseki* [Hirayamabashi site]. Tokyo: Tokyo Westline & Hachiôji Transformer Substation Excavation Committee.

084: Nanyôji site 南養寺

- a) Tokyo Kunitachi Municipal Board of Education & Site Survey Group. (eds.) 1994. *Tokyo-to Kunitachi-shi Nanyôji iseki—VII & IX—Heisei 1~3 nendo chôsa hôkoku* [Nanyôji site, Kunitachi-city, Tokyo Pref: report of 1989-91 excavations no. 8 & 9].
- b) Tokyo Kunitachi Municipal Board of Education (ed.) 1995. *Tokyo-to Kunitachi-shi Nanyôji iseki—X—Heisei 4 nendo chôsa hôkoku* [Nanyôji site, Kunitachi-city, Tokyo Pref: report of 1992 excavation no. 10].

085: Jinmeijô-kita site 神明上北

Hino-city Site Research Group & Hino Municipal Board of Education (eds.) 1989. *Hino-shi maizôbunkazai hakkutsu chôsa hôkoku V* [Hino-city archaeological excavations: overview V].

086: Tama New Town no. 300 site 多摩ニュータウン No. 300

Tokyo Centre for Buried Cultural Properties (eds.) 1994. *Tama New Town iseki no. 300 iseki* [Tama New Town sites: no. 300 site]. Tokyo Prefectural Centre for Buried Cultural Properties Excavation Site Reports vol. 16.

087: Tama New Town no. 67 site 多摩ニュータウン No. 6 7

Tokyo Centre for Buried Cultural Properties (eds.) 1995. *Tama Nyuu Taun iseki no. 67 iseki* [Tama New Town sites: no. 67 site]. Tokyo Prefectural Centre for Buried Properties Excavation Site Reports vol. 18..

088: Tama New Town no. 57 site 多摩ニュータウン No. 5 7 :

Tokyo Prefectural Board of Education (eds.) 1988. *Tama New Town no. 57 iseki—iseki no gaiyô to seibi no aramashi* [Tama New Town no. 57 site: interim report of the site and outline of the adjustments].

089: Hirao no. 2 site 平尾

Minamitama-county Hirao Site Research Group (eds.) 1971. *Tokyo-to Minamitama-gun Inagi-chô Hirao iseki chôsa hôkoku 1* [Tokyo Pref. Minamitama-county Inagi-town Hirao site excavation report].

090: Tsurukawa (J) site 鶴川

Tokyo Machida-city Tsurukawa Site Group Research Committee (eds.) 19xx. *Kôkogaku chôsa hôkoku: Tsurukawa iseki gun.* [Archaeological research report: Tsurukawa site group]. Tokyo: Yûsankaku.

091: Kisomorino site 木曾森野

Machida Kisomorino-ward Site Research Group (eds.) 1993. *Kisomorino iseki II—Kyûsekki & Jômonjidai-hen* [Kisomorino site II: Palaeolithic and Jômon period edition].

092: Musashinodai site 武蔵台

- a) Tôritsufuchû Hospital Grounds Site Research Group (eds.) 1992. *Musashino Kokubunji xx chiku Musashinodai iseki II* [Musashino Kokubunji-city xx-ward: Musashinodai site II- data edition 4].
- b) Tôritsufuchû Hospital Grounds Site Research Group (eds.) 1996. *Musashino Kokubunji xx chiku Musashinodai iseki III* [Musashino Kokubunji-city xx-ward: Musashinodai site III].

093: Koigakubo site 恋ヶ窪

- a) Kokubunji Municipal Board of Education & Koigakubo Site Research Group (eds.) 1979. *Tokyo-to Kokubunji Koigakubo Iseki Chôsa Hôkoku 1.* [Tokyo Pref. Kokubunji city Koigakubo site excavation report I].
- b) Kokubunji Site Research Group (eds.) 1992. *Tokyo-to Kokubunji-shi Koigakubo iseki chôsa hôkoku VI—Hiritsu chûô kenkyûsho kenkyûmune, shokudô, puru mata ishitsu kensetsukôji ni tomonau chôsa.* [Tokyo pref. Kokubunji city Koigakubo site excavation report VI- excavation prior to construction of the ridgepole, dining room, swimming pool & changing rooms of Central Hiritsu Research Centre].
- c) Kokubunji Site Research Group (eds.) 1996. *Tokyo-to Kokubunji-shi Koigakubo iseki chôsa hôkoku VII—Kokubunji-shi kôyô gesuidômen seibichû chiku 32go jigyô ni tomonau chôsa.* [Tokyo pref. Kokubunji city Koigakubo site excavation report VII- excavation prior to construction work on the public sewerage system in section 32, Kokubunji-city].
- d) Kokubunji Site Research Group (eds.) 1990. *Koigakubohigashi isseki hakkutsu chôsa gainen 1—Yamaichi Shôken Kokubunji Dokujiryô kensetsu ni tomonau chôsa.* [Interim

report 1 on Koigakubo-higashi site excavation—survey prior to construction of Yamaichi Securities Kokubunji Singles Dormitory].

094: Ladies Building Higashi-Fuchû site レディースビル東府中

Fuchû Municipal Board of Education & Fuchû-city Site Research Group (eds.) 1991. *Musashikokufu—Fuchû-shi iseki chōsa nenpō 1981 nendo*. [Musashikokufu: Annual overview of Fuchû-city site surveys: 1981].

095: Nukii site 貫井

Koganei Municipal Board of Education (eds.) 1978. *Koganei-shi Bunkazai Chōsa Hōkokusho 5: Nukii—Nukii iseki hakkutsu chōsa hōkoku*.

[Koganei Municipal Cultural Properties Research Report 5: Nukii—the report of Nukii site excavation.

096: Nukii-minami site 貫井南

Koganei-city Nukiiminami Site Research Group (eds.) 1974. *Nukiiminami—Koganei-shi Nukiiminami iseki chōsa hōkoku* [Nukiiminami: Koganei-city Nukiiminami site excavation report].

097: Nakazanya site 中山谷

Nakazanya Site Research Group (eds.) 1975. *Nakazanya Iseki* [Nakazanya site]. (Includes English summary by J.E. Kidder).

098: Inokashiraike (A) site 井の頭池 A

Mitaka-city Site Research Group (eds.) 1980. *Inokashiraike isekigun A-chiten hakkutsu chōsa hōkoku* [Excavation report of the Inokashiraike site group at section A].

099: Kaminunota site 上布田

Chōfu Municipal Board of Education & Chōfu-city Site Research Group (eds.) 1985. *Chōfu-shi Kaminunota iseki—dai 2 chiten no chōsa* [Chōfu-city Kaminunota site: the survey of section 2].

100: Harayama site はらやま

Chōfu-city Harayama Site Research Group (eds.) 1993. *Harayama—Tō'ei Chōfu Shibazaki ichome no. 2 jūtaku tatekae in tomonau hakkutsu chōsa* [Harayama: report of the excavation prior to the rebuilding of Chōfu Shibazaki first chome, no.2 Houses].

101: Benzaitenike site group 弁財天池

a) Komae Municipal Board of Education (eds.) 1992. *Benzaitenike iseki* [Benzaitenike site].

b) Odakyū Line Site Research Group (eds.) 1995. *Odakyū Odawara-sen senzōrenzoku rittai kōsa jig'yō ni tomonau iseki chōsa* [Rescue excavations prior to construction work along the Odakyū and Odawara metro lines].

102: Dogayato site 堂ヶ谷戸

a) Setagaya-ward Board of Education & Setagaya-ward Site Research Group (eds.) 1982a. *Dōgayato iseki I*.

- b) Setagaya-ward Board of Education & Setagaya-ward Site Research Group (eds.) 1982b. *Dôgayato iseki II*.

103: Jakuzure site 蛇崩

- a) Setagaya-ward Board of Education & Jakuzure Site 2&3 Research Group (eds.) 1991. *Jakuzure iseki*
b) Jakuzure Site 2&3 Research Group (eds.) 1992. *Jakuzure iseki*.

104: Suwayama site 諏訪山

- a) Setagaya-ward Board of Education & Setagaya-ward Site Research Group (eds.) 1984. *Suwayama iseki I*.
b) Setagaya-ward Board of Education & Suwayama Site no. 12 Research Group (eds.) 1991a. *Suwayama iseki II*.
c) Setagaya-ward Board of Education & Suwayama Site no. 13 Research Group (eds.) 1991b. *Suwayama iseki III*.

105: Megurisawa-kita site 廻沢北

- a) Setagaya-ward Board of Education & Setagaya-ward Site Research Group (eds.) 1984. *Megurisawakita iseki I*.
b) Setagaya-ward Board of Education (eds.) 1988. *Megurisawakita iseki II*.

106: Shimonoge site 下野毛

Setagaya-ward Board of Education & Shimonoge site no. 6 Research Group (eds.) 1993. *Shimonoge Iseki III* [Shimonoge site III].

107: Sendagi site 千駄木

Sendagi Site Research Group (eds.) 1989. *Sendagi iseki* [Sendagi site]. Includes English Summary by E.J. Kidder.

108: Jiyûgakuenminami site 自由学園南

- a) Jiyûgakuenminami Site Research Group (eds.) 1983. *Jiyûgakuenminami iseki—Tokyo-to Kurume-shi Shozai no sendoki jidai & Jômonjidai iseki no chôsa* [Jiyûgakuenminami site: research of a Palaeolithic and Jômon site at Kurume-city, Tokyo Prefecture].
b) Higashikurume Municipal Board of Education (eds.) 1996. *Jiyûgakuen-minami III—Tokyo-to Kurume-shi Jiyûgakuenminami III hakkutsu chôsa hôkokusho* [Jiyûgakuenminami III site: report of the research of the third excavation of the site at Kurume-city, Tokyo Prefecture].

109: Noshiosotoyama site 野塩外山

Research Committee of sites in Kiyose-city (eds.) 1995. *Kiyose-shi Noshiosotoyama iseki* [Kiyose-city Noshiosotoyama site].

KANAGAWA PREFECTURE (West Kantô Plains)

110: Mikage site 三ヶ木

Kanagawa Prefectural Centre for Buried Cultural Properties (eds.) 1992. *Mikage iseki—Kenritsu Tsukui Kôkôgakkô bushitsu kaisaku ni tomonau chôsa* [Mikage site: Report prior to renovation of Prefectural Tsukui High School building].

111: Ooiki site 大井己

Ooiki Site Research Group (eds.) 1994. *Kanagawa-ken Tsukui-gun Tsukui-machi Ooiki Iseki hakkutsu chôsa hôkokusho* [Kanagawa Pref. Tsukui-county Tsukui-town Ooiki site excavation report].

112: Hashimoto site 橋本

Sagamihara-city Hashimoto Site Research Group (eds.). 1986. *Hashimoto iseki VII: Jômon jidairon—Ippan Kokudô 16go (Hachiôji Bypass) kaisaku kôji ni tomonau maizobunkazai hakkutsu chôsa hôkoku*. [Hashimoto site VII: Jômon period edition. Report of the excavation prior to maintenance work on the Hachiôji Bypass National Road no. 16].

113: Kawajiri site 川尻

Kanagawa Prefectural Centre of Buried Cultural Properties. 1992. *Kanagawa-ken Maizôbunkazai Centre chôsa hôkoku 23: Kawajiri iseki*. [Kanagawa Prefectural Centre of Buried Cultural Properties research report 23: Kawajiri site].

114: Taima site 当麻

Kanagawa Prefectural Board of Education (eds.) 1977. *Kanagawa-ken maizôbunkazai chôsa hôkokusho 12: Taima iseki & Uwaichi iseki—ippan kokudô 129-gosen kairyôkôji ni tomonau chôsa* [Kanagawa Buried Cultural Properties research report 12: Taima site & Uwaichi site—report of excavation prior to the reconstruction work of national highway no. 129].

115: Shimomizo site 下溝 site group: Kaminakamaru 上中丸 & Shitahara 下原 subsites

- a) Sagamihara city Taima & Shimomizo Site Research Group (eds.). 1994. *Kanagawa-ken Sagamihara-shi Kaminakamaru iseki* [Kanagawa Prefecture Sagamihara-city Kaminakamaru site].
- b) Sagamihara city Taima & Shimomizo Site Research Group (eds.). 1992. *Kanagawa-ken Sagamihara-shi Shitahara iseki* [Kanagawa Prefecture Sagamihara-city Shitahara site].

116: Katsusaka site 勝坂

- a) Sagamihara Municipal Board of Education (eds.) 1981. *Katsusaka Iseki*.
- b) Katsusaka 45th Survey Site Research Group (eds.) 1993. *Katsusaka iseki dai 45 ji chôsa* [Katsusaka site excavation survey no. 45].

117: Higashiyato (B) site 東谷戸

Atsugi Municipal Board of Education (eds.) 1994. *Kanagawa-ken Atsugi-shi Higashiyato iseki hakkutsu chôsa hôkokusho* [Report of the excavation of Kanagawa pref. Atsugi-city Higashiyato site].

118: Heiwazaka site 平和坂

Heiwazaka Site Research Group (eds.) 1993. *Kanagawa-ken Zama-shi Heiwazaka iseki* [Kanagawa Pref. Zama-city Heiwazaka site].

- 119: Kamiimaizuminakahara site 上今泉中原
 Kamiimaizuminakahara Site Excavation Research Group (eds.) 1992. *Kamiimaizuminakahara iseki*. [Kamiimaizuminakahara site].
- 120: Ebinabôchi site 海老名望地
 Ebinabôchi Site Research Group (eds.) 1984. *Ebinabôchi—Kanagawa-ken Ebina-shi Bôchi iseki chôsa hôkokusho*. [Excavation report of Ebinabôchi site, Ebina-city, Kanagawa Pref.].
- 121: Sugikubonakahara site 杉久保中原
 Sugikubonakahara Site Research Committee (eds.) 1991. *Sugikubonakahara—Kanagawa-ken Ebina-shi Sugikubonakahara iseki chôsa hôkokusho* [Excavation report of Sugikubonakahara site, Ebina-city, Kanagawa Pref.].
- 122: Shimotsurama-Nagahori (II) site 下鶴間長掘
 Yamato Municipal Board of Education. (eds.) 1993. *Shimotsurama-Nagahori iseki dai 2 chiten* [Shimotsurama-Nagahori site, section 2].
- 123: Inagahara (A section) site 稲ヶ原
 Yokohama-city 'Furusato' and History Foundation (eds.) 1992. *Inagahara iseki A chiten Hakkutsu chôsa hôkokuk—Yokohama shiritsu Sakkagaoka shogakkô kensetsu ni tomonau maizôbunkazai chôsahôkoku*. [Inagahara site section A: report of the excavation prior to the construction of Yokohama Municipal Sakkagaoka Primary School].
- 124: Juchidaiyama (no. 11) site 受地だいやま
 Yokohama-city Midori-ward Nara-section Site Research Group (eds.) 1982. *Yokohama-shi Midori-ku Nara-chiku isekigun: no. 11 Juchidaiyama iseki hakkutsu chôsa gaihō* [Yokohama-city Midori-ward Nara-section Site Group: interim report of the excavation Juchidaiyama no. 11 site].
- 125: Kurokawa site group 黒川: Yatsu site 谷ツ & Kurokawa no. 16 site 黒川 no. 16
 a) Research Committee of Kurokawa Plot Sites (eds.) 1990. *Kawasaki-shi Asao-ku Yatsu iseki—Kurokawa chiku isekigun hôkokusho 2* [Yatsu site, Asao-ward, Kawasaki-city: the second excavation site report of the site group in Kurokawa plot].
 b) Research Committee of Kurokawa Plot Sites (eds.) 1992. *Kawasaki-shi Asao-ku Yatsu iseki—Kurokawa chiku isekigun hôkokusho 2* [Kurokawa no. 3, 16 and 29 sites, Asao-ward, Kawasaki-city: the fourth excavation site report of the site group in Kurokawa plot].
- 126: Nakamachi site 仲町
 Nakamachi Site Research Committee (eds.) 1971. *Nakamachi iseki—Kawasaki-shi Katadaira shojû Jômonjidai iseki no chôsa* [Nakamachi site: excavation of a Jômon site at Katadaira, Kawasaki-city, Kanagawa Pref.].
- 127: Sakuranami site 桜並
 Yokohama Municipal Board of Education (eds.) 1995. *Sakuranami iseki*. [Sakuranami site].

- 128: Shiomidai site 潮見台
 KUBO, Tsuneharu, ITO, Hidekichi & SEKI, Toshihiko. 1971. *Shiomidai iseki* [Shiomidai site: a report on the archaeological excavations at Shiomidai, Kanagawa Prefecture] (includes English summary). Tokyo: Chûôkôron Bijutsu Shuppan.
- 129: Amaya site 天屋
 Kanagawa Prefectural Centre for Buried Cultural Properties (eds.) 1990. *Amaya iseki—daisankyobei dôrô tsuchigaya Parking area kaisaku ni tomonau chôsa*. [Amaya site: research prior to construction of the Tsuchigaya parking lot at Daisankyôbei Road].
- 130: Morooka-Uchikoshi site 師岡打越
 Research Committee for Sites within the Oogurayama Mansion Construction Grounds (eds.) 1990. *Yokohama-shi Kôhoku-ku Morooka-Uchikoshi iseki hakkutsu chôsa hôkokusho* [Report of the excavation of Morooka-Uchikoshi site, Yokohama-city, Kôhoku-ward].
- 131: Ooguchidai site 大口台
 Yokohama Municipal Centre for Buried Cultural Properties (eds.) 1992. *Ooguchidai iseki hakkutsu chôsa hôkoku—Shiritsu Môgakkôtei seibi ni tomonau maizôbunkazai chôsa hôkokusho*. [Ooguchidai site: report of the excavation prior to the adjustment of the garden of the Yokohama Municipal School for the Blind].
- 132: Hazawadaidô site 羽沢大道
 Research Committee of sites within Hazawa Plot (eds.) *Yokohama-shi Kanagawa-ku Hazawadaidô iseki hakkutsu chôsa hôkokusho*. [The excavation site report of Hazawadaidô site, Kanagawa ward, Yokohama-city].
- 133: Toshikura Kaizuka shell mound site 利倉貝塚
 Sugata Toshikura Shellmound Site Research Committee (eds.) 1990. *Toshikura Kaizuka—Yokohama-shi Sugata Toshikura Kaizuka iseki no chôsa* [Toshikura Kaizuka: the excavation of the Sugata-Toshikura shell mound site at Yokohama-city].
- 134: Gontazaka Shogakkô site 権太坂小学校
 Yokohama Municipal Board of Buried Cultural Properties (eds.) 1981. *Gontazaka Shogakkô iseki hakkutsu chôsa hôkokusho* [The report of the excavation of Gontazaka Primary School site].
- 135: Nakamuramiyanotani site 中村宮ノ谷
 Nakamuramiyanotani Site Excavation Research Group (eds.) 1992. *Nakamuramiyanotani iseki hakkutsu chôsa hôkokusho* [Nakamuramiyanotani site excavation report].
- 136: Izumikeisatsu site 泉警察
 Excavation Research Committee for Sites within Izumi Police Station Grounds (eds.) 1992. *Yokohama-shi Izumi-ku Izumikeisatsu iseki—Izumi Keisatsu kensetsu yôchinai iseki hakkutsu chôsa hôkokusho* [Report of the excavation of Izumikeisatsu site, Izumi-ward in Yokohama: report of sites excavated within the construction grounds of the Izumi Police Station].

137: Kamishinanô site group 上品濃

Kaminshinanô Site Group Excavation Research Committee (eds.) 1992. *Yokohama-shi Totsuka-ku Kaminshinanô iseki hakkutsu chôsa hôkokusho* [Report of the excavation of Kaminshinanô site, Totsuka-ward in Yokohama].

138: Shimokitahara site 下北原

Kanagawa Prefectural Board of Education (eds.) 1977. *Kanagawa-ken Maizôbunkazai Chôsa Hôkoku 14: Shimokitahara iseki—Isehara-shi Shimokitahara shozon no Jômonjidai haiseki ikô no chôsa* [Kanagawa Prefectural Centre for Buried Treasures Report 14: Shimokitahara site—report of the excavation of a Jômon ritual stone structure at Shimokitahara in Isehara-city].

139: Shintenôhara site 真田大原

Research Committee of Sites within Tôkai University Grounds, & Shintenôhara Site Research Committee (eds.) 1990. *Shintenôhara Iseki*. [Shintenôhara site].

140: Kaminarimatsu 神成松 & Goisenomori site

- a) Kaminarimatsu Site Resesarch Committee (eds.). 1995. *Kanagawa-ken Isehara-shi Kaminarimatsu iseki hakkutsu chôsa hôkokusho* [Site report of the excavation of Kaminarimatsu site, Isehara-city, Kanagawa Pref.].
- b) Goisenomori Medieval Sites Excavation Committee (eds.) 1979. *Kanagawa-ken Isehara-shi Goisenomori iseki no chôsa* [Report of the excavation of Goisenomori site (at royal tutor Uesugi Sadamasa Hall), Isehara-city, Kanagawa].

141: Hinatagaoka site 日向岡

Hiratsuka Municipal Board of Education & Hiratsuka-city Site Research Group (eds.) 1985. *Hinatagaoka iseki* [Hinatagaoka site]

142: Tenjinyamadai site 天神山台

Odawara Municipal Board of Education (eds.) 1994. *Tenjinyamadai iseki*. [Tenjinyamadai site].

CHIBA PREFECTURE (East Kantô Peninsula)

143: Hayashidai site 林台

Kashiwa Municipal Board of Education & Kashiwa-city Site Research Committee (eds.) 1989. *Chiba-ken Kashiwa-shi Hayashidai iseki*. [Chiba Pref. Kashiwa-city Hayashidai site]

144: Kôshinmae site 庚申前

Kashiwa Municipal Board of Education & Kashiwa-city Site Research Committee (eds.) 1990. *Kashiwa-shi Maizôbunkazai chôsahôkokusho 17: Kôshinmae iseki (no. 3)*... [Kashiwa-city Buried Cultural Properties Research Report vol. 17: Kôshinmae site (3rd survey)].

145: Sasawara site 笹原

- a) Kashiwa Municipal Board of Education & Kashiwa-city Site Research Committee (eds.) 1993. *Kashiwa-shi Maizôbunkazai chôsahôkokusho 21: Sasawara iseki (no. 6)* [Kashiwa-city Buried Cultural Properties Research Report vol. 21: Sasawara site (6th survey)].
- b) Kashiwa Municipal Board of Education & Kashiwa-city Site Research Committee (eds.) 1994. *Kashiwa-shi Maizôbunkazai chôsahôkokusho 24: Sasawara iseki (no. 2)*... [Kashiwa-city Buried Cultural Properties Research Report vol. 21, incl. Sasawara site (2nd survey), etc.].

146: Mukaidai site 向台

Ichikawa Municipal Board of Education (eds.) 1994. *Heisei 5 nendo Ichikawa-shinai iseki hakkutsu chôsa hôkoku: Mukaidai iseki dai 2 chiten (etc)* [Report of 1993 excavations within Ichikawa-city, including Mukaidai site, section 2].

147: Takanekido site 高根木戸

Funabashi Municipal Board of Education & Takanekido Site Research Committee (eds.) 1971. *Takanekido—Jômon jidai Chûki shûrakushi chôsa hôkokusho* [Takanekido site—report of the excavation of a Late Middle Jômon settlement site].

148: Mukaeyama site 迎山

Chiba-city Cultural Properties Research Committee (eds.) 1987. *Chiba-shi Mukaeyama iseki* [Chiba-city Mukaeyama site].

149: Arayashiki Kaizuka Shellmound site: 荒屋敷貝塚

- a) Chiba Municipal Centre for Cultural Properties (eds.) 1974. *Chiba-shi Arayashiki Kaizuka—Iseki kakunin chôsa hôkokusho*. [Chiba-city Arayashiki Shellmound: report of the preliminary survey].
- b) Chiba Municipal Centre for Cultural Properties (eds.) 1976. *Chiba-shi Arayashiki Kaizuka—Kaizuka gaienbu iseki kakunin chôsa hôkoku* [Chiba-city Arayashiki Shell Mound: report of the preliminary survey at the outer edges of the shell mound].
- c) Chiba Municipal Centre for Cultural Properties (eds.) 1978. *Chiba-shi Arayashiki Kaizuka—Kaizuka chûôbu hakkutsu chôsa hôkoku* [Chiba-city Arayashiki Shell Mound: report of the excavation survey at the centre of the shell mound].

150: Kasori Kaizuka Shellmound site 加曾利貝塚

TAKIGUCHI, Hiroshi (ed.) 1977. *Kasori Kaizuka IV iseki* [Kasori Shell Mound IV] Tokyo: Chûôkôron Bijutsu Shuppan.

151: Kamatori site 鎌取

Chiba Prefectural Centre for Cultural Properties (eds.) 1993. *Chiba tônanbu nyû taun 18—Kamatori iseki* [Southeastern Chiba New Town no. 18: Kamatori site].

152: Takazawa site 高沢

Chiba Prefectural Centre for Cultural Properties (eds.) 1990. *Chiba tônanbu nyû taun 17—Takazawa iseki* [Southeastern Chiba New Town no. 17: Takazawa site].

- 153: Hagawa site 芳賀輪
Chiba-city Cultural Properties Research Committee (eds.) 1988. *Chiba-shi Hagawa iseki—Shōwa 61 nendo hakkutsu chōsahōkokusho* [Report of the 1986 excavation of Hagawa site, Chiba-city].
- 154: Warabi site 和良比
Chiba Pref. Inba-county Inba Municipal Centre for Cultural Properties (eds.). 1991. *Chiba-ken Nishikaidō-shi: Warabi iseki hakkutsu chōsa hōkoku 2—Nishikaidō-shi Warabi-chiku maizōbunkazai chōsa* [Chiba pref. Nishikaidō-city Warabi site: the report of the excavations of the Warabi plot in Nishikaidō-city].
- 155: Hetanodai Kaizuka (shell mound) site へたの台 貝塚
Chiba Municipal Board of Education (eds.) 1990. *Chiba-shi Hetanodai Kaizuka*. (Chiba-city Hetanodai Shellmound].
- 156: Ueno site 上野
Inba-city Cultural Properties Centre (eds.) 1993. *Chiba-ken Yotsukaidō-shi Ueno iseki & Deguchi iseki hakkutsu chōsa hōkokush—Yotsukaidō sōgō kōen jigō chinai maizōbunkazai chōsa* [Report on the excavations of Ueno site and Deguchi site, Yotsukaidō-city, Chiba—excavations of sites within the grounds of Yotsukaidō Park].
- 157: Deguchi site 出口
Inba-city Cultural Properties Centre (eds.) 1993. *Chiba-ken Yotsukaidō-shi Ueno iseki & Deguchi iseki hakkutsu chōsa hōkokush—Yotsukaidō sōgō kōen jigō chinai maizōbunkazai chōsa* [Report on the excavations of Ueno site and Deguchi site, Yotsukaidō-city, Chiba—excavations of sites within the grounds of Yotsukaidō Park].
- 158: Mukaihara site 向原
Chiba Prefectural Centre for Cultural Properties (eds.) 1989. *Sakura-shi Mukaihara iseki—Sakura Daisan kōgyōdanchi dōsei ni tomonau maizōbunkazai hakkutsu hōkokusho 6*. [Sakura-city Mukaihara site: site report of the excavation no 6, prior to the road works at Sakura Daisan].
- 159: Ikemukai site 池向
Chiba Prefectural Centre for Cultural Properties (eds.) 1995. *Sakura-shi Ikemukai iseki—Sakura Daisan kōgyōdanchi dōsei ni tomonau maizōbunkazai hakkutsu hōkokusho 12*. [Sakura-city Ikemukai site: 12th site report of the excavation, prior to the road works at Sakura Daisan, volume 1].
- 160: Gotanme site 五反目
Sakura Municipal Board of Education (eds.) 1991. *Sakura-shi shinai iseki shozai kakunin chōsa jigō hōkokusho. Kaguraba iseki & Gotanme iseki* [Report of the preliminary surveys of sites in Sakura-city: Kaguraba and Gotanme sites].
- 161: Naradaibutsudai site 奈良大仏台
Ichiwara-city Cultural Properties Centre (eds.) 1992. *Ichiwara-shi Naradaibutsudai iseki*.

162: Kusakari Shellmound site 草刈貝塚 & Kusakari (section B) 草刈 B区

- a) Chiba Prefectural Centre for Cultural Properties (eds.) 1986. *Chibadai New Town III: Kusakari iseki (B-ku)* [Chiba Plateau New Town III: Kusakari site, B section].
- b) Chiba Prefectural Centre for Cultural Properties (eds.) 1990. *Ichihara-shi Kusakari Kaizuka—Chiba kyūkōsen nai maizōbunkazai hakkutsu chōsa hōkokusho IV*. [Ichihara-city Kusakari Shell mound—site report IV of excavations within the grounds of Chiba express train line].

163: Otabatadai site 尾畑台

Kimitsugu Municipal Centre for Cultural Properties (eds.) 1994. *Chiba-ken Sodegaura-shi Ootake isekigun hakkutsu chōsa hōkokusho III—Fujita Kankō gorufu-ba kensetsu kōji ni tomonau maizōbunkazai chōsa* [Excavation site report of the Ootake site group in Sodegaura-city, Chiba: report of excavations prior to the construction of the Fujita Kankō golf course].

164: Kado site 嘉登

Kimitsugu Municipal Centre for Cultural Properties (eds.) 1994. *Chiba-ken Sodegaurashi Kado iseki & Ootakenagasaku Kōfungun—shidō 128go senkensetsu kōji ni tomonau maizōbunkazai hakkutsu chōsa hōkokusho* [Kado site and Ootakenagasaku Burial Mound group in Sodegaura-city, Chiba: report of excavations prior to road construction of the 128 city line].

165: Iwai site 岩井

Kimitsugu Municipal Centre for Cultural Properties (eds.) 1992. *Chiba-ken Futtsu-shi Iwai iseki* [Iwai site, Futtsu-city, Chiba]

166: Daigi (A) site 台木 A

Kimitsugu Municipal Centre for Cultural Properties (eds.) 1995. *Daigi A iseki—Kazusa Academia Park kensetsu ni tomonau maizōbunkazai hakkutsu chōsa hōkokusho (1)* [Daigi A site: report of the excavations prior to construction of Kazusa Academia Park, vol. 1].

167: Igodai site 囲護台

Inba Municipal Centre for Cultural Properties (eds.) 1989. *Chiba-ken Narita-shi Igodai iseki hakkutsu chōsa hōkokusho—Sekomu dokujiryō kensetsu ni tomonau maizōbunkazai chōsa* [Igodai site, Narita-city, Chiba: report of the excavations prior to the construction of Sekomu dormitory].

168: Nogedairakidoshita site 野毛平木戸下

Inba Municipal Centre for Cultural Properties (eds.) 1990. *New Tokyo kūkō gorufuba zokusei chinai maizōbunkazai chōsahōkokusho III: Chiba-ken Narita-shi. Inba-gunshi bunkazai centre hakkutsu hōkokusho 32*. [Third report of the rescue excavations prior to the construction of the New Tokyo Airport Golf Course. Inba-county Municipal Centre for Cultural Properties report no. 32].

169: Nagatakijigahara site 長田雉子ヶ原

Inba Municipal Centre for Cultural Properties (eds.) 1989. *New Tokyo kūkō gorufuba zokusei chinai maizōbunkazai chōsahōkokusho II: Chiba-ken Narita-shi Nagatakijigahara & Nagatakohanada iseki. Inba-gunshi bunkazai centre hakkutsu hōkokusho 31*. [Nagatakijigahara and Nagatakōhanada sites in Narita-city, Chiba: report II of the rescue

excavation prior to the construction of the New Tokyo Airport Golf Course. Inba-county Municipal Centre for Cultural Properties report no. 31].

170: Kumon site 宮門

Chiba Prefectural Centre for Cultural Properties (eds.) 1991. *Shûyô chihôdô Narita Matsuo-sen VI—Shibayama-cho Koikejizô II iseki & Kumon iseki*. [Sixth report of the Narita Matsuo line: Shiba-town Koikejizô and Kumon sites].

171: Kisaki site キサキ

Katori Municipal Centre for Cultural Properties (eds.) 1995. *Chiba-ken Katori-gun Taiei-machi Kisaki iseki* [Kisaki site in Taiei-town Katori-county, Chiba].

172: Tada site 多田

Chiba Prefectural Centre for Cultural Properties (eds.) 1992. *Higashi-Kantô jidôshadô maizôbunkazai chôsa hôkokusho VII: Sahara-chiku 4* [Seventh Report of the excavations prior to the construction work of the East Kantô Expressway, within Sahara-ward vol. 4, (incl. Tada site)].

173: Shiraiômiyadai Kaizuka shellmound site 白井大宮台

Chiba Prefectural Board of Education (eds.) 1991. *Omigawa-machi Shiraiômiyadai Kaizuka kakunin chôsa hôkokusho* [Report of the preliminary survey of Shiraiômiyadai Kaizuka shellmound site, Omigawa-town].

174: Shindainatsukata site 神代夏方

Katori Municipal Centre for Cultural Properties (eds.) 1992. *Chiba-ken Katori-gun Tônoshô-machi Shindainatsukata iseki, Tôkairitorideato, Tôkairi 1&2 tsuka* [Shindainatsukata site, Tôkairitoride Ruin and Tôkairi Burial Mounds 1 & 2, in Tônoshô-town Katori-county, Chiba].

175: Higashinagayamano site 東長山野

Higashinagayamano Site Excavation Committee (eds.) 1990. *Higashinagayamano & Kitanagayamano Iseki* [Higashinagayamano and Kitanagayamano sites]. Yokoshiba: Higashinagayamano Site Excavation Committee

[NOT INCLUDED IN STATISTICAL ANALYSIS]:

176: Awashimadai site 粟島台

- a) OHBA, Iwao (ed.) 1952. *Chiba-ken Chôshi-shi Awashimadai Sekki Jidai Iseki Chôsa Hôkoku*. [The excavation report of Chiba Prefecture Chôshi-city Awashimadai Stone Age site]. Chôshi: Chôshi-city Koseishinkan.
- b) Chôshi Municipal Board of Education (eds.) 1974. *Awashimadai Iseki—1973nendo hakkutsu chôsa gaiyô* [Awashimadai site—interim report of the 1973 excavation]. Chôshi: Chôshi Municipal Board of Education.
- c) Awashimadai Site Research Group (eds.) 1990. *Chôshi-shi Awashimadai Iseki Hakkutsu Chôsa Hôkokusho—sûpa-ma-ketto kensetsu ni tomonau maizôbunkazai hakkutsu chôsa* [Chôshi-city Awashimadai site report: the report of the excavation prior to the supermarket construction]. Chôshi: Awashimadai Site Research Group

- d) Chôshi Municipal Board of Education (eds.) 2000. *Awashimadai iseki—Chôshi-shi Awashimadai iseki 1973 & 1975nen no hakkutsu chôsa hôkokusho* [Awashimadai site: an extensive excavation report of the 1973 and 1975 excavations of Awashimadai site, Chôshi-city].

TOYAMA and NIIGATA PREFECTURE (Hokuriku ‘Jadeite Coast’)

177: Babayama site 馬場山

Toyama Prefectural Board of Education (eds.) 1987. *Hokuriku jidosha iseki chosa hokoku—Asahi-machi hen 3; Babayama D, G, H Iseki: sekki-hen* [Report of the excavations of the Hokuriku Express way —Asahi-town 3, Babayama sites no. D, G and H]. Toyama: Toyama Prefectural Board of Education.

178: Sakai A site 境 A

Toyama Prefectural Board of Education (eds.) 1990. *Hokuriku Jidôshadô iseki chôsa hokoku—Asahimachi-hen Sakai A iseki sekki-hen*. [Report of the excavations of the Hokuriku Express way—sites in Asahi-town; Sakai A site, stone tool edition (3 vol.)]. Toyama: Toyama Prefectural Board of Education.

179: Teraji site 寺地

TERAMURA, Mitsuharu, AOKI, Shigetaka & SEKI, Masayuki (eds.) 1987. *Shiseki Teraji iseki—Niigata-ken Oomi-machi Teraji iseki hakkutsu chôsa hôkokusho*. [Historical site Teraji: the excavation site report of Teraji site in Oomi-town in Niigata prefecture]. Niigata: Oomi Municipal Board of Education.

180: Chôjagahara site 長者が原

- a) MAEYAMA, Kiyooki. 1985. Niigata-ken Chôjagahara isseki—hisui gensanchi no iseki [Chôjagahara site in Niigata prefecture: site at the source of jadeite]. In M. Tozawa (ed). *Jômon no iseki—higashi nihon-hen* [Jômon sites in East Japan], pp. 475-82. Tokyo: Yuhikaku.
- b) Chôjagahara Site and Museum Committee (eds.) 2000. *Umoreru daishuraku chojagahara—hisui no furusato* [The buried large settlement Chôjagahara—the home of jadeite] Museum brochure. Niigata Oomi-town: Chôjagahara Site and Museum Committee.

APPENDICES

*A1: Overview of the characteristics of sample sites **with** stone ornaments*

*A2: Overview of the characteristics of sample sites **without** stone ornaments*

B: Overview of the contexts of stone ornaments, divided per material category

C: Illustrations fig. 1~27

Site information			House numbers				Habitation History				Stone Ornament Materials							Special Commodities								
Site no. in text/map	Site Name	Site location: city	Geographical location	Excavation size (in m ²)	All Jōmon houses	Including Middle Jōmon	Including LATE Jōmon	Earlier or Later Jōmon houses	Earlier Middle Jōmon houses	Percentage of LATE MJ Houses	Late MJ house pottery phases	Jadeite	Soapstone	Amber	Serpentine	Agate/ Jasper	Ubiquitous stone	Material Not Defined	Exotic polished adzes present	arrowhead totals	Obsidian arrow head ratios (%)	Clay figurines	Phallic stone rods	Clay 'prisms'		
CHUBU Mountains (28 sites; 40% of Mountain area sample)																										
7	Tsubonouchi	Matsumoto	Matsumoto Basin	6,867	25	6	6	E & L		24%	2	(2)								Y	246	76%	Y	Y		
8	Kolke/Hitotsuya	Matsumoto	Matsumoto Basin	16,452	84	84	54		Y	64%	3	2								Y	147	92%	Y	Y		
9	Yamakage	Matsumoto	Matsumoto Basin	3,198	19	15	11	L	Y	58%	3									Y	83	81%	Y	Y		
10	Minaminakajima	Matsumoto	Matsumoto Basin	4,807	30	30	21		Y	70%	3									Y	278	90%	Y	Y		
11	Hora	Yamagata	Matsumoto Basin	540	21	21	19		Y	90%	3									Y	7	86%	Y	Y		
12	Nakajima	Shiojiri	Suwa Lake	856	14	14	13		Y	93%	3									Y	26	96%	Y	Y		
13	Hiraide	Shiojiri	Suwa Lake	?	17	17	12		Y	71%	2	1								Y	9	78%	Y	Y		
16	Nashikubo	Okaya	Suwa Lake	11,604	90	84	29	E & L	Y	32%	3	3	8							Y	1107	90%	Y	Y		
24	Shichimengawa B	Komagane	Ina Valley	700	10	10	10			100%	1	1								Y	11	100%	Y	Y		
27	Tsujisawaminami	Komagane	Ina Valley	24,500	100	100	100			100%	3	2								?	25	92%	Y	Y		
28	Takamihara	Komagane	Ina Valley	4,420	44	44	28		Y	64%	2	1								?	14	?	Y	Y		
33	Satomi V	Matsukawa	Ina Valley	2,900	12	12	12		Y	100%	1	1								?	17	?	Y	Y		
34	Nakahara /Koshikihara I-II	Matsukawa	Ina Valley	1,880	25	25	21		Y	84%	1	1								?	52	?	Y	Y		
35	Masunoshinkiri	Takamori	Ina Valley	3,800	81	81	81		Y	100%	3	2	1							?	254	?	Y	Y		
38	Tanabatake	Chino	Suwa/WYGD	9,000	149	146	94	E	Y	63%	3	3	5	1						Y	529	99%	Y	Y	?	
39	Tateishi	Chino	Suwa/WYGD	4,000	35	31	31	L		89%	2	5								?	28	?	Y	Y		
42	Chinowada	Chino	W Yatsugadake	5,200	67	58	42	E & L	Y	63%	3	1	1							Y	14	?	Y	Y		
44	Todonomiya group (Idaira)	Fujimi	WYatsugadake	9,665	53	45	44	E	Y	83%	3	6								Y	30	97%	Y	Y		
46	Hōjō I /Ohwada	Oizumi	S Yatsugadake	2,660	14	14	14			100%	2	1									23	96%	Y	Y		
48	Kabutsuppara	Oizumi	S Yatsugadake	7,701	78	57	40	E	Y	51%	3										86	95%	?	?		
51	Kashiranashi	Nagasaka	S Yatsugadake	3,000	16	16	16			100%	3	1									9	100%	Y	Y		
56	Ushiroda & Kita~	Nirasaki	S Yatsugadake	10,000	18	18	18		Y	100%	2									?	?	?	Y	Y		
58	Karamatsu	Futaba	S Yatsugadake	7,000	10	11	3		Y	30%	2									?	?	?	Y	Y		
59	Kanenoo	Shikishima	N Kōfu Basin	5,000	8	7	3	E	Y	38%	1									Y	60	98%	Y	Y		
64	Tateishiminami	Sakaigawa	W Kōfu Basin	450	0	0	0				0									?	66	82%	Y	Y		
65	Ichinosawa ~nishi	Sakaigawa	W Kōfu Basin	5,000	21	20	17	E & L	Y	81%	3									?	13	?	Y	Y		
67	Kitabori	Ichinomiya	E Kōfu Basin	1,440	5	5	5			100%	2									Y	4	50%	Y	Y		
68	Shakadō group	Ichinomiya	E Kōfu Basin	20,000	255	194	131	E & L	Y	51%	3	1								?	927	97%	Y	Y		

APPENDIX A 2: Overview of the characteristics of sample sites *without* stone ornaments

Site Information			House numbers			Habitation history			Stone Ornaments						Special Commodities											
Site no.	Site Name	Site location: City	Geographical location	Excavation size (in m ²)	All Jōmon houses	Including Middle Jōmon	Including LATE Middle Jōmon	Earlier or Later Jōmon houses	Earlier Middle Jōmon houses	Percentage of LATE MJ Houses	Late MJ house phases	Jadite	soap-stone	amber	serpentine	Agate/ Jasper	LOCAL stone	Material N.D.	Exotic adzes present	arrowhead totals	Obsidian arrowhead ratios (%)	Clay figurines	Phallic stone rods	Clay 'prisms'		
CHUBU Mountains (42 sites, 60% of Mountain area sample)																										
1	Hashiba	Suzaka	North Nagano	184	0	0	0			100%	0										28	53%		Y		
2	Yotsukaichi	Sanada	North Nagano	1,180	25	25	25			100%	3										76	93%		Y		
3	Kitamura	Akashina	North Matsumoto	21,530	58	10	10	L		17%	1										685	6%		Y		
4	Oomratsukada	Matsumoto	Matsumoto Basin	2,555	46	46	46			100%	3										?	?		Y		
5	Shōzuma	Matsumoto	Matsumoto Basin	300	6	6	6			100%	2										15	67%		Y		
6	Yashōmae	Matsumoto	Matsumoto Basin	3,000	21	22	16	L		76%	2										13	69%		Y		
14	Minebata	Shiojiri	Matsumoto Basin	2,530	14	14	10			71%	3										39	90%		Y		
15	Tokoochūdō	Shiojiri	Matsumoto Basin	350	16	20	10			63%	3										27	96%		Y		
17	Kaido	Okaya	Suwa Lake	2,675	23	20	15	E		65%	3										103	?		Y		
18	Nagazuka	Okaya	Suwa Lake	300	4	3	1	L		25%	1										23	91%		Y		
19	Kuzushigo	Ootaki	Kiso Valley	7,335	8	6	3	E		38%	2										138	19%		Y		
20	Misayama	Minowa	Ina Valley	700	12	12	12			100%	1										71	93%		Y		
21	Uenobayashi	Minowa	Ina Valley	1,600	10	10	7			70%	2										11	64%		Y		
22	Takagawahara	Miyata	Ina Valley	100	3	3	3			100%	1										1	100%		Y		
23	Haragaito	Komagane	Ina Valley	3,577	30	30	30			100%	2										3	100%		Y		
25	Maruyaminami	Komagane	Ina Valley	13,500	43	52	32			74%	1										0	100%		Y		
26	Hinatazaka	Komagane	Ina Valley	804	4	4	4			100%	1										2	100%		Y		
29	Machiya	Iijima	Ina Valley	710	8	8	7			88%	1										3	100%		Y		
30	Kitaharanishi	Iijima	Ina Valley	3,375	22	22	22			100%	1										?	?		Y		
31	Okoshi	Iijima	Ina Valley	600	28	24	24	L		86%	2										87	?		Y		
32	Nakiotenpaku	Iijima	Ina Valley	240	10	10	10			100%	2										3	?		Y		
36	Daimyōjinbara	Kamisato	Ina Valley	2,908	20	22	17			85%	3										1	100%		Y		
37	Shirohonya	Takagi	Ina Valley	2,500	48	45	45			94%	1										33	85%		Y		
40	Yosukeoneminami	Chino	W Yatsugadake	1,500	5	4	4	E		80%	1										8	88%		Y		
41	Takabe	Chino	W Yatsugadake	1,200	9	9	5			56%	2										27	96%		Y		
43	Izawaone	Hara	W Yatsugadake	10,000	28	28	28			100%	2										43	95%		Y		
45	Sori	Fujimi	W Yatsugadake	2,500	59	59	31			53%	3										61	95%		Y		
47	Tenjin A	Oizumi	S Yatsugadake	1,000	5	5	5			100%	1										3	100%		Y		
49	Yanagitsubo A&B	Nagasaka	S Yatsugadake	7,000	21	21	20			95%	3										16	100%		Y		
50	Nishihara	Takane	S Yatsugadake	1,500	1	1	1			100%	1										7	100%		Y		

APPENDIX A 2: Overview of the characteristics of sample sites *without* stone ornaments

Site information			House numbers			Habitation history			Stone Ornaments							Special Commodities									
Site no.	Site Name	Site location: City	Excavation size (in m ²)	All Jōmon houses	Including Middle Jōmon	Including LATE Middle Jōmon	Earlier or Later Jōmon houses	Earlier Middle Jōmon houses	Percentage of LATE MJ Houses	Late MJ house phases	Jadite	soap-stone	amber	serpentine	Agate/Jasper	LOCAL stone	Material N.D.	Exotic adzes present	arrowhead totals	Obsidian arrowhead ratios (%)	Clay figurines	Phallic stone rods	Clay 'prisms'		
52	Negoya	Hakushū	700	13	12	12	E		92%	3								?	7	100%					
53	Yashikisoe	Akeno	11,400	7	3	3	L		43%	1									?	?		Y	Y	Y	
54	Gōsōji	Sudama	1,700	1	1	1			100%	1									1	100%		Y	Y	Y	
55	Shukujiri	Nirasaki	250	6	6	4		Y	67%	1									4	100%		Y	Y	Y	
57	Sakai	Nirasaki	1,100	?	?	?		Y	?	?									35	100%		Y	Y	Y	
60	Miyanomae	Ichikawadaimon	1,800	11	11	11			100%	3									8	88%		Y	Y	Y	
61	Yokobatake	Toyotomi	281	1	1	1			100%	1									3	100%		Y	Y	Y	
62	Goro	Nakamichi	1,500	3	3	3			100%	2									0						
63	Uenohara	Nakamichi	1,500	15	14	4	E	Y	27%	3									16	81%		Y	Y	Y	
66	Uenodaira	Yatsushiro	1,674	3	3	3			100%	1									12	100%		Y	Y	Y	
69	Miyanomae	Tsuru	170	5	5	5			100%	2									9	100%		Y	Y	Y	
70	Furuyadonmichi	Makioka	100	2	1	2	L		100%	1									0						
WEST KANTO PLAINS (54 sites; 7.5% of West Kantō sample)																									
71	Kamoppara	Itsukaichi	837	8	8	8			100%	1									45	36%		Y			
72	Yamanesakaue	Hamura	400	5	5	5			100%	1									2	50%					
73	Ninomiya	Akigawa	45	10	5	5	E		50%	2									45	27%				Y	
74	Nagasawa	Fussa	675	1	1	1			100%	1									3	?				Y	
75	Ryūshinji-higashi	Akishima	260	1	1	1			100%	1									0	0%				Y	
77	Odano	Hachiōji	4,147	1	1	1			100%	1									3	0%				Y	
78	Bentenbashi	Hachiōji	1,000	7	7	7			100%	2									7	67%				Y	
79	Ishikawa-amanod	Hachiōji	1,300	3	3	3			100%	1									46	20%				Y	
81	Shimoterada	Hachiōji	2,400	3	3	3			100%	1									1	0%					
82	Minami Hachiōji no. 28	Hachiōji	2,110	1	1	1			100%	1									0						
83	Hirayatabashi	Hino	400	9	9	7		Y	78%	1									25	40%				Y	
85	Jinmeijōkita	Hino	72	9	9	6		Y	67%	1									6	?				Y	
87	Tama N.T. no. 67	Hachiōji	800	14	14	11		Y	79%	3									39	77%				Y	
88	Tama N.T. no. 57	Hachiōji	6,000	10	8	8	E	Y	80%	3									26	31%				Y	
89	Hirao no. 2	Inagi	595	0	0	0		Y		0									2	50%				Y	
90	Tsurukawa J	Machida	4,000	38	43	32		Y	84%	3									28	?				Y	
91	Kisomorino	Machida	13,550	10	9	10			100%	1									28	79%				Y	

APPENDIX A 2: Overview of the characteristics of sample sites *without* stone ornaments

Site information			House numbers			Habitat history			Stone Ornaments							Special Commodities								
Site no.	Site Name	Site location: City	Geographical location	Excavation size (in m ²)	All Jōmon houses	Including Middle Jōmon	Including LATE Jōmon	Earlier or Later Jōmon houses	Earlier Middle Jōmon houses	Percentage of LATE MJ Houses	Late MJ house phases	Jadette	soap-stone	amber	serpentine	Agate/ Jasper	LOCAL stone	Material N.D.	Exotic adzes present	arrowhead totals	Obsidian arrowhead ratios (%)	Clay figurines	Phallic stone rods	Clay 'prisms'
92	Musashinodai	Fuchū	Tama River	4,371	1	1	1			100%	1								?	1	0%			
94	L.B. Higashi Fuchū	Fuchū	Tama River	153	5	5	5			100%	3								?	0	?	Y		
96	Nukiminami	Koganei	Tama River	2,600	17	17	8	Y		100%	2								?	14	?			
97	Nakazana	Koganei	Tama River	840	3	3	3			100%	1									18	39%			
98	Inokashiraike A	Mitaka	Tama River	1,200	1	1	1			100%	1								Y	2	50%	Y		
99	Kaminunota	Chōfu	Tama River	500	2	2	2			100%	1								?	81	36%	Y		
101	Benzaitenike group	Komae	Tama River	7,712	45	45	42	L	Y	93%	3													
102	Dogayato	Setagaya	Tama River	3,289	21	23	20	E		95%	2									22	95%			
103	Jakuzure	Setagaya	Tama River	1,450	15	15	9	Y		60%	1								Y	47	74%			
104	Suwayama	Setagaya	Tama River/TB	1,090	27	27	27			100%	2									171	90%			
105	Megurisawakita	Setagaya	Tama River	6,877	2	2	2		Y	100%	1									11	27%	Y		
106	Shimonoge	Setagaya	Tama River/TB	273	0	0	0				0									8	86%			
107	Sendagi	Bunkyo	Ara River	400	1	1	1			100%	1									3	100%			
108	Jiyūgakuen-minami	Higashi-kurume	Tama/Ara River (N. Tokyo)	1,500	36	43	27	Y	Y	75%	2								Y	175	58%	Y		
109	Noshiosotoyama	Kiyose	Tama/Ara River	965	16	16	6	Y	Y	38%	1								?	10	?			
110	Mikage	Tsukui	Sagami River	330	10	11	2	Y	Y	20%	2									156	99%			
111	Ooiki	Tsukui	Sagami River	225	0	0	0	Y	Y		0									0				
116	Katsusaka	Sagamihara	Sagami River	970	5	5	4	Y	Y	80%	2									0				
117	Higashiyato B	Atsugi	Sagami River	±1000	4	1	1		L	25%	1								Y	0				
118	Heiwazaka	Zama	Sagami River	300	7	7	7			100%	2								?	3	100%	Y		
119	Kamiizumi-nakahara	Ebina	Sagami River	1,800	1	1	1			100%	1									5	60%			
120	Ebinabōchi	Ebina	Sagami River	2,028	0	0	0	Y	Y		1								?	0				
121	Sugikubo-nakahara	Ebina	Sagami River	600	6	6	5	Y	Y	83%	1									0				
122	Shimotsurama-Nagahori II	Yamato	Sagami River	122	1	1	1			100%	1									0				
126	Nakamachi	Kawasaki	Tama River	351	1	1	1			100%	1									0				
127	Sakuranami	Yokohama	Tama River	16,700	5	5	5			100%	2								?	7	71%			
129	Amaya	Yokohama	Tokyo Bay	4,573	1	1	1			100%	1									0				

APPENDIX A 2: Overview of the characteristics of sample sites *without* stone ornaments

Site no.	Site Name	Site location: City	Site information		House numbers			Habitat history			Stone Ornaments							Special Commodities						
			Excavation size (in m ²)	Geographical location	All Jōmon houses	Including Middle Jōmon	Including LATE Middle Jōmon	Earlier or Later Jōmon houses	Earlier Middle Jōmon houses	Percentage of LATE MJ Houses	Late MJ house phases	Jadite	soap-stone	amber	serpentine	Agate/ Jasper	LOCAL stone	Material N.D.	Exotic adzes present	arrowhead totals	Obsidian arrowhead ratios (%)	Clay figurines	Phallic stone rods	Clay 'pmsms'
130	Morooka-uchikoshi	Yokohama	Tokyo Bay	1,800	6	6	3	Y	50%	1								Y	5	100%	Y			
131	Ooguchidai	Yokohama	Tokyo Bay	1,382	28	34	16	Y	57%	2								Y	23	91%				
133	Toshikura Kaizuka	Yokohama	Tokyo Bay	368	0	0	0	Y	67%	2									0					
134	Gontazaka shogakkō	Yokohama	Tokyo Bay	768	3	3	2	Y		2									0					
135	Nakamura miya notani	Yokohama	Tokyo Bay	4,200	1	1	1		100%	1									0					
136	Izumikeisatsu	Yokohama	Tokyo Bay	800	29	29	28	Y	97%	2									2	100%				
137	Kamishinano site group	Yokohama	Tokyo Bay	4,778	2	2	2		100%	1									2	100%				
139	Shintoshara	Hiratsuka	Sagami River	2,630	4	4	4	Y	100%	1								Y	67	97%				
141	Hinatagaoka	Hiratsuka	Sagami River	5,000	0	0	0			0									13	100%				
142	Tenjinyamadai	Odawara	Hakone	53	3	3	3	Y	100%	1									2	100%	Y			
EAST KANTO PENINSULA (24 sites, 73% of Chiba sample)																								
143	Hayashidai	Kashiwa	Tone River	32,000	76	76	76		100%	?								Y	32	13%				
144	Kōshinmae	Kashiwa	Tone River	2,168	1	1	1		100%	1									1	100%				
145	Sasawara	Kashiwa	Tone River	609	2	2	2		100%	1									1	100%				
146	Mukaidai	Ichikawa	Tokyo Bay	90	3	3	3		100%	1									7	0%				
148	Mukaeyama	Chiba	Tokyo Bay	6,000	7	6	4	Y	57%	2	E							Y	4	50%				
152	Takazawa	Chiba	Tokyo Bay	27,000	2	2	2		100%	1									16	50%				
153	Hagawa	Chiba	Tokyo Bay	1,560	4	4	4		100%	2								?	2	50%				
155	Hetanodai Kaizuka	Chiba	Inland Chiba	1,230	0	0	0			0									1	?				
156	Ueno	Yotsukaidō	Inland Chiba	3,615	8	8	3	Y	38%	1									24	50%	Y			
157	Deguchi	Yotsukaidō	Inland Chiba	7,700	1	1	1		100%	1									0		Y			
159	Ikemukai	Sakura	Inland Chiba	57,625	14	14	14		100%	1									448	57%				
160	Gotarime	Sakura	Tokyo Bay	4,500	6	2	2		33%	1	L								4	?				
161	Naradaibutsudai	Ichihara	Tokyo Bay	9,000	3	3	3	Y	100%	1									2	50%				
163	Obatadai	Sodegaura	S Tokyo Bay	2,500	*	*	0			0	L								4	?	Y			
164	Kado	Sodegaura	S Tokyo Bay	7,863	2	1	1		50%	1									8	57%				

APPENDIX A 2: Overview of the characteristics of sample sites *without* stone ornaments

Site information		House numbers			Habitation History			Stone Ornament Materials							Special Commodities								
Site no. in text/map	Site Name	Site location: city	Excavation size (in m ²)	All Jōmon houses	Including Middle Jōmon	Including LATE Middle Jōmon	Earlier or Later Jōmon houses	Earlier Middle Jōmon houses	Percentage of LATE MJ Houses	Late MJ house phases	Jadite	Soapstone	Amber	Serpentine	Agate/Jasper	stone	Material N.D.	Exotic polished adzes present	arrowhead totals	Obsidian arrowhead ratios (%)	Clay figurines	Phallic stone rods	Clay 'prisms'
165	Iwai	Tomimura	4,710	1	1	1			100%	1								Y	99	74%	Y	Y	
166	Daigi A	S Tokyo Bay	15,000	85	60	60	E		71%	1								Y	104	59%			
167	Igodai	Tone River	1,376	2	2	2			100%	1									0	17%		Y	
168	Nogedaira-kidoshita	Tone River	1,600	18	18	18			100%	1									24				
170	Kurmon	Tone River	334	1	1	1			100%	1									7	71%			
171	Kisaki	Tone River	4,500	9	9	9			100%	1									3	0%		Y	
172	Tada	Tone River	11,475	41	41	41		Y	100%	1									105	6%		Y	
173	Shiraiōmiyadai	Omigawa	200	0	0	0				0									43	5%		Y	
174	Shindainatsukata	Tonoshō	4,500	7	7	5		Y	71%										12	25%			

APPENDIX B: Overview of the contexts of stone ornaments, divided per material category

JADEITE ORNAMENTS AND RAW NODULES: 44 items at 23 sample sites

No.	Site name	Location	Item	Context	Date assigned	Style	Condition
8	Koike-Hitotsuya	Matsumoto Basin	2 R	House fill; Cultural layer	Late MJ KE 2 <i>Middle Jōmon</i>	--	2 Raw nodules
13	Hiraide	Shiojiri, Suwa lake	1 R	House fill	Mid MJ	--	Raw nodule
16	Nashikubo	Okaya, Suwa Lake	2 P 1 R	Burial s Burial	Mid~Late MJ Mid MJ	2 'Bonito' --	Both whole Raw nodule
27	Tsujisawaminami	Komagane, Ina Valley	2 P	House floor House floor	Late MJ KE 1 Late MJ KE 2	2 'Bonito'	Broken in half Whole
28	Takamihara	Komagane, Ina Valley	1 P	Burial	Late MJ KE 1	'Bonito'	Whole
33	Satomi V	Matsukawa, Ina Valley	1 R	Burial	Late MJ	--	Raw nodule
34	Kōshinbara II	Matsukawa, Ina Valley	1 U	House fill	Late MJ	'Adze'	Whole, partially drilled hole
35	Masunoshinkiri	Takamori, Ina Valley	2 P	House fills	Late MJ (both KE 2)	2 'Bonito'	Whole whole
38	Tanabatake	Chino, W. Yatsugadake	3 P	Burials (3 pits w/1)	Late MJ	3 Bonito; 2 'Adze'	All whole
39	Tateishi	Chino, W. Yatsugadake	5 P	Burials (1 pit w/ 3)	Late MJ~Start LJ	5 'Bonito'	Whole
42	Chinowada	Chino, W. Yatsugadake	1 P	Cultural layer settlement	<i>Late MJ</i>	'Bonito'	Whole
44	Todonomiya: Idaira	Fujimi, W. Yatsu-gadake	6 P	Burial (5 pits; 1 pit w/ 2)	Late MJ KE 3	n.d.	n.d.
46	Hōjō	Oizumi, S. Yatsugadake	1 P	Burial (pit & stones)	Late MJ KE 4	'Bonito'	Whole
51	Kashiranas hi	Nagasaka, S. Yatsugadake	1 P	House fill	Late MJ KE 2	'Bonito'	Almost whole (bottom chipped)
68	Tsukakoshi kita A	Ichinomiya Kōfu Basin	1 R	House fill	Early MJ	--	Raw nodule
94	Koigakubo	Kokubunji, Tama River	1 R 1 U 2 P	House fill House fill Burial (1w/2)	Mid MJ Mid Chuki Late MJ KE 1	-- 'bonito' .?? 2 'Bonito'	Raw nodule Broken, no hole Both whole
114	Taima	Sagamihara Sagami River	1 U	Cultural layer	<i>Late MJ</i>	'Bonito'	Whole; partially drilled hole
115	Kaminakamaru	Sagamihara Sagami R.	1 P	Burial	Late MJ	'Bonito'	Tip damaged
128	Shiomidai	Kawasaki, Tama River	1 P	Cultural layer	<i>Late MJ</i>	'Bonito'	Whole
147	Takanekido	Funabashi Tokyo Bay	2	House fill (burial?) pit	Late MJ KE 3 ?	'Bonito' ?	Whole Fragment
149	Arayashiki Kaizuka	Chiba, Tokyo Bay	1	Cultural layer	<i>Mid~Late MJ</i>	'Bonito'	Whole
162	Kusakari Kaizuka B	Ichiwara, Tokyo Bay	2	Cultural layer	<i>Mid~Late MJ</i>	'Bonito'	Whole
174	Higashinagayamano	Yokoshiba, Pacific Coast	1	Cultural layer	<i>Late MJ</i>	'Bonito'	Whole

APPENDIX B: Overview of the contexts of stone ornaments, divided per material category

AMBER ORNAMENTS: 21 items at 8 sample sites

No.	Site name	Location	Items	Context	Date assigned	Style	Condition
16	Nashikubo	Okaya, Suwa Lake	8	Burial 3 pits w/1 1 pit w/5	Early~Mid MJ	Round?	Fragments
38	Tanabatake	Chino, W. Yatsugadake	1	Burial	Late MJ	± irregular round	Whole
39	Tateishi	Chino, W. Yatsugadake	1	Burial	Late MJ~Start LJ	± irregular round	damaged
48	Kabutsupara	Oizumi, S. Yatsugadake	7	Burial 1 pit w/1 1 pit w/6	Early MJ	± square	Fragments; only 2 better-preserved
59	Kanenuo	Shiikishima Kôfu Basin	1	House fill	Mid MJ	Pipe bead?	Fragment
65	Ichinosawa-nishi	Sakaigawa, Kôfu Basin	1	?	?	?	Small fragment
158	Mukaihara	Sakura, Inland Chiba	1	Cultural layer	Late MJ?	± bonito-shape?	fragment
175	Higashinagayama	Yokoshiba, Pacific Coast	1	Burial	Late MJ	± cone-shaped	Whole

JASPER ORNAMENTS: 3 items at 3 sample sites

No.	Site name	Location	Items	Context	Date assigned	Style	Condition
124	Jûchidaiyama 11	Yokohama, Tokyo Bay	1	Cultural layer	?	Earring part	Broken, pierced
132	Hazawadaidô	Yokohama, Tokyo Bay	1	Burial	Final MJ~start LJ ≥Kasori E 3	'Bonito'	Whole
140	Kaminari-matsu	Isehara, Sagami R.	1	Burial	Final MJ KE 4	'Bonito'	Broken in half

AGATE ORNAMENTS: 2 items at 2 sample sites

No.	Site name	Location	Items	Context	Date assigned	Style	Condition
67	Kitabori	Ichinomiya, Kôfu Basin	1	House fill	Final MJ	'Bonito'	Whole
68	Shakadô (Noronohara)	Ichinomiya, Kôfu Basin	1	Surface-collected	?	Earring part	Broken

APPENDIX B: Overview of the contexts of stone ornaments, divided per material category

SOAPSTONE (steatite) ORNAMENTS: 40 items at 21 sample sites

No.	Site name	Location	Item	Context	Date assigned	Style	Condition
10	Minaminkajima	Matsumoto Basin	1 U	House fill	Late MJ (KE2)	'Adze'	Whole, not pierced
11	Hora	Yamagata, Matsumoto	1 U	Cultural layer	?	Earring part	Broken, no evidence of hole
13	Hiraide	Shiojiri, SL	1 U	House fill	Mid MJ	round	Unfinished
15	Nashikubo	Okaya Suwa Lake	7 P	Burial Burial House fill (2in 1) cult. layer (3)	Early~Mid MJ " " ? Late MJ (Kasori E 2) ?	Pipebead Pipebead Round Pearshaped	Broken Broken
24	Shichimengawa B	Komagane Ina Valley	1 P	House fill	Late MJ (KE 1~2)	'Adze'	Whole
27	Tsujisawaminami	Komagane Ina Valley	1 P	House fill	Late MJ	Oval & flat	Whole
28	Masunoshinkiri	Takamori Ina Valley	1 P	Random	Late MJ?	Pipe bead	Whole
38	Tanabatake	Chino, West Yatsugadake	5 P	Burial House fill House fill cult. layer 2	Early MJ Early MJ Mid MJ MJ?	Earring part Comma Laurel leaf ?	Broken Whole Whole ?
42	Chinowada	Chino, W.Y	1 U	House fill	Late MJ	Triangular	Partially pierced
59	Kanenuo	Shiikishima Yatsu/Kôfu	1 P 1 U	Cultural layer House fill	? Mid~Late MJ	Pipe bead Rectangular	Whole; whole & unfinished
64	Tateishiminami	Sakaigawa Kôfu Basin	1 P	burial	Mid~Late MJ	'Bonito'	Whole
76	Oomachi	Hachiôji Tama river	1 U	House floor	Mid MJ	'Adze'?	Chipped, unpierced
84	Nanyôji	Kunitachi Tama river	1 P	House fill	Mid MJ	'Bonito'	Whole, scratched
112	Hashimoto	Sagamihara Sagami River	4 P	Burial Burial House fill House fill	Late MJ Late MJ KE 2 Late MJ KE 3 Late MJ KE 3	'Bonito' Pear Stick Round	Whole but worn whole but worn whole Broken in 2
113	Kawashiri	Sagamihara	1 P	Cultural layer	Mid~Late MJ	'Adze'	Almost whole
115	Shimomizo (Kaminakamaru & Shitahara)	Sagamihara Sagami River	1 U 2 P	House floor House fill House fill	Late MJ KE 4 Late MJ KE 4 Late MJ KE 2	'Adze' Rectangular Earring part	Whole, no hole Tip damaged Broken
124	Juchidaiyama 11	Yokohama Tokyo B.	1 U	Cultural layer	?	Earring part	Broken; unfinished?
138	Shimokitahara	Isehara Sagami R.	1 P	Cultural layer	?	Rectangular	Whole
162	Kusakari	Ichihara, TB	1	Cultural layer	Mid~Late MJ	Rectangular	Top broken
169	Nagatakijigahara	Narita, Tone River	1 P	Cultural layer	MJ~Kôki	'Bonito'	Whole, small
175	Higashinagayamano	Yokoshiba, Pacific Coast	4	Burial 1 Cult. layer 3	Late MJ KE1 ~2 Late MJ?	Earring part	All four pierced

APPENDIX B: Overview of the contexts of stone ornaments, divided per material category

SERPENTINITE ORNAMENTS: 9 items at 9 sample sites

No.	Site name	Location	Item	Context	Date assigned	Style	Condition
7	Tsubono-uchi	Matsumoto Basin	1	Cultural layer	?	Earring part	Broken, pierced?
8	Koike-Hitotsuya	Matsumoto Basin	1 P	Cultural layer	MJ?	± oval	Top broken
9	Yamakage	Matsumoto	1 P	House fill	Mid MJ	Triangular	Whole, chipped
93	Koigakubo	Kokubunji Tama R.	1 P	House floor	Mid MJ	Comma	xx
115b	Shitahara	Sagamihara Sagami R.	1	Cultural layer	?	Earring part	Broken, pierced
125	Yatsu/Kurokawa 16	Kawasaki Tama River	1	Cultural layer	?	Earring part	Broken, pierced
150	Kasori Kaizuka IV	Chiba, Tokyo Bay	1 P	Cultural layer	Late MJ layer	'Bonito'	Almost whole
151	Kamatori	Chiba, T.B.	1 P	House fill	Final MJ (KE3)	Stick	Broken in two
162	Kusakari Kaizuka B	Ichiwara, Tokyo Bay	1 P	House floor	Mid MJ	'Adze'	Whole

UNDEFINED STONE MATERIAL ORNAMENTS: 9 items at 9 sample sites

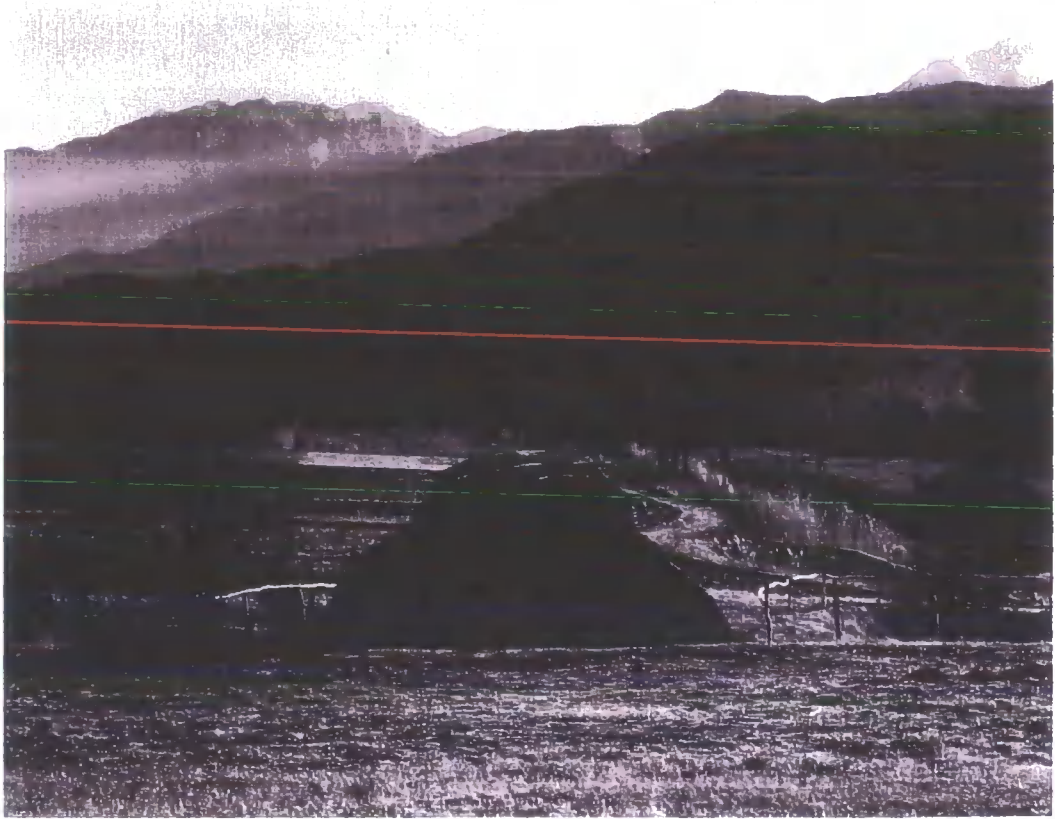
No.	Site name	Location	Item	Context	Date assigned	Style	Condition
16	Nashikubo	Okaya, Suwa L.	1 U	Cultural layer	?	?	Unfinished, polished
56	Kitaushiroda	Nirasaki, S. Yatsugadak	1	House fill	Late MJ (KE2)	'Adze'	whole
67	Kitabori	Ichinomiya E. Kōfu B.	1	Cultural layer	?	Earring part	Broken, pierced
80	Kunugita 4	Hachiōji, Tama/Sagami R.	1 U	House floor	Early MJ	'Adze'	Unfinished, bottom broken
86	Tama NT 300	Hachiōji, Tama & Sagami R.	1	House floor	Late MJ (KE2)	'Bonito'	whole
84	Nukii	Koganei, Tama R.	1	House fill	Late MJ (KE2)	'Bonito'	Almost whole
113	Kawashiri	SagamiharaSagami R.	1	House fill	Mid MJ	± 'Bonito'	whole
138	Shimokitahara	Isehara, Sagami R.	1 U	Cultural layer	?	Bell-shape?	Unfinished, whole
154	Warabi	Yotsukaidō Tokyo Bay	1	Surface-collected	?	'bonito'	whole

APPENDIX B: Overview of the contexts of stone ornaments, divided per material category

ORNAMENTS MADE OF LOCALLY AVAILABLE STONE MATERIALS: 28 items at 16 sample sites

No.	Site name	Material	Item	Context	Date assigned	Style	Condition
7	Tsubono-uchi	Sandstone hornfels	2	Burial Scattered	Final MJ ?	? Earring part	Top damaged; broken, no visible piercing
8	Koike-Hitotsuya	Green tuff sandstone	2	House fill Burial	Mid MJ MJ?	Bonito Flat round	Broken Broken
12	Nakajima	tuff	1	House floor	Late MJ	Pipe bead	Whole
16	Nashikubo	Shale	1	Scattered	?	Comma bead	whole
38	Tanabatake	Chert	1	House fill	Mid MJ	Bead	?
51	Kashira-nashi	Andesite	1	Scattered	Late MJ?	'bonito'	whole
58	Karamatsu	Sandstone tuff	2	Both scattered	?	Round pipe bead	Whole but crudely made
84	Nanyōji	shale	1	House fill	Late MJ	rectangular	Unfinished
100	Harayama	xx	1	Scattered	Mid~Late MJ?	'bonito'	Whole
113	Kawashiri	Slate, 2x schist	3	Scattered scattered house fill	? ? Mid MJ	'bonito' 2 ?	Almost whole; 2 heavily damaged
115a	Kaminakamaru	Pumice, tuff, sandstone	3	House fill scattered scattered	Late MJ (KE3~4) ?	'bonito' irregular 'bonito'	All 3 whole
115b	Shitahara	Tuff, shale, tuff	3	House floor house fill house fill	Mid MJ Mid MJ Mid MJ	± bonito ± adze ± adze? Irreg	Whole, polished slightly damaged whole
123	Inagahara	Shale shale	2	Both scattered	?	Irregular round & flat	? whole
125	Kurokawa	Schist	1	House fill	Mid MJ	Rectangular	Unfinished, top broken
140	Kaminari-matsu	Pumice	1	House fill	Late MJ (KE3)	Bonito?	Slightly damaged; pendant?
162	Kusakari	Tuff sandstone	2	Scattered pit	n.d.	? rectangular	Broken but well-polished; broken
169	Nagatakijigahara	Tuff (green)	1	Pit	Late MJ (KE 4)	Round	Whole

Figure 1: Central Japanese landscapes—the Japan Alps versus the Coastal environments



1 A (above): Chûbu Mountain region landscape: a reconstruction of a pit dwelling at Sori site (no. 45), in the Yatsugadake Mountains. 1 B (below): The ‘Jadeite Coast’, taken at the Eastern end of Toyama Bay, the boundary between Niigata and Toyama (photo courtesy of UCHIYAMA)



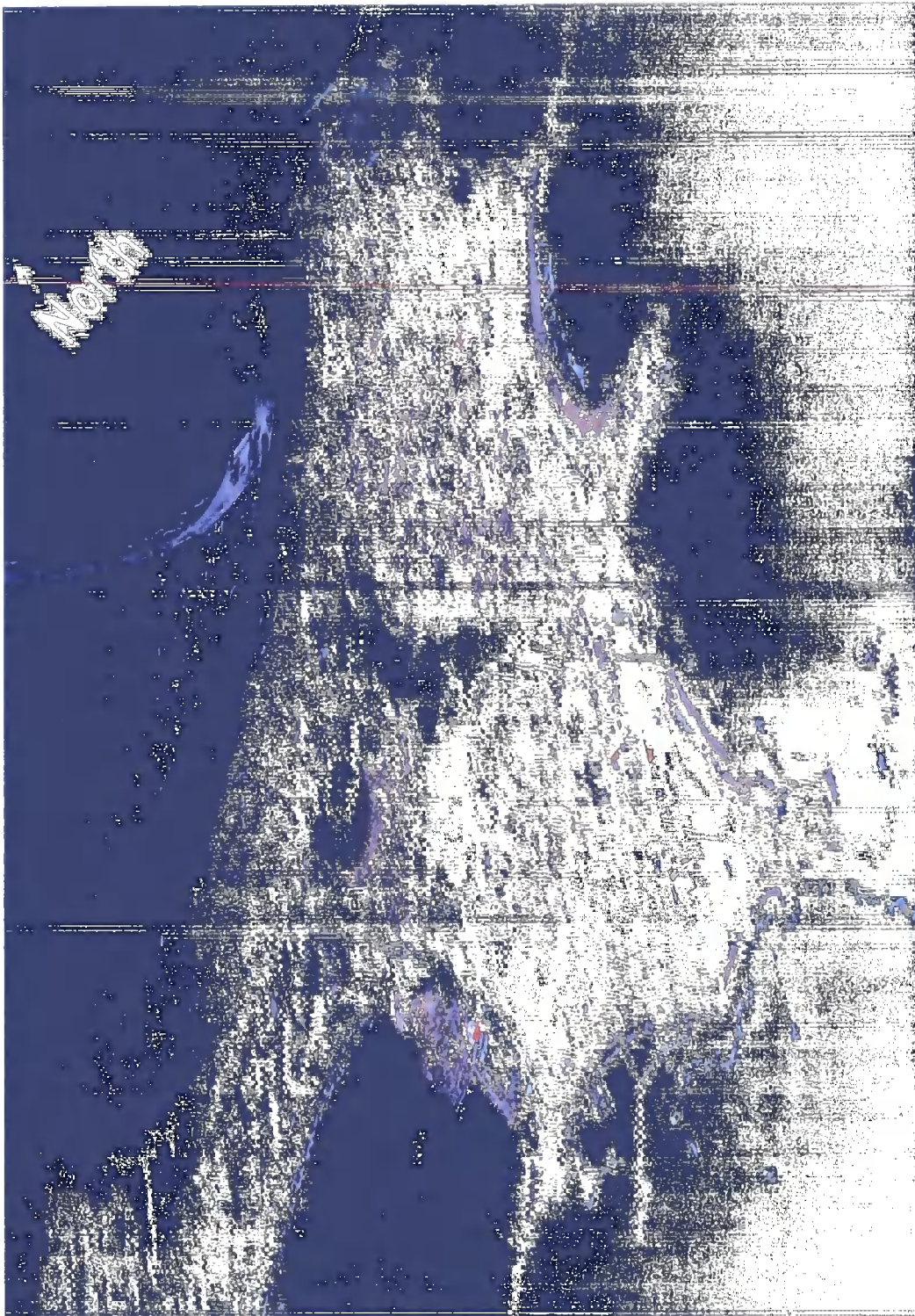


Figure 1C: Pacific 'Amber Coast' at Choshi-town/peninsula, Chiba Prefecture. This relatively flat landscape is surrounded by the Pacific Ocean, and in the northwest by the Tone river delta. Very small pieces of amber can occasionally still be found at certain coast locations during ebb-tide, after particularly rough autumn storms. These spots are well-kept secrets, known only by a few local mineralogists (Yamada Katsuhiko and Ito Mutsumori; personal communication, March 2004).

Figures 2 and 3: Jōmon cycles—seasonal subsistence activities and fluctuating population densities.

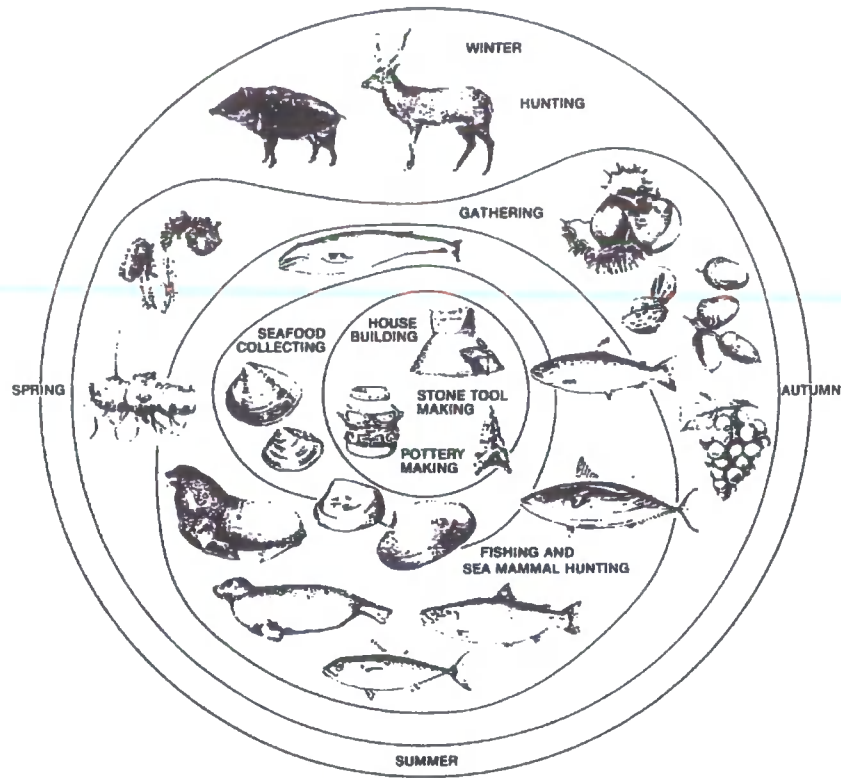


Figure 2: The Jōmon subsistence calendar, as conceived by Akazawa. Picture taken from Barnes (1993: 76).

PLANT FOODS AND THE MIDDLE JOMON CULTURE

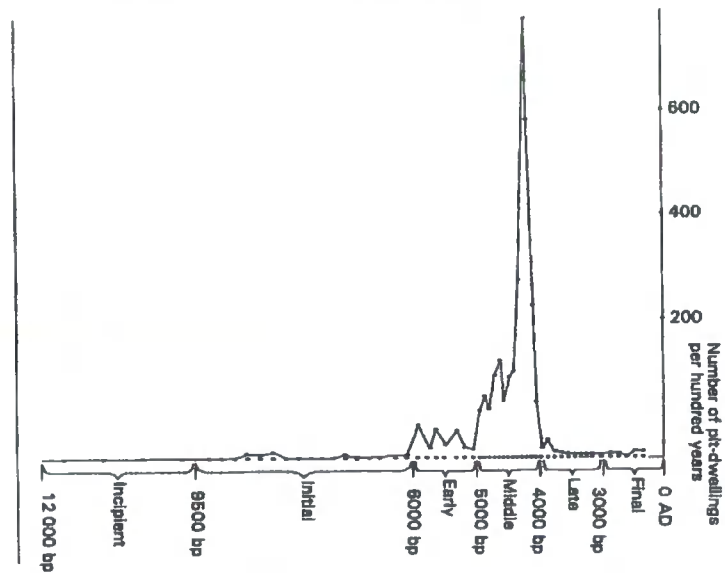


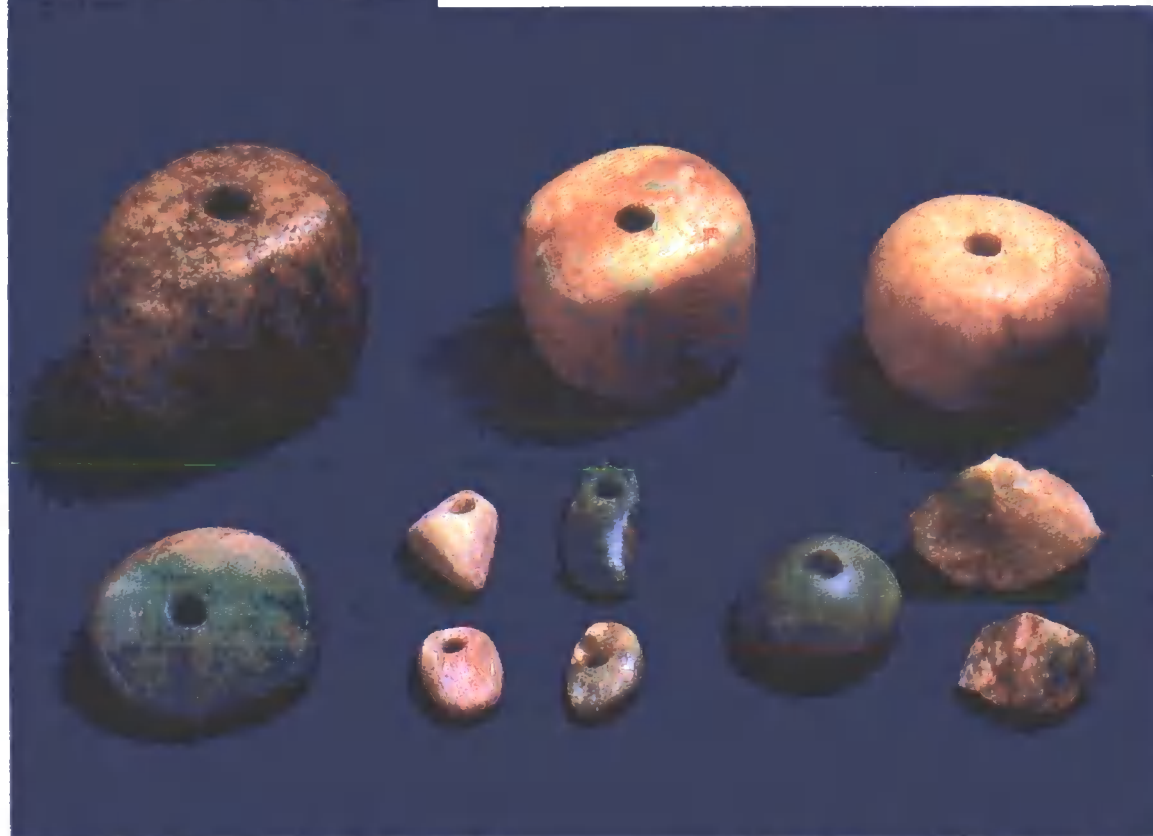
Figure 3.3 Change in numbers of excavated Jōmon pit-dwellings in the Chubu Highland with pottery type designating time unit (Imamura in press).

Figure 3: Calculations showing increased population density in the Chūbu Mountains during the Middle Jōmon, based on excavated pit dwelling numbers (Imamura 1996: 96).

Figure 4: Jōmon jadeite pendants (not included in the research area and sample)



4 A: Early Jōmon period JADEITE pendant from Tenjin C site, Yamanashi: the oldest Jadeite Pendant found in Japan so far. The pendant was found as a grave good inside a burial in the centre of a large-scale Late Early Jōmon village (ca. 5500BP), located in the Yatsugadake mountain area. The same settlement also contained various split earrings made of soapstone and serpentinite, as well as serpentinite polished adzes. All these items were derived from the Hokuriku area, ca. 150 km away. At a distance of several hundred meters (Tenjin A section), the remains of a much smaller Late Middle Jōmon settlement were discovered, without jadeite finds; this small site entered the analysis as site no. 47. (Photo taken from site report no. 47).

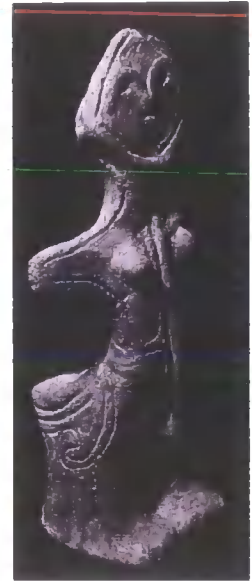


4 B: Itoigawa jadeite found in Middle Jōmon contexts at Sannai-Maruyama site, Aomori prefecture. The best evidence that very long-distance exchange of jadeite ornaments already took place during the Middle Jōmon is provided by these finds at this world-famous Northern Japan site, approximately 600km from the jadeite source in the Hokuriku area. Various types of pendants from Middle Jōmon contexts are seen here: 'bonito' shaped (centre) and large cylindrical items (ca. 6cm diameter, upper row). Archaeologists like Okamura have suggested that the presence of some raw material and unfinished items at this site may indicate that some of the phases of ornament production were carried out locally (Taken from Okamura 1995b:26).

Figure 5: Late Middle Jōmon pottery styles and associated clay figurines in the sample area: KARAKUSAMON style



A



B



表館象(T.N.72遺跡)

C

Representative Karakusamon style ceramics Photo A: Typical Karakusamon 'burial jar' (height 51cm, rim diameter 35.6cm; from Kobayashi et al. 1988b:100); B: a rare unbroken example of a clay figurine (height 26.7cm; from Harada 1995:27). Within the sampled area, this style is prevalent in the Central Mountain area, particularly in Western Nagano prefecture. Karakusamon also occurs in the Yatsugadake mountains, at sites where the Sori style is dominant. Although distribution is largely limited to the Central Mountain area, Karakusamon style pots have been found at more distant places: e.g. photo C was taken at the large-scale Tama New Town no. 72 settlement site in Tokyo (from Tokyo Centre of Buried Treasures 1993:24), and was buried in typical 'Karakusamon' fashion: upside-down under the pit dwelling's entrance, with a hole in the bottom, which according to folklore allows the child's soul to escape and be reborn in its mother's womb.

Figure 6: Late Middle Jōmon ceramic styles and associated clay figurines in the sample area: the SORI style



A



B

Representative examples of the Sori ceramic style. In terms of distribution sphere, the SORI style was more prevalent than the Karakusamon: it centred on the Yatsugadake mountain area and Kōfu Basin (south-eastern Nagano and all Yamanashi), but was also very commonly found at sites in the West Kantō plain (modern Tokyo and Kanagawa). Moreover, within the area under discussion, smaller quantities were found in the Japan Sea Coast region and the Pacific East Kantō area of the Chiba Peninsula.

Photo A shows an example of a Sori pot from Shakadō site, with its typical decoration of grooved lines and appliqué strips. (Height 42.5cm, rim diameter 40cm; from Kobayashi et al. 1988b:62). Clay figurine ritual also played an essential role within this ceramic tradition.

Photo B shows a rare undamaged Sori style clay figurine, from Sakaue site (part of Todonomiya site group, report no. 44) in Southeast Nagano; height 22 cm. Photo C shows a sample of broken clay figurine parts recovered from Shakadō site in Yamanashi, a site with a highly ritual character that contained an unsurpassed number of Middle Jōmon clay figurines (photos B and C taken from Harada 1995:27; front).



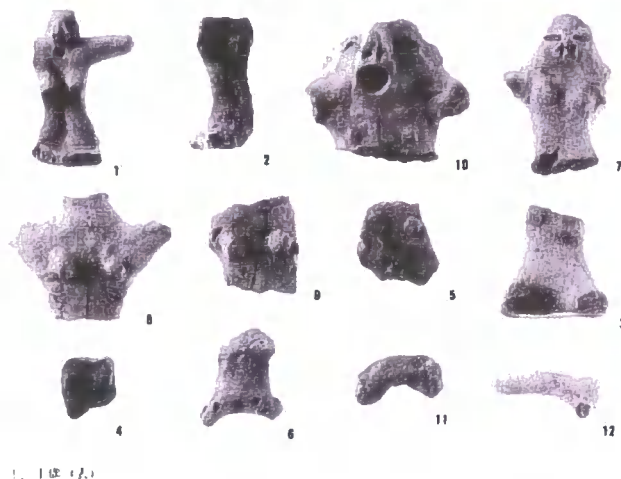
C

Figure 7: Late Middle Jōmon pottery styles and associated clay figurines in the sample area: the KASORI 'E' style



A

7 A: A representative Kasori E-type jar: typical body and rim shape; cord-marked decoration on the body. Height 41.4cm, rim diameter 34.5cm; found at Nakazanya site (report no. 97) (from Kobayashi et al. 1988a:272). This pottery type was distributed throughout the Kantō area, sometimes in association with Sori pottery. During the final stages of the Late Middle Jōmon, pottery in the Mountain area (Karakusamon and Sori style areas) also adopted some Kasori E characteristics.



B

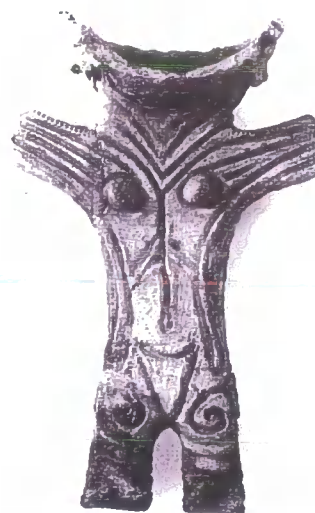
The clay figurines in **7 B** were found at Tama New Town site 300 (report no. 86) in the Tama Hill area of Tokyo. (From report 86, 1994, p. 353).

Although ritual practices involving clay figurines were also carried out in the Kasori E distribution area, these were somewhat less common than in the Central Mountain area, and even at sites with figurines, the number of figurine (parts) is often smaller. The size of these Kasori E figurines was considerably smaller than those of the Karakusamon and Sori traditions from the Central Mountains (height ca. 6~8cm unbroken; max. 10cm). Moreover the style was much more crudely executed, pulled from one lump of clay, with minor indications of legs and facial features.

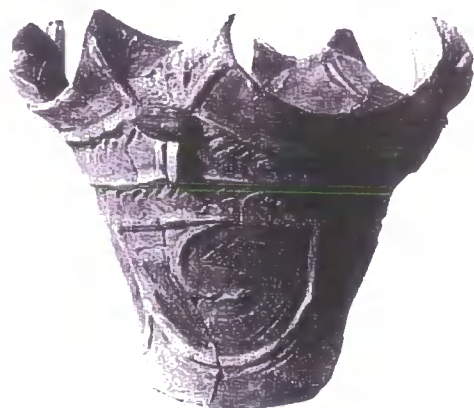
Figure 8: Regional Late Middle Jōmon pottery styles and associated clay figurines in the sample area: the Hokuriku KUSHIDASHIN and KAMIYAMADA styles



A



B



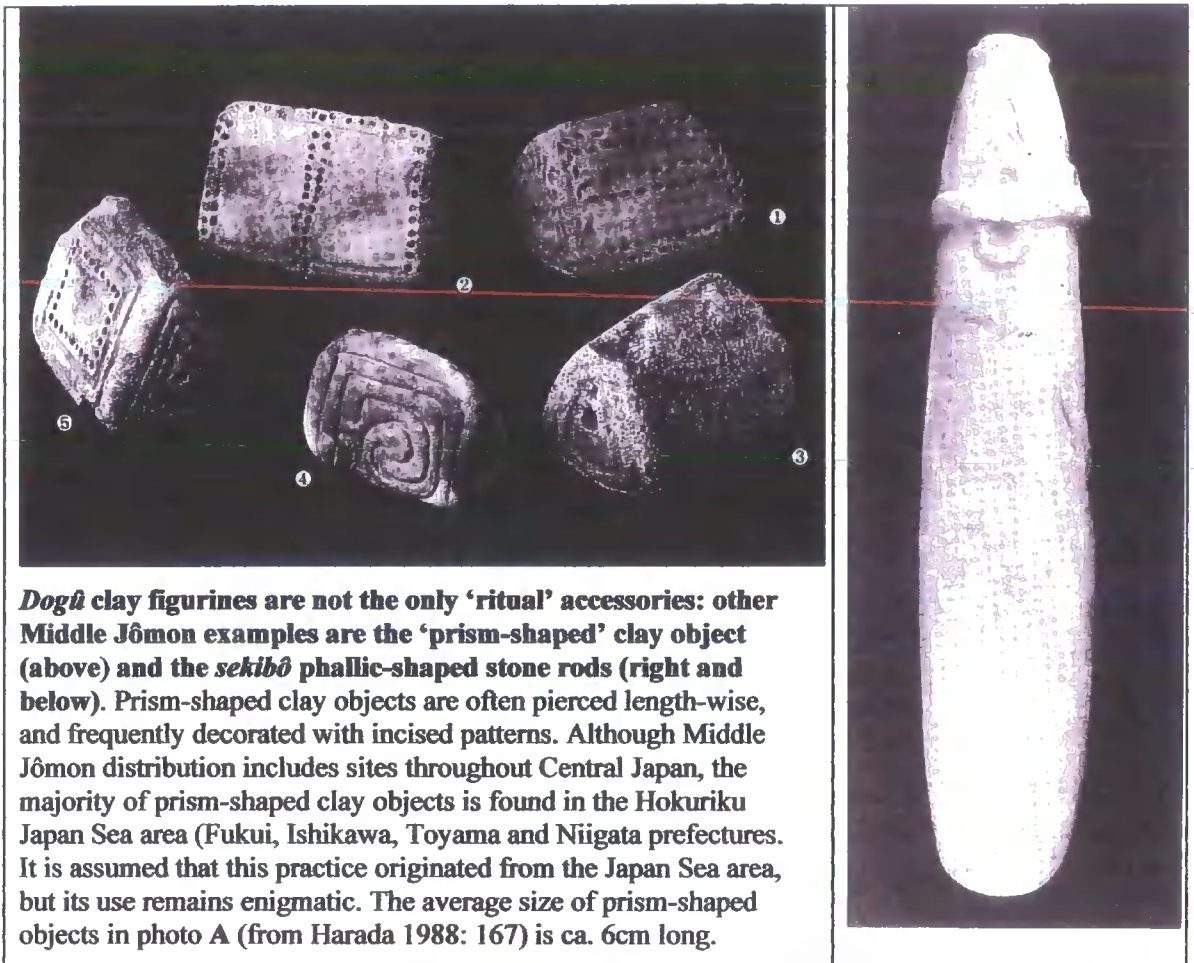
C

Figure 8: ‘Jadeite Coast’ Ceramics

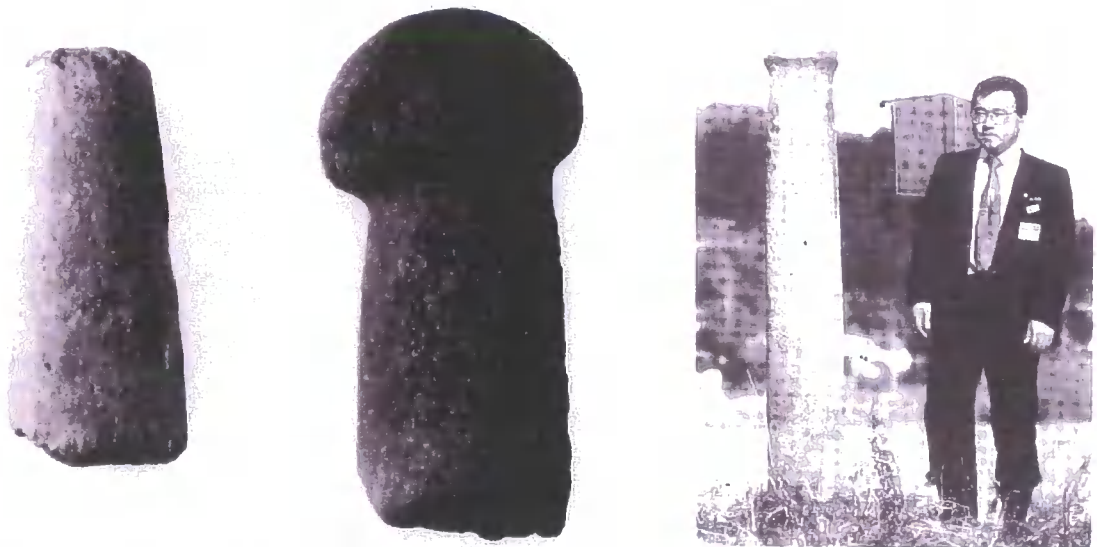
During the Late Middle Jōmon the Japan Sea coastal section of the Hokuriku region was characterised by two pottery styles which frequently coexisted at sites, including Chōjagahara: the **Kushidashin** and **Kamiyamada** styles. The vessel in 8 A belongs to the *Kamiyamada* style and was found at Chōjagahara site (site no. 180) in Niigata; its height is 34.5cm, rim diameter 29cm (Kobayashi 1988:204). The clay figurine from 8 B was also found at Chōjagahara; it is whole apart from its head, showing that the head was hollow (height 28.1cm; from Harada 1995:26). The *Kushidashin*-style pot shown in 8 C (height 23.5cm; Kobayashi 1988:188), was found in Asahi-town, Toyama, at a site near Sakai A and Babayama sites (nos. 177 & 178).

Pottery sizes of both styles vary, but the average height appears to be around 30cm—somewhat smaller than the more southern style jar, especially those from the Chūbu mountains. Moreover, vessels of both *Kamiyamada* and *Kushidashin* styles frequently possess a very ‘wavy’ rim decoration, like the one in 8 C. The appearance of preceding styles in this region was also characterised by elaborately protruding rim decorations (for example the flame-rimmed pottery representative of the Mid Middle Jōmon *Umataka* phase, cf. **Map 3** (taken from Barnes 1991); therefore this appears to be the continuation of a regional stylistic trend.

Figure 9: Other Middle Jōmon artefacts without clearly practical purpose: prism-shaped clay objects and phallic-shaped stone rods.

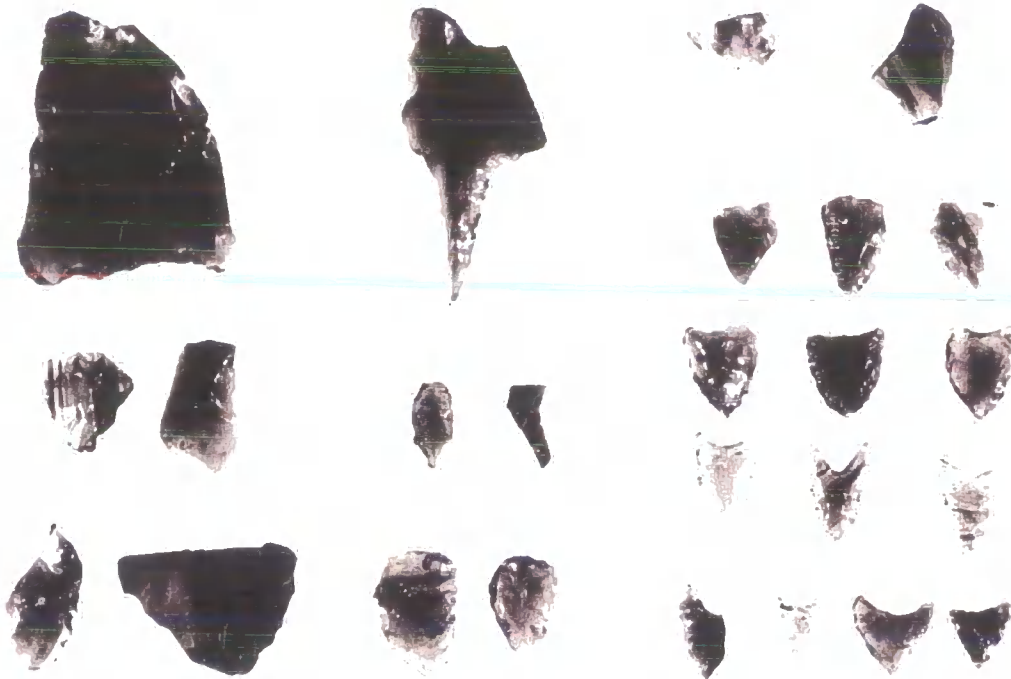


Dogu clay figurines are not the only ‘ritual’ accessories: other Middle Jōmon examples are the ‘prism-shaped’ clay object (above) and the *sekibō* phallic-shaped stone rods (right and below). Prism-shaped clay objects are often pierced length-wise, and frequently decorated with incised patterns. Although Middle Jōmon distribution includes sites throughout Central Japan, the majority of prism-shaped clay objects is found in the Hokuriku Japan Sea area (Fukui, Ishikawa, Toyama and Niigata prefectures). It is assumed that this practice originated from the Japan Sea area, but its use remains enigmatic. The average size of prism-shaped objects in photo A (from Harada 1988: 167) is ca. 6cm long.

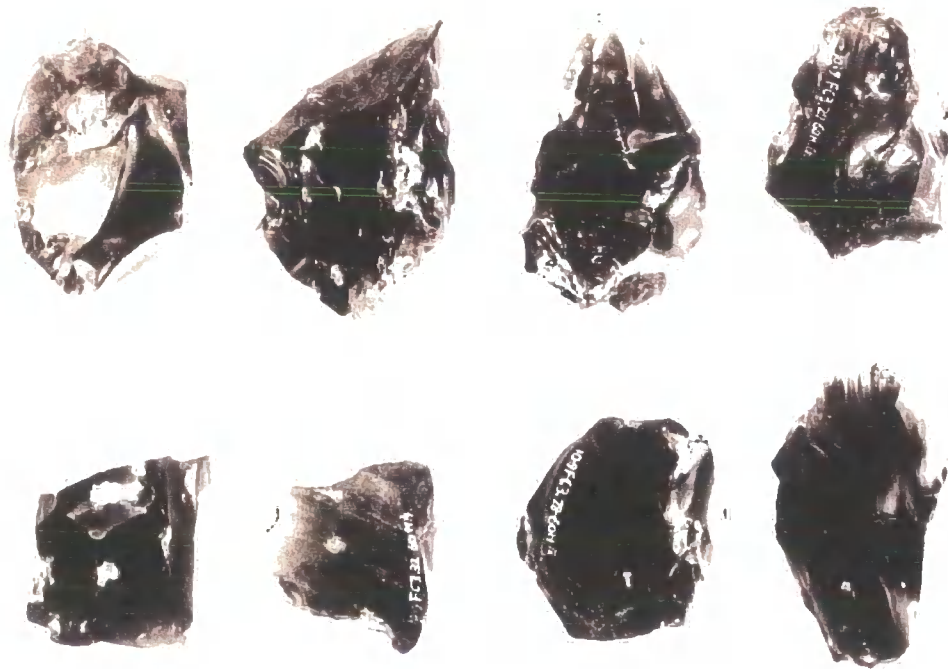


Although the majority of Middle Jōmon *sekibō* is quite small (with a diameter of just a few centimetres, and a length of up to 20cm) and frequently broken besides, some giant *sekibō* used as upright ‘monuments’ can be more than man-height (B & D: from Harada 1988: 168; C: report 16).

Figure 10: Obsidian (Volcanic glass) used for small sharp tools like arrowheads. Examples of obsidian found at Nashikubo site, Okaya-city in Nagano prefecture (from report 16, photo vol.).



A: Various obsidian tools including flake tools (left); drill (middle) and unfinished and finished arrowheads (right)



B: Obsidian cores and flakes.

This obsidian material was all recovered from a 'hoard' on the floor of Late Middle Jōmon pit-dwelling no. 60, Nashikubo site.

Figure 11: Polished stone adzes made of SERPENTINITE, from the pendant and adze production site Sakai A, at the Jadeite Coast, Toyama Prefecture.



The true length of the adzes is $\pm 12\text{cm}$ (1:2). Photo taken from site report 178 (photo volume). Some of the adzes produced at such sites were used locally, but a large proportion of the adzes was probably used in exchange and distributed over long distances (no. 178; Yamamoto 1989, 1991).

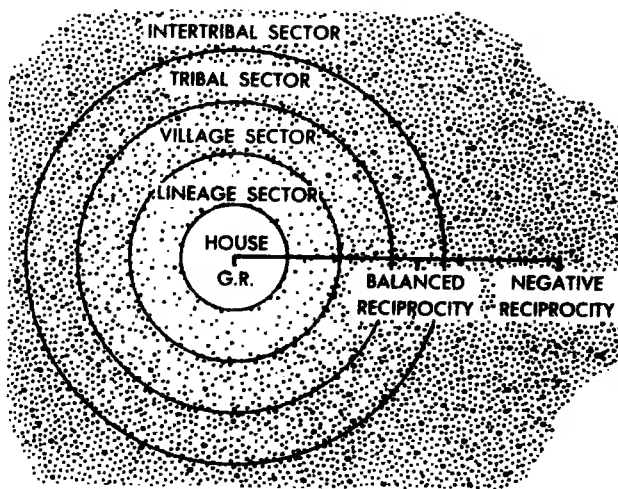
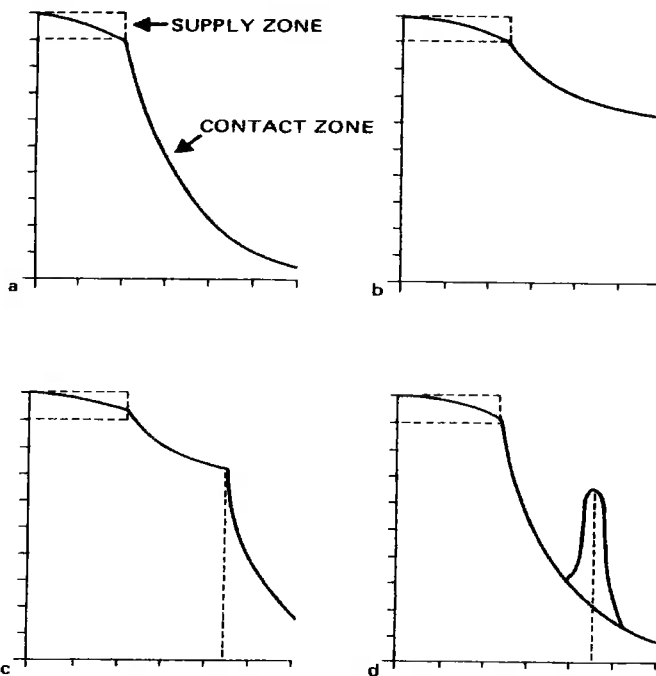


Figure 12: Sahlins' model on the relation between kinship distance and the nature of reciprocity. The stronger the kinship relation, the more altruistic the type of exchange (positive or generalised reciprocity). Balanced reciprocity (whereby both parties benefit) is carried out between more distant relations, whereas strangers and enemies may be exploited or swindled, which is termed negative reciprocity (illustration taken from Sahlins 1974:199)

Figure 5.1. Reciprocity and Kinship Residential Sectors



25. Predicted fall-off patterns for various exchange types. The vertical axis represents the percentage of obsidian in the assemblage; distance from the source is measured on the horizontal axis: (a) down-the-line, reciprocal exchange; (b) prestige-chain exchange; (c) free-lance trade; (d) directional trade. (After Renfrew 1975: figs. 11-14.)

Figure 13: Renfrew's linear distance regression analyses, whereby the relationship between distribution of an exchange material and the distance travelled from its source area is shown in a graph. The 'fall-off' curve—derived from plotting quantity measures (e.g. percentage of the item in the site assemblage) on the vertical axis and distance to the source area on the horizontal axis—is supposed to identify different types of exchange: reciprocal, prestige, free-lance or redistribution. The base line is 'egalitarian' reciprocal exchange (a), whereby it is assumed that all partners take their share and pass the remainder on, so that the material will decrease exponentially with distance; this curve is expected to be steepest and most smooth. (Renfrew 1975, 1977; Graph assortment taken from Torrence 1986:116).

Figure 14: Evidence of beadstone production during the Initial and Early Jōmon periods.



Great quantities of split earrings and pendants made of soapstone and serpentinite were found at the production site of Ariake-sansha site, Nagano prefecture—which is located near the Hokuriku jadeite Coast. (Photo taken from Harada 1988:115). Soapstone is the ‘softest’ mineral (1 on Mohs’ Scale), and therefore very easy to work. Serpentinite is also relatively soft: 2.0~3.5 on the scale.

Figure 15: Examples of jadeite use in other cultures



15 A

Neolithic ceremonial 'Zong'
China 4500-4000 BP; height 20cm.
(Taken from Clark 1988: 40)



15 B

Maori 'tiki' sacred ornament, a chiefly
insignia.
(Taken from Clark 1988: illustration F)



15 C

Maori ritual adze, with jadeite blade:
ceremonial attribute of chiefs
(Taken from Clark 1988: illustration B)



15 D

'Suri-kiri' style Maori adze: Half-
abandoned nephrite adze blade
(Taken from Clark 1988: 38)

Figure 16: Another example of prehistoric amber use: Mesolithic amber ornaments from Scandinavia.



Like Jômon amber pendants, these items were also exchanged over wide distances; however unlike the Middle Jômon ornaments, the Mesolithic Scandinavian amber items were elaborately carved into figures, often zoomorphic shapes. Moreover their surfaces were decorated with patterns of incised lines and dots. Taken from Clark (1988: illustration A).

Figure 17: Middle Jōmon pendants made of jadeite, serpentinite (no. 227 and 227) and amber (no. 225). Photo taken from Harada (1988:117).



Pendant no. 222 is from Shiomidai site, Kanagawa (site 128); 221 from Sankō (ref. only), Yamanashi; 227 and 228 from Kusakari, (site 162) and amber 225 is from Awashimadai, Chiba.

Figure 18: Late and Final Jōmon forms and usage of ornaments made of jadeite and other materials.



A
18 A: Jadeite *magatama* ('curved beads'), Final Jōmon period: greater complexity of form was achieved than during the Middle Jōmon (From Harada 1988:116).



B
18 B: Late Jōmon ornament found at Aoki site, Yamanashi (From Harada 1988:132). Harada interprets the rather intricate symmetrical design of this ornament (black, material n.d.) as a flower-shaped brooch.



C
18 C: The Late~Final Jōmon burial of a woman with a 'Middle Jōmon'-type large pendant and many shell bracelets, at Yamaga Shellmound, Fukuoka. This has been interpreted as a shamaness burial. (Photo taken from Esaka 1973: 50).

Figure 19: Pendants from the 'Jadeite Coast' production settlement at Sakai A site, Toyama



19 A: Bonito-shaped JADEITE pendants from Sakai A site, presumably from the Middle Jōmon period. Only the top left two are perfect finished items; these were also the only items found in a burial context. (From report no. 177, Tools section, photograph supplement).

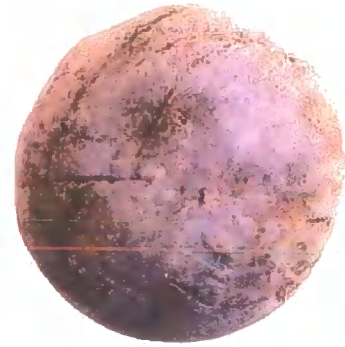


19 B: Sakai A site pendants made from alternative materials, particularly SOAPSTONE

Figure 20: Production evidence: raw material and tools for producing jadeite pendants and polished serpentinite adzes, Sakai A site, Toyama (all photos from report no. 178, photo vol.)



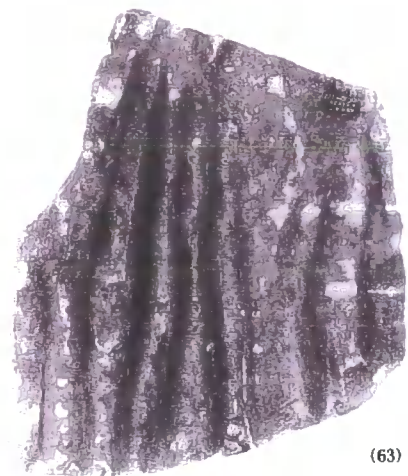
20 A: Jadeite fragments, and partially shaped polished material for pendants. Sakai A is one of the settlements at the Hokuriku Japan Sea Coast renowned for being a pendant and polished adze production site. (1:2, true length \pm 5cm).



20 B: Jadeite polyhedral hammer stone: percussion tools for shaping both jadeite pendants and serpentinite polished adzes. Jadeite and serpentinite material could be collected from the beach near Sakai A site. (1:2, true diameter \pm 8cm).

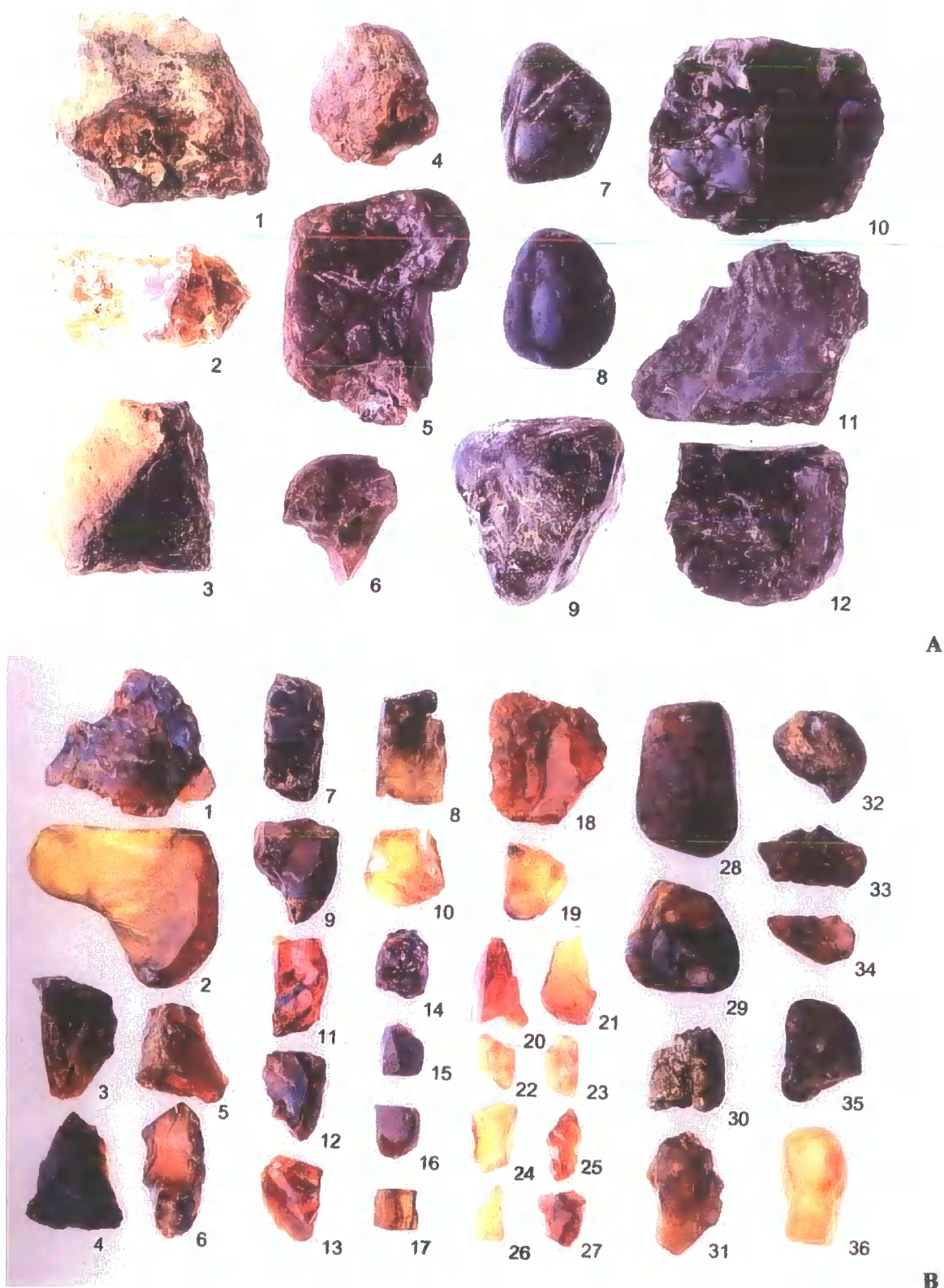


20 C: Flat whetstone. This type of whetstone was probably mainly used for grinding and polishing *stone adzes*. Whetstones are generally made of rough-gritted material like sandstone. (1:4, true length \pm 24cm)



20 D: Grooved whetstone. The deep scores on the stone indicate that this whetstone type was used for grinding and polishing *pendants*, probably from a very hard material, like jadeite. (1:4, true length \pm 24cm).

Figure 21: AMBER production evidence from Awashimadai site, Chiba Prefecture.



The top photo A shows mainly unprocessed nodules (the items on the right are black due to carbonisation). The photo B below shows unfinished processed material: flakes, polished cores, and almost-finished unpierced items. Taken from site report 180d, 2000, plate 159.

Figure 22: The evidence of AMBER production discovered during the 1990 survey at Awashimadai site, Chôshi-city in Chiba prefecture.



The items depicted here include processed amber nodules, flakes, as well as half-finished and discarded pendants. The attempts at piercing are particularly informative. Some of the discarded pendants have been pierced several times (e.g. nos. 3, 5 and 6) before abandonment. Illustration taken from excavation site report 180c, p. 35.

Figure 23: Features of Nashikubo site (sample no. 16), Suwa Lake, Nagano pref.

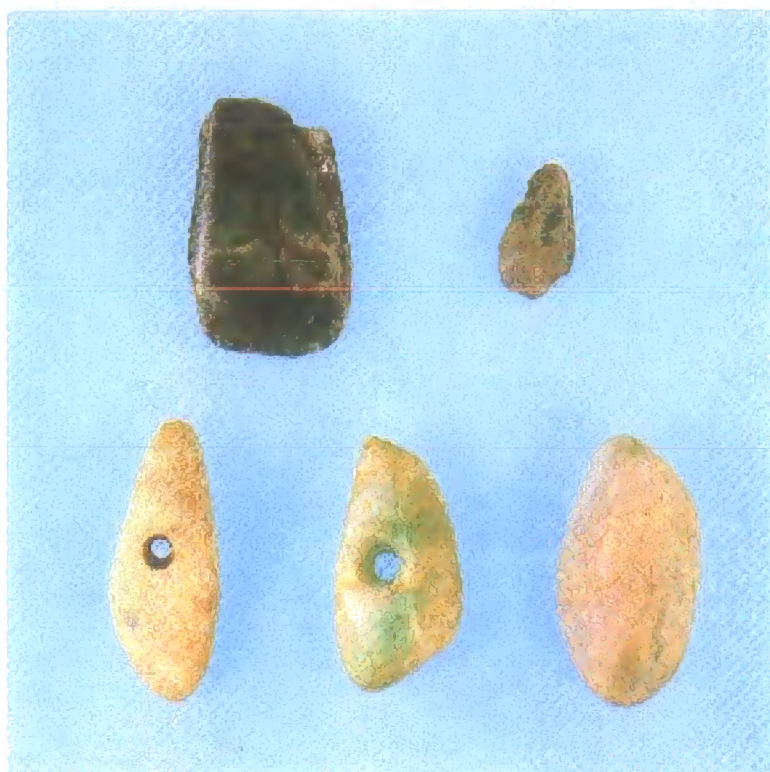


23 A: The location of Nashikubo site (no. 16). Behind Suwa Lake, Mt. Fuji is faintly visible in the distance to the south. (Photo taken from report 16, 1986, Illustration volume, front pages).



23 B: Nashikubo site Middle Jōmon pit-dwelling outlines (photo: as above).

Figure 23: Features of Nashikubo site (sample no. 16), Suwa Lake, Nagano pref.



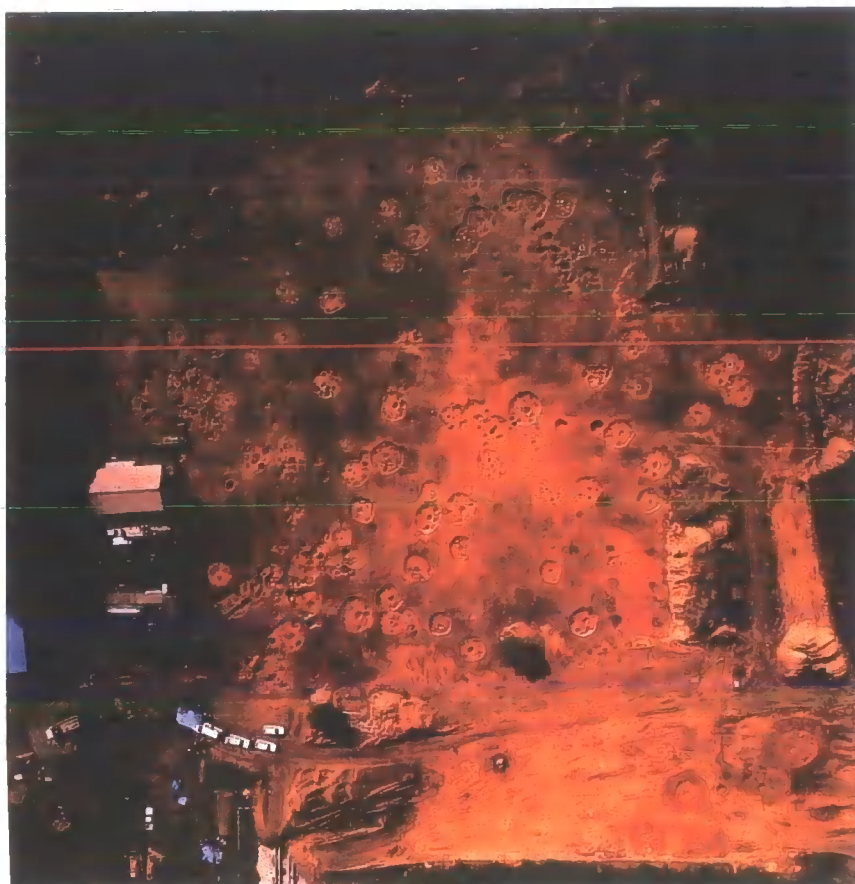
23 C: JADEITE items found at Nashikubo site. Above: two jadeite polished adzes, one of which was found on the floor of a Mid Middle Jōmon (Katsusaka period) dwelling. Below are two pendants, both found in a burial pit (see also figure 18), and a slightly polished jadeite nodule. (Taken from report 16, 1986, Illustration volume, front pages).



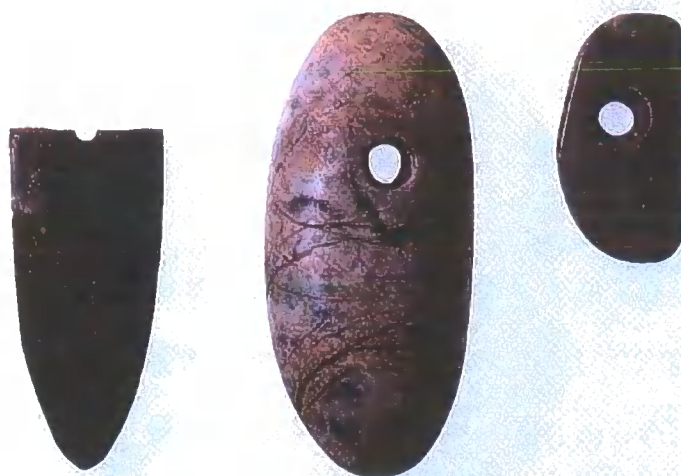
21 D: Two examples of the AMBER found in Nashikubo graves, dating from the Early part of the Middle Jōmon. Unfortunately, as organic material, most items at the site had become very crumbled and brittle due to bad preservation. (source: as above).

21 E: One of the main sources of Jadeite, Oomi river in Niigata. (Taken from Teramura 1995:32).

Figure 24: Features of Tsujisawaminami site, Upper Ina Valley, Nagano prefecture

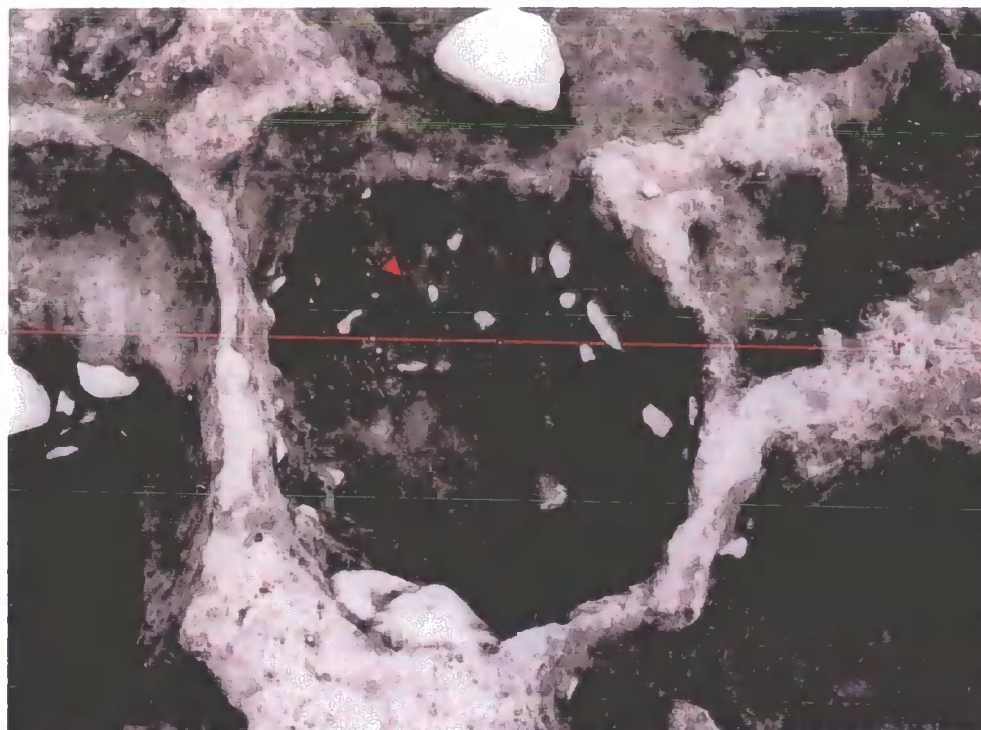


24 A: An aerial view of the large-scale settlement Tsujisawaminami (site no. 27)

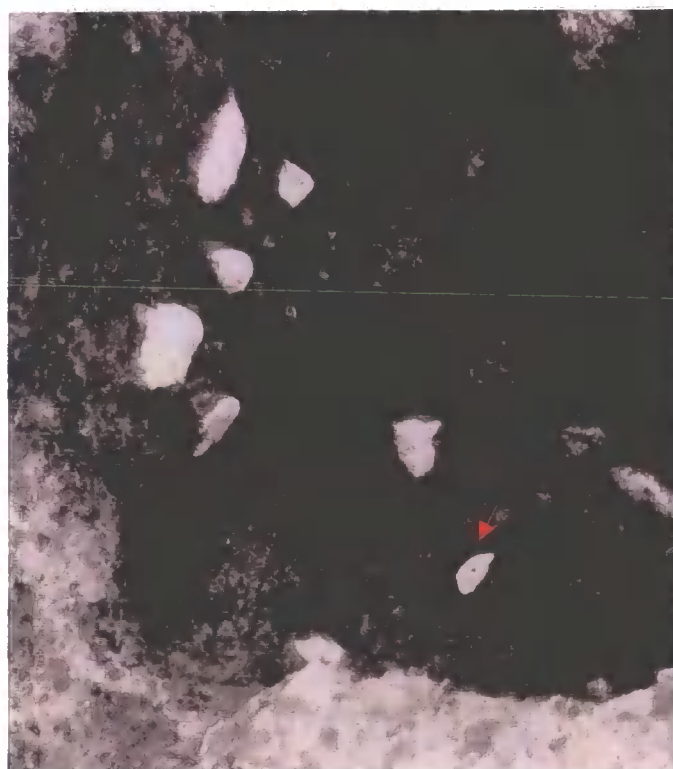


24 B: The beadstone pendants from Tsujisawaminami site, found on the floors of houses of consecutive Late Chûki phases. From left to right: a broken jadeite [or serpentinite?] pendant from a Kasori E-1 house; a undamaged jadeite pendant from a Kasori E-2 house; a soapstone pendant from a slightly younger Kasori E 2 house. (Both photos taken from Tsujisawaminami report, 1988).

Figure 25: Jadeite as a grave good. Jadeite pendant in its burial context, Nashikubo site, Nagano prefecture.



ヒスイ製装身具の出土した小竪穴 (257P) 1.3×1 m, 深さ0.6 m, 縄文時代。



南壁際の底近くに出土。長さ5



Based on the fact that a jadeite polished adze at the same site was recovered from a Mid Chûki house floor context, this pendant is also tentatively assigned to the Mid Chûki *Katsusaka* phase, although Late Chûki is also a possibility (report no. 16, p. 547) The size of the burial, pit no 257, is 1.3x1m, and 0.6m deep. Apart from some Mid and Late Chûki pottery fragments, no other artefacts were found inside. The pendant is ca. 5cm long,, 2cm wide and 1.5cm thick.

Figures 26 and 27: Changing contexts in production—Middle versus Final Jōmon structures at Teraji site, Niigata (site no. 179)

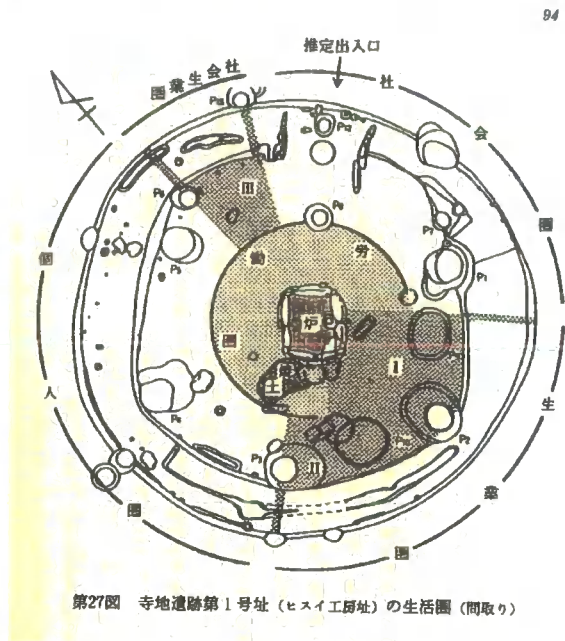


Figure 26: Middle Jōmon period artisan dwelling at the Pendant & Adze production site Teraji (Oomi-city, Niigata pref.) This well-preserved house contained a great deal of jadeite and serpentinite raw material and debitage on the floor and in pits, and was interpreted by Teramura as an ‘Artisan Dwelling’ producing both pendants and polished adzes (Taken from Teramura 1995: 91 and 94).



第35図 寺地遺跡の神マツリ（配石遺構）のイメージ

共同通信社提供（船橋三郎氏画）。黒沢恒雄氏と寺村のイメージによる。なお木柱の礎の付近（上部）に瓶屋的な施設（構造物）があったと考えるもよい。

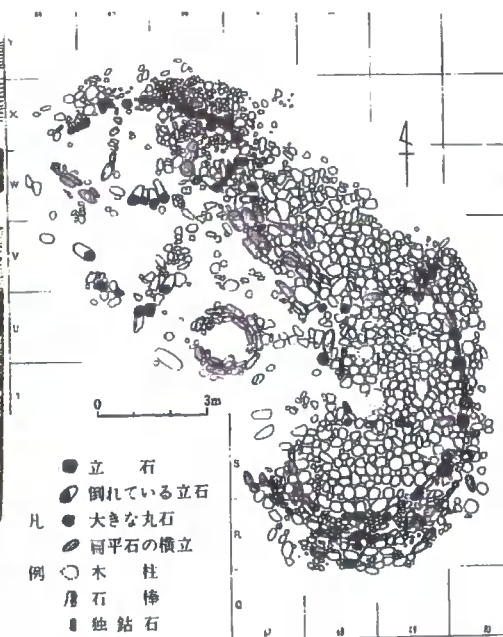


Figure 27: The large Final Jōmon-period ‘ceremonial’ stone structure at Teraji site. Left: Teramura’s reconstruction involving wooden totems; right: plan of the stone structure, including four large post holes, several ritual stone rods, various larger standing stones. (Taken from Teramura 1995:99 and 114).

