Jomon Society, East and West: A Study of the Social Structure of the Late Jomon Period

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ABSTRACT

This study undertakes concrete spatio-temporal and settlement analyses of pottery, but in neither case did we find any definite signs pointing to social stratification. The results of this study do not support an interpretation that Jomon pottery was as "luxurious" because of having distinct, specialized types which were traded over long distances, with specially fine pieces being owned by the rich. While large dwellings, where specialized artifacts have been excavated, have been considered evidence pointing to stratification, it is difficult to distinguish them from other dwellings in terms of quality and quantity of specialized artifacts. The segmented and multilayered social structure of the Late Jomon period, as seen in the results of the analysis of pottery and settlements in this study and the model of Late Jomon period social structure (Figure 22) derived from those results, shows no traces of the segmented groups being positioned according to rank or hierarchy, or of any development of specific family or status distinctions. In addition, the essence of the rituals and rites that developed in the late Jomon period was the construction of a wide-area social network aimed at assuring livelihood stability and the reproduction of life, and intended to produce and reproduce horizontal social relations by strengthening ties between groups. In this context, it is reasonable to interpret that both eastern and western Jomon societies of the Late Jomon Period were societies that can be described within the framework of a typical tribal society (Sahlins 1968, 1972; Service 1971).

KEYWORDS: Jomon period of prehistoric Japan, settlement, pottery, social organization

I. Objectives

The transition from the Jomon period to the Yayoi period was an epochal event in the history of the people of the Japanese archipelago. Wet-rice agriculture was introduced to Japan from the Korean peninsula to northern Kyushu and from there extended across the archipelago. As it spread from west to east, subsistence practices shifted from hunting and gathering to farming.

Interestingly, the way wet-rice farming was accepted was not the same in all parts of the archipelago. In western Japan it spread quickly, and subsistence practices changed rapidly, whereas in eastern Japan farming took a very long time to take root even although it is confirmed to have been introduced at an early stage in the northern part of Japan's

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northeast (Tohoku) region (Sasaki Kōmei 1991; Sahara 1992; Terasawa 2008).

In the Late and Final Jomon periods, eastern Japan's cultural sphere features highly decorative vessels such as the well-known Kamegaoka pottery. Western Japan's pottery culture, in contrast, lacked in decoration, as exemplified by black-polished Jomon pottery. The borderline that separates the pottery distribution area of eastern Japan from that of western Japan is more or less identical with the cultural borderline between east and west in their different ways of accepting wet-rice agriculture. This is why regional differences in pottery distribution and in the way rice farming was accepted are often discussed in relation to each other (Sasaki Kōmei 1991; Tamada & Shōda 2013).

The two major pottery distribution areas of east and west in the Late and Final Jomon periods are important in considering the spread and acceptance of wet-rice agriculture in the Japanese archipelago. These two distinct distribution areas came into being in the latter part of the Late Jomon period, but even before that, in the early part of the Late Jomon period, east–west interaction had been robust, as seen in the appearance of the wide area distribution of Nakatsu- and Shōmyōji-style pottery (Imamura 1977a, 1977b) and the phenomenon of the waves of westward spread of the cultural complex of eastern Japanese origin (Maekawa 1979; Watanabe Makoto 1968, 1975). What was the transition like from the time of lively interactions between eastern and western Japan, to the time when east–west differences in pottery culture began being accentuated? It is imperative that we clarify the transition. The first objective of this study is to shed light on archipelago-wide changes in group and social relations during the Late Jomon, especially in the middle part of the Late Jomon period.

The cultural differences between eastern and western Japan are not confined to the Late and Final Jomon periods; the "east–west differences of Jomon culture" were seen even before that. More than 80 percent of the Jomon sites on the archipelago are said to be distributed in eastern Japan. In both quantitative and qualitative terms, eastern Japan is far more abundant in Jomon sites, structural remains, and artifacts, hence the phrase "east-high, west-low Jomon culture" (*tōkō-seitei no Jōmon bunka*).

An environment rich in natural resources and the resultant population size have been cited as the factors most responsible for the east–west differences (Yamanouchi 1964; Koyama 1984). It has also been pointed out that the subsistence strategies of groups of people according to their resource environments differed between the east and the west (Izumi 1984, 1985; Seguchi 2018). Recent developments in botanical archaeology are showing it is increasingly likely that the way people approached the natural environment differed between the east and the west (Sasaki Yuka 2014a, 2014b). Examination of botanical remains recovered from Late Jomon wetland sites suggests that people in eastern Japan modified the ecosystem surrounding their settlements for multifaceted utilization of natural resources, while such was not the case in western Japan.

As described above, relations between a group of people and the natural environment in which they lived have been regarded as important in considering the east–west differences of Jomon culture. Quantitative east–west differences in terms of Jomon sites, structural remains, and artifacts can be explained by the differences in abundance of the natural environment and the resultant disparity in the size of regional populations. Qualitative differences in the tools used for subsistence activities may also be explained by different strategies for adaptation to the natural environment.

What about quantitative and qualitative differences in ritual-related structural remains and artifacts? And the differences in pottery decoration? Well-known, elaborately decorated artifacts such as flame-shaped pottery and goggle-eyed clay figurines are notable features of eastern Jomon culture—something not found in western Jomon culture. Is it possible to explain these east–west differences only by focusing on differences in the natural/resource environments and in the adaptability to the environment of the region's people?

In response to such queries, some scholars have pointed to disparity in population size (Koyama 1984; Yamada 2015). According to them, in eastern Japan, where groups of people were large in size, friction was likely to emerge among them, and resolving friction required complex social apparatus, namely, development of rites and rituals. In western Japan, on the other hand, groups of people were much smaller in size, and with friction not likely to occur among them, there was little necessity for rites and rituals to solve them. Issues left for future research include verification of whether or not population and group size calculated on the basis of numbers of excavated sites and dwellings truly reflect reality. Another issue to verify is the logic behind the notion of "inter-group friction → necessity to resolve it → development of rites and rituals." It is necessary to examine specific archaeological data to demonstrate whether east–west differences can be found in the ways groups of people related to each other and how their relationships were formed. Based on the foregoing, the second objective of this study is to clarify the mechanism whereby the "east–west difference of Jomon culture" arose.

Jomon pottery is chosen as the subject of analysis for this paper in order to achieve those two objectives—the first being to shed light on archipelago-wide changes of group and social relations in the Late Jomon and the second to clarify the mechanism whereby the east–west difference of Jomon culture emerged. Exploring the spatio-temporal dynamics of Jomon pottery makes it possible to reconstruct the group and social relations of that time, as demonstrated by earlier scholars (Ōtsuka 2000; Taniguchi 1986; Tanaka 1982; Tanaka & Matsunaga 1984; Yano 2016). Group and social relations that would be explained through analysis of magic items (clay figurines, stone rods, etc.) and stone implements (arrowheads, chipped stone axes, etc.) are limited to those relations in specific situations such as rites and rituals and subsistence practices. Jomon pottery was used not

just for daily food preparation and rites and rituals but also for many other purposes, and by analysing such a diversity of vessel types (vessel shape categories) we can achieve a comprehensive understanding of group and social relations on various occasions of the time. It is also important that, of all Jomon archaeological data, it is its pottery that has the greatest universality and the most quantitively and qualitatively stable analytical data. Given these advantages, Jomon pottery was considered the most appropriate analytical data for fulfilling the two objectives.

II. Data and Methodology

1. Analytical data

This study analyses pottery artifacts recovered from 246 Jomon sites located from the Kanto region westward. Based on geographical features such as plains, mountains, and rivers, it makes regional divisions as shown in Figures 1 and 2.

The period under study is the Late Middle Jomon period, and the number of artifacts for analysis exceeds 16 500. Of them, 3 873 are used to classify pottery and establish a chronology. This study also examines settlements in the Kanto and Kyushu regions. Studied are 26 sites (465 dwellings) from the Kanto region and 30 sites (250 dwellings) from the Kyushu region.

2. Analytical methodology

(1) Timescale construction

It is first necessary to construct an archaeological timescale (chronology) applicable to a wide area from the Kanto to Kyushu regions. Using attribute analysis methods (Tanaka 1982; Tanaka & Matsunaga 1984), this study identifies units of classification and builds a multi-region-wide chronology of the pottery of the Late Middle Jomon period.

(2) Spatio-temporal examination

Using the timescale built, it makes a spatio-temporal examination of pottery. As shown in (a), (b), and (c) below, the distribution of pottery for each period of time is understood from micro and macro points of view.

(a) Classification units: Distribution by unit of classification is examined for each period of time. A dot map is used to show the distribution.

(b) Attributes: The frequency of appearance of pottery attributes by region is examined using a seriation graph. For analytical method, I refer to studies by Tanaka Yoshiyuki and Matsunaga Yukio (Tanaka & Matsunaga 1984, 1991).

(c) Type composition: Pottery shape variations are identified (Figure 3), and their

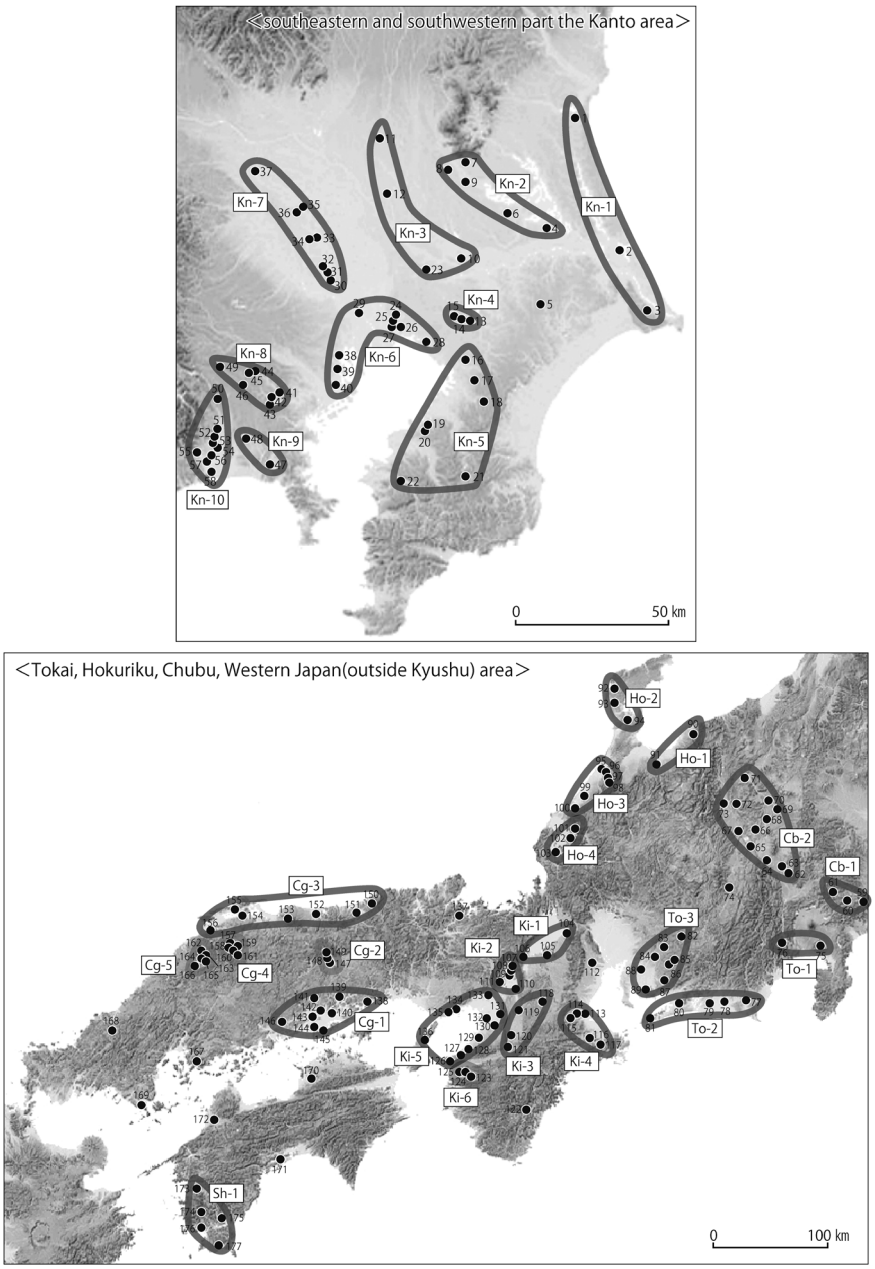
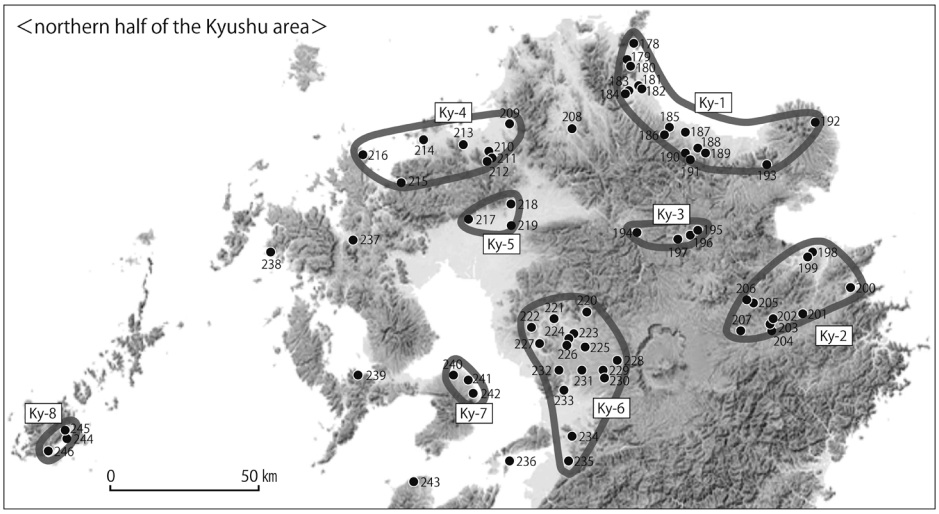


Figure 1. Sites subject to analysis and sub-area classification (1).



1 Onukiochigami	51 Shimokitahara	101 Narukasanka	151 Katsurami	201 Kurazono
2 Kataoka	52 Hinataminamishinden	102 Sonbo	152 Shima	202 Koshoji
3 Yoyama	53 Ikebata・tsubakiyama	103 Shimoitouwaki	153 Nawahida	203 Sugisono
4 Fukuda	54 Numame・sakado	104 Matsubaranaiko	154 Tatecho	204 Natasebaru
5 Kamijyuku	55 Terayama	105 Ushirogawa	155 Sadamae	205 Maeda- Ⅰ
6 Kashiwamine-B	56 Ojinodai	106 Anou	156 Santadani	206 Santanda
7 Shimosakata	57 Haraguchi	107 Ichijojimukaibatacho	157 Ienoato-Ⅱ	207 Shimosakatanishi
8 Kamizakaiasahidai	58 Ishigamidai	108 Kyodaihokubukonai	158 Kitaharahongo	208 Amida
9 Kamitakatsu-A	59 Baba-No.6	109 Kyodaibyouinkonai	159 Maeda	209 Katamidori
10 Nakatsuma	60 Shioseshitappara	110 Moriyama	160 Harada	210 kashiwada
11 Shakasaibutsu	61 Otsuki	111 Nagaokagu	161 Shimokamokura	211 Torinosu
12 Haraguchi	62 Aoki	112 Gongenzaka	162 Shimoyama	212 Yamadanishi
13 Yoshitakaipponmatsu	63 Ubagami	113 Gosyogaito	163 Itaya-Ⅲ	213 Shika
14 Ishigamidai	64 Hannogiyamanishi	114 Tenpaku	164 Kanbara- Ⅰ	214 Kishimotomura
15 Nishine	65 Juninoki	115 Shimooki	165 Mori	215 Gotandamatsumoto
16 Kasori	66 Takayama	116 Okuhori	166 Okijo	216 Minatomatsumoto
17 Tabeta	67 Hachikubo	117 Morizoe	167 Wadahiro	217 Kinryu
18 Nakanosomido	68 Uraya-B	118 Oko	168 Okage	218 Kuranoue
19 Gionbara	69 Ishigami	119 Wadanakadori	169 Iwata	219 Noguchi
20 Saihiro	70 Furuyashiki	120 Takeuchi	170 Nagai	220 Amanoiwatoiwakage
21 Teranodai	71 Oshimizu	121 Fushimi	171 Nishibunmasui	221 Wakakusa
22 Kashimadai	72 Kitamura	122 Shimonooi	172 Ikado	222 Jo・shimobaru
23 Futatsugiushiroda	73 Hanareyama	123 Mizonokuchi	173 Ibukicho	223 Katoudahigashibaru
24 Kainohana	74 Nakakoshi	124 Asso- Ⅰ	174 Inuyoke	224 Kikoji
25 Gesu-daiichi	75 Umenokisawa	125 Okamura	175 Funato	225 Wakudoishi
26 Soya	76 Harama	126 Tannowa	176 Hirajo	226 Mimanda
27 Dohmekiyatsu	77 Kurishita	127 Mukaide	177 Katakasu	227 Kamiodamiyanomae
28 Kokusaku	78 Nishi	128 Sangenya	178 Shimoyoshida	228 Nakaushirozako
29 Nishigahara	79 Shijimizuka	129 Harukihachimanyama	179 Nuki・idegamoto	229 Rokujizo
30 Ishigami	80 Uchida	130 Miyakenishi	180 Kikusuicho	230 Karakawa
31 Junohdeitanso	81 Kawaji	131 Ikeshima・fukumanji	181 Yamasaki	231 Tsuruhata
32 Banbaomuroyama	82 Michishita	132 Morinomiya	182 Ishimachi	232 Tarozako
33 Takaihigashi	83 Sakaguchi	133 Aomadani	183 Kamifukano・heikoshi	233 Kitakuneyama
34 Okido	84 Terabe	134 Kumoi	184 Matsumaru-D	234 Shizumetateyama
35 Utaya	85 Nakagawara	135 Ikuta	185 Nakamuraishimaru	235 Nishibira
36 Sasara	86 Santome	136 Tsukuda	186 Hasamamiyanoshita	236 Hamansu
37 Akagi	87 Takagi	137 Kuwagaishimo	187 Kamitobaruryosei	237 Ono
38 Nishikubohachiman	88 Tsujji	138 Douyama	188 Sachi	238 Furuta
39 Omori	89 Hachioji	139 Ishigatsubo	189 Hogaki	239 Ikiriki
40 Kugaharashougakkonai	90 Sakai-A	140 Hyakkengawasawada	190 Tsussai	240 Ikada
41 Nishinotani	91 Nunojiri	141 Tamasutanaka	191 Haraimitsue	241 Onobaru
42 Keshodai	92 Tougemotomachi	142 Tsushimaokadai	192 Waramino	242 Obarushimo
43 Komaru	93 Sakamishindo	143 Minamimizote	193 Handanitanda	243 Okinohara
44 Hirao-No.9	94 Kurodanomori	144 Hiroe・hama	194 Tesaki	244 Ohama
45 Tsurukawa-M	95 Okyozukashinden	145 Hikozaki	195 Kuginosengen	245 Nakashima
46 Nasunahara	96 Yonaizumi	146 Omiya	196 Miyakobaru	246 Miyashita
47 Toshoin	97 Magae	147 Hako-E	197 Nakanishi	
48 Kamitsuchidanaminami	98 Hakusan	148 Kutahorinouchi	198 Shimogori	
49 Tabata	99 Yokaichijikata	149 Kutahara	199 Kaminanazoshi	
50 Kamiogino	100 Yokogita	150 Mikata・hiroidai	200 Seitaro	

Figure 2. Sites subject to analysis and sub-area classification (2).

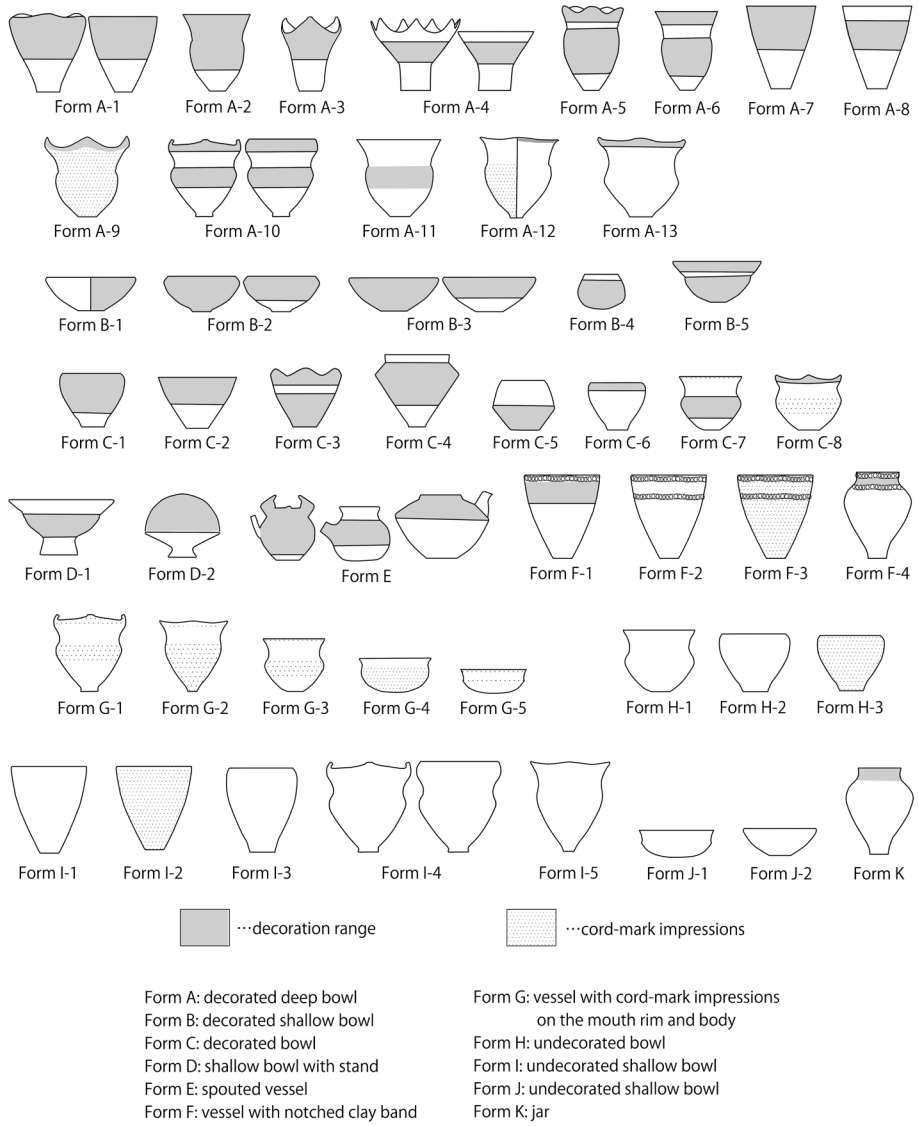


Figure 3. Variation of shape categories.

composition and the spatio-temporal dynamics of pottery types are examined to understand pottery style structure in the Late Middle Jomon period and their transformation. The spatio-temporal comparative analysis of the type composition is made from a wide area perspective, extending from Kanto to Kyushu.

The focus is then narrowed down to the Kanto and Kyushu regions alone to get a more

detailed understanding of the spatial phenomena of pottery. The Kanto region is treated as a case study of eastern Japan's late Jomon society and the Kyushu region is taken as a case study of western Japan's late Jomon society. The two regions are selected for their accessibility to quantitatively and qualitatively rich analytical data.

For each area in Kanto and Kyushu, the surface finishing of the pottery is studied to assess the level of fineness or coarseness and grasp the pottery style structure (Tanaka 1982). Pottery style involves not only type and form but also the level of fineness or coarseness. Analysing Late Jomon pottery artifacts in Kyushu, Tanaka Yoshiyuki detected socio-cultural structural changes from the spatio-temporal changes of pottery style structure. The present study aims to build on this analytical perspective in a developmental way.

Pottery that underwent a careful surface finishing process have a high level of fineness and are considered to have been ranked highly in the pottery style structure, while pottery rough in surface finishing have a low level of fineness and are thought to have been placed low in pottery style structure. Surface finishing is also studied by shape category to determine the placement of each shape category in the pottery style structure. Keeping in mind differences in their placement, this study examines how pottery artifacts are distributed by shape category, and compares the results between eastern Japan and Kyushu.

(3) Habitation and subsistence activities

For a more specific grasp of group and social relations of that time, this study examines settlements to learn about the habitation and subsistence practices as well as social activities of a human group. The Kanto and Kyushu regions are the subject of analysis. The specific items analysed are: settlement components; length of settlement duration; scale of dwelling remains; spatio-temporal aspects of settlement forms; and arrangement of dwelling remains within a settlement. The results are compared between Kanto and Kyushu. The period of settlements and dwellings is determined on the basis of the timescale constructed in (1) above.

(4) Clay analysis

For a better understanding of movements of pottery, clay is analysed. Pottery artifacts studied are: a group dating from the Late Jomon period recovered from the Nakane-hachiman site in Tochigi prefecture, as a case study of Late Jomon society in eastern Japan; and another group dating from the Late Jomon period recovered from the Hōgaki site in Ōita prefecture, as a case study of Late Jomon society in western Japan.

III. Results and Discussion

1. Changes in inter-group relationships in the middle part of the Late Jomon period

Using attribute analysis, nine units of classification were extracted from the typological examination of pottery artifacts and phased as follows: Phase I (type A I, type J I, type M) → Phase II (type A IIa, type D, type J IIa) → Phase III (type A IIb, type E, type J IIb). Figure 4 shows a wide-area chronology of pottery during the Late Middle Jomon period. The following summarizes the spatial aspects of pottery from Phases I, II, and III, and then considers changes in inter-regional and inter-group relationships during the Late Middle Jomon period.

(1) Phase I

As shown in Figure 5, pottery of type A I (Kasori B1 type pottery) is found to be widely distributed in eastern Japan, mainly in the Kanto region. At the same time, it can be seen to have spread in western Japan. Figure 5 shows how type A I pottery is scattered throughout western Japan, primarily in the Kinki region, but with its influence extending even to the

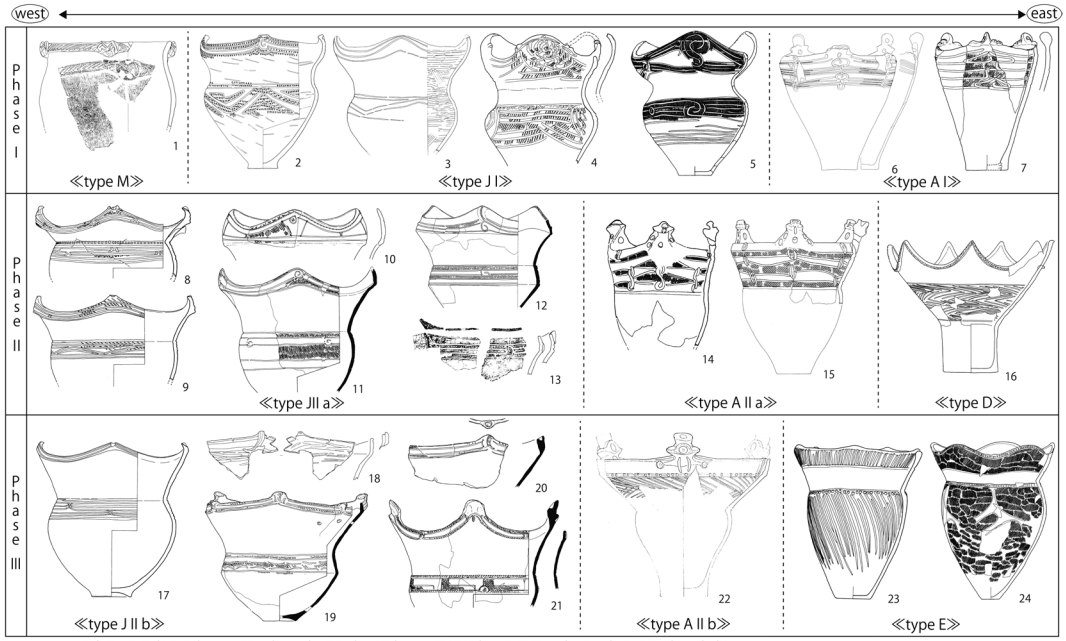


Figure 4. Chronology of pottery in the Late Middle Jomon period.

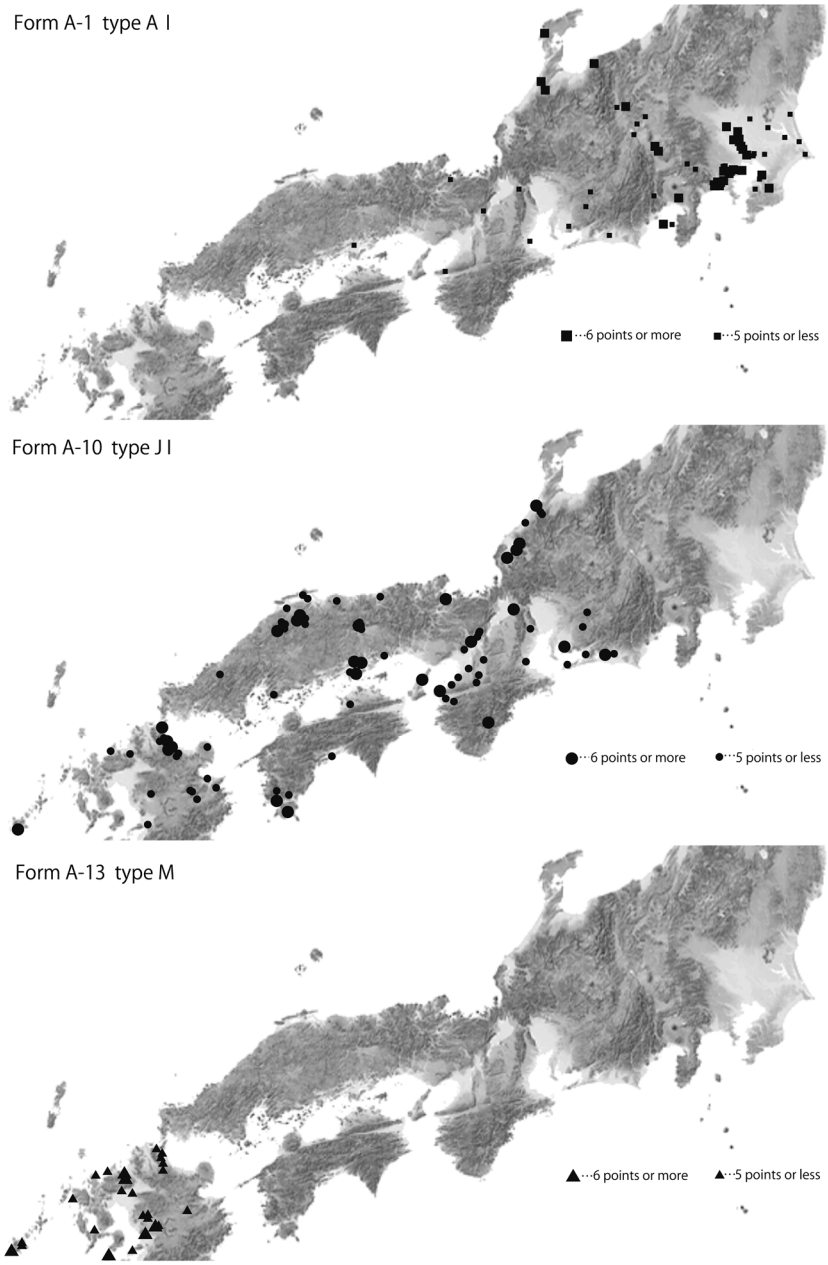


Figure 5. Distribution of each classification unit in Phase I.

Chūgoku (western Honshu) and Shikoku Island regions. Study of the spread of Phase I Kasori B1 type pottery artifacts shows that information on all types of vessels within this type becomes scarcer as the distance from the source of the pottery type (that is, the Kanto region) increases, and that some types spread quite far (e.g., Form E; Figure 6) while others did not (e.g., Form C-1; Figure 6).

It is possible to hypothesize the migration of human groups on the basis of the westward spread of Kanto pottery artifacts. However, it is difficult to hypothesize such movement occurring on a large scale because, as described above, the pottery style structure of the Kasori B1 type does not move as a unified set. Furthermore, it must be noted that the vessel type that spreads most widely and most stably is the spouted vessel (e.g., Form E; Figure 6), which is thought to have a strong ritual significance. Considering the particular characteristics of this vessel type, a possible hypothesis is that the transmission of goods and information took place not only during the gradual migration of human groups, in which marriage played a part, but also during special ritual events that involved the use of spouted vessels.

It is also important to note that, although there are quantitative and qualitative differences, the influence of Kanto pottery spread westward even during the Horinouchi-

Area, Site	Form A-1	Form B-1	Form C-1	Form E	Total
Kn-1	2	5	3	2	12
Kn-2	3		2		5
Kn-6	13	3	5	3	24
Kn-7		11	110	27	148
Kn-8	25	12	33	19	89
Kn-10	15	3	10	6	34
Cb-1	18	5	2	9	34
Cb-2	30	20	5	8	63
To-1	18			2	20
To-2	6	3		7	16
To-3	14	5	4	8	31
Ho-1	42	10	1	5	58
Ho-2	6	2		2	10
Ho-3	78	6		20	104
Ho-4	3	5		10	18
Ki-1	1			3	4
Ki-3				2	2
Ki-4	2			1	3
Shimonooi (No. 121)		1		14	15
Ki-6	3			2	5
Ki-5				4	4
Kuwagaishimo (No. 136)	4			14	18
Cg-1				5	5
Cg-3				2	2
Cg-5				1	1
Nishibunmasui (No. 170)				1	1
Ky-1				11	11

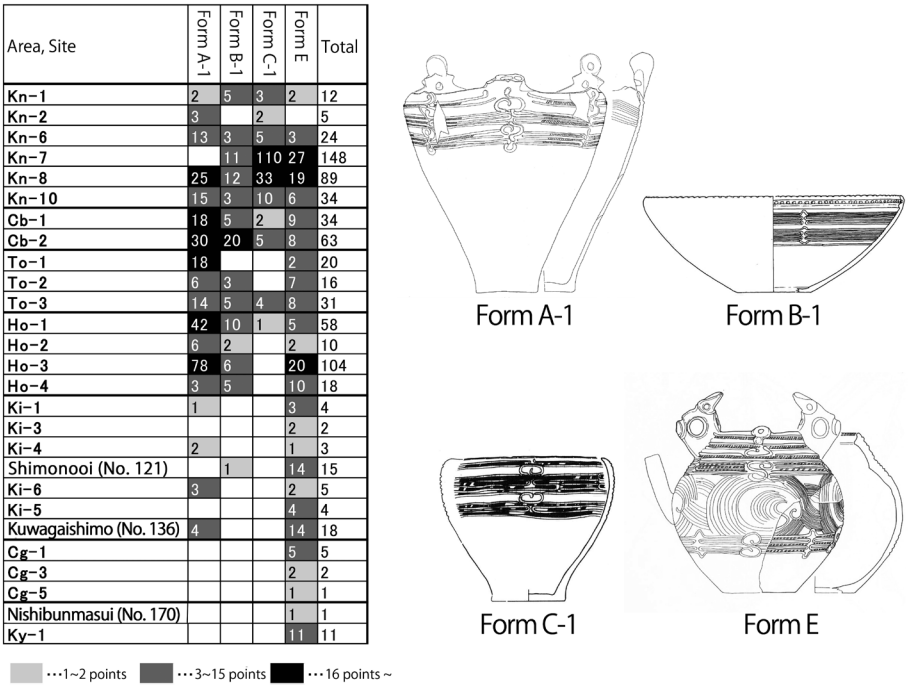


Figure 6. Westward spread of Kanto-style vessels.

type period of the previous phase. The origin of this phenomenon can be traced back to the emergence of robust interactions between eastern and western Japan, as symbolized by the wide-area distribution of Shōmyōji- and Nakatsu-style pottery at the beginning of the Late Jomon period.

Moving on to type J1, it was found to be spread over a wide area (Figure 5) in western Japan during Phase I. The spatial aspect of each attribute is particularly noteworthy when considering the phenomenon of wide-area pottery distribution in western Japan during this phase (Figures 7 and 8).

While information such as cross-sectional form of mouth rim I-1 is shared across the entire type J1 distribution area, specific regional characteristics are seen in cross-sectional forms of mouth rim I-6 and II-5 and mouth rim decoration groups G and Q. Moving on to mouth rim decoration group A, the frequency of occurrence tends to decrease as it spreads east and west from an area centred around the Kinki region. In addition, a closer look at the decoration motifs shows that the Kyoto Basin (Ki-2) and other areas have complex *irikumi* patterns (interlocked ornamental elements) such as A- ① and A- ② , while the Chugoku and Kyushu areas located further west have somewhat simplified patterns such as A- ⑤ and A- ⑥ , indicating a gradual variation in the spatial spread of attribute information.

It is important to note that the same spatial variation in pottery attributes was also observed in the phenomenon of the earlier phase's wide area distribution of pottery in western Japan (Tanaka & Matsunaga 1984, 1991), and when combined with the phenomenon described above of the spread of the Kanto pottery group to western Japan, it is hypothesized that from at least the early part of the Late Jomon period to Phase I of this study the same kind of inter-regional and inter-group relationships existed in the background of the phenomenon of wide area pottery distribution.

(2) Phase II

In Phase II, type D pottery is found in the Kanto region (Figure 9). The morphological and decorative characteristics of these artifacts clearly indicate that type D has no lineal relationship to artifacts of type A I that are distributed throughout the Kanto region in Phase I.

Previously, the background of the emergence of type D had been assumed to be the influence of pottery artifacts from the Tohoku region (Abiko 1997; Sugaya 2019). Figure 10 shows the artifacts from the Hokkaido and Tohoku regions that roughly parallel Phases I through III. The morphological characteristics of 1–8, 12–15, and 17–21 are similar to those of type D (Figure 4), and it is reasonable to consider the emergence of type D as being related to the Tohoku region. It should be noted, however, that although the pottery of the Tohoku region during the periods in question is morphologically similar to that of type D, it differs in decorative characteristics. It is evident that Kanto groups of those

Figure 7. Type J1: Attribute variations.

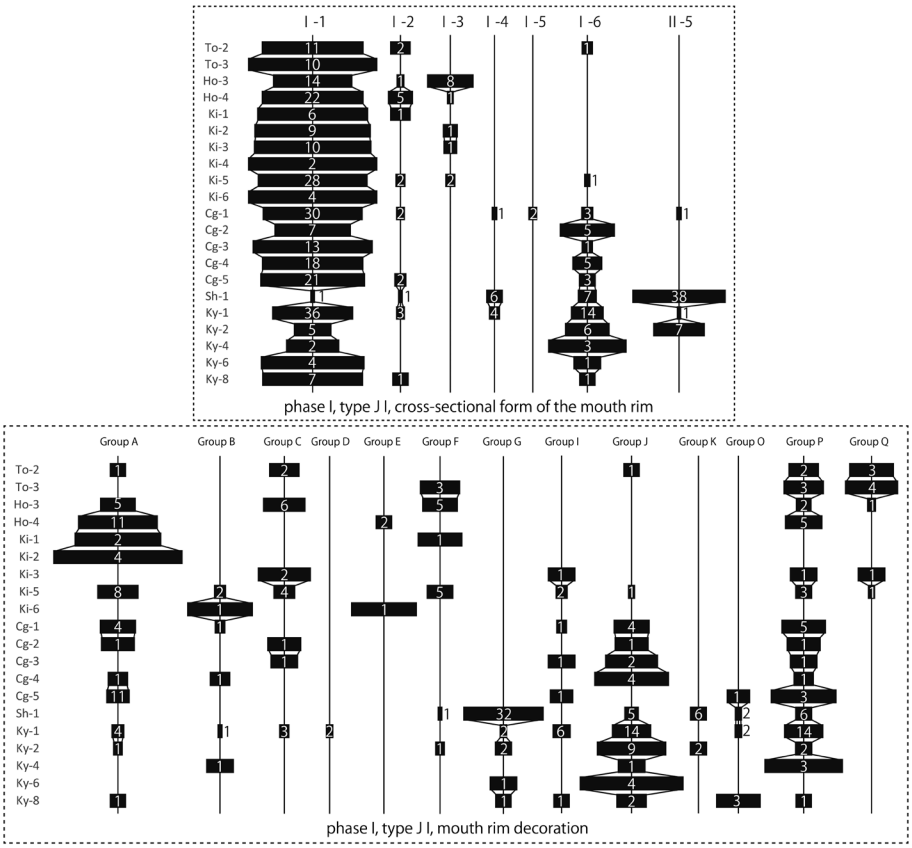


Figure 8. Phase I type J1 frequency of attributes by region.

periods share information on morphological attributes with Tohoku groups, but do not share—they may even have rejected—information on decorative attributes.

The trend in spouted vessels is also worthy of note. Figure 11 affirms that the "Takaragamine type (Figure 11, Kanto-type C)" of Tohoku-style spouted vessels appears in the Kanto region in Phase II. These spouted vessels are thought to rank in the higher level (the most carefully produced and highly valued) of the pottery style structure of the Kanto region, and in their morphological and decorative characteristics they bear a great similarity to the spouted vessels of the Tohoku region. It is of much interest that in contrast to these shared morphological and decorative characteristics, patterned deep bowl D (type D) lower down in the ranking (more crudely produced and relatively low-valued) shares only morphological characteristics and there is no evidence of shared decorative characteristics. Given the social function of spouted vessels as a mediator of relationships between localities and regions (Akita 2015, 2016), it is possible that two groups in the

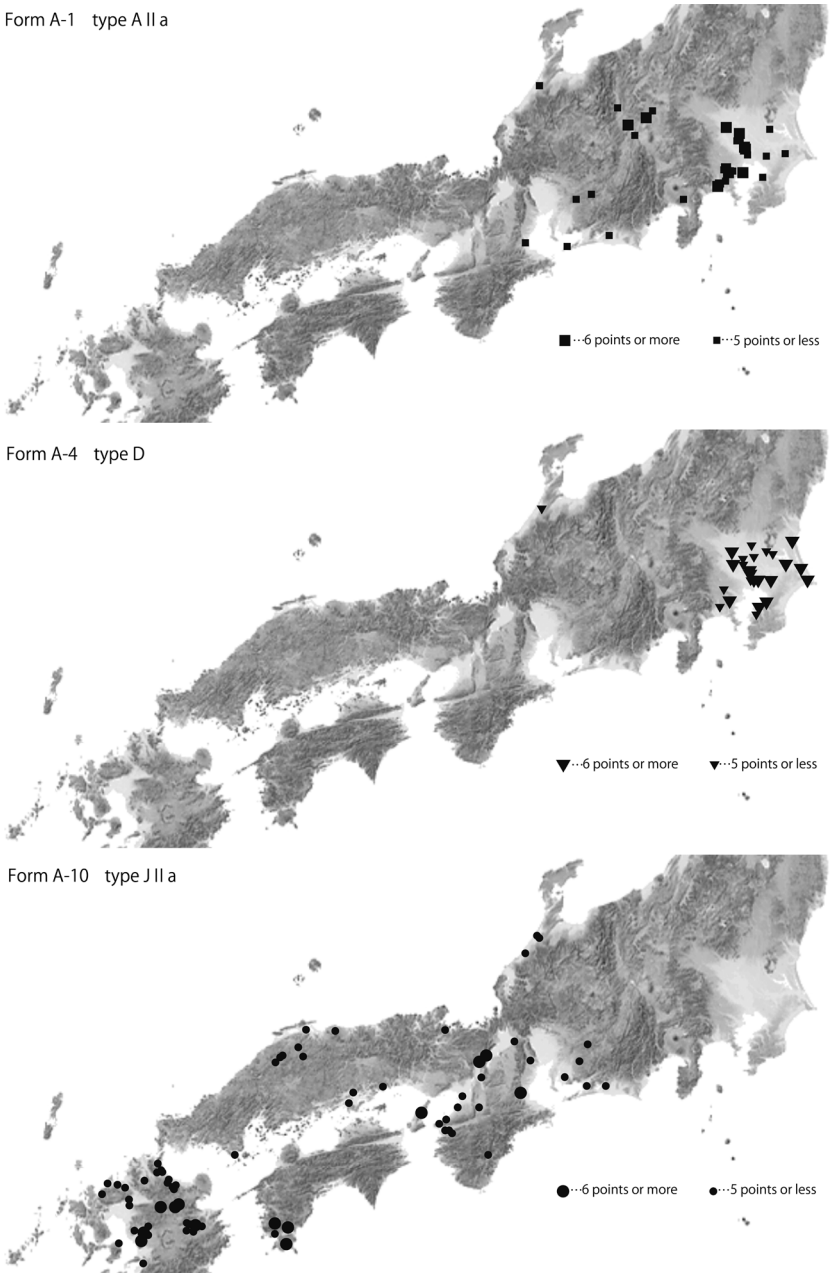


Figure 9. Distribution of each classification unit at phase II.

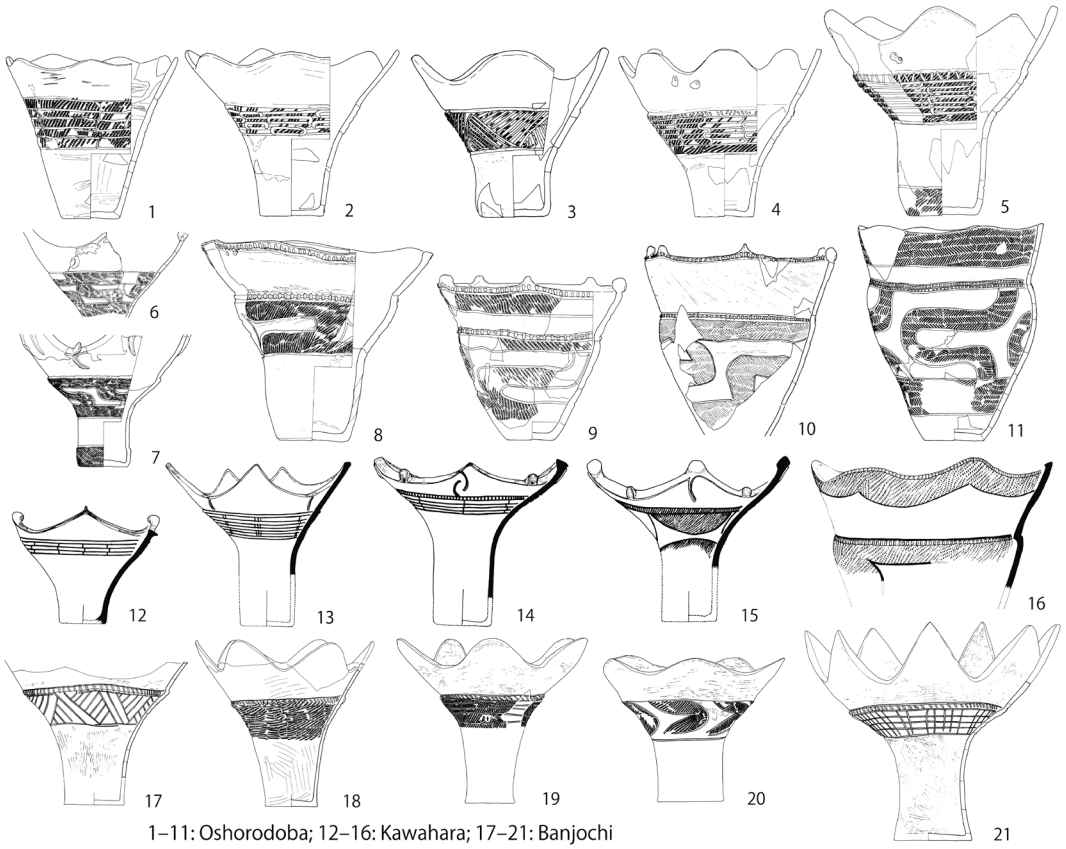


Figure 10. Pottery from Hokkaido and Tohoku regions in the Late Middle Jomon period.

Tohoku and Kanto regions attempted to establish a relationship in Phase II, and that they shared a ritual or social "place" in which spouted vessels with identical morphological and decorative features were used as mediators for the confirmation and reinforcement of that relationship.

The most significant event in Phase II is the dilution of the influence of the Kanto-related pottery group in western Japan. The shrinkage of the distribution zone from type A I to type A IIa is symbolic of this. As can be seen in Figure 9, types A IIa is almost completely absent in western Japan. It is highly possible that the relationship between eastern and western Japan, which had seen robust exchange since the beginning of the Late Jomon period, changed drastically in Phase II. It seems likely that the direct impetus for the establishment of the two major east–west pottery distribution zones whose formation is thought to have occurred from the Latter Late Jomon period on may be found in this phase.

In Phase II, changes in vessel type composition occur in western Japan. The number

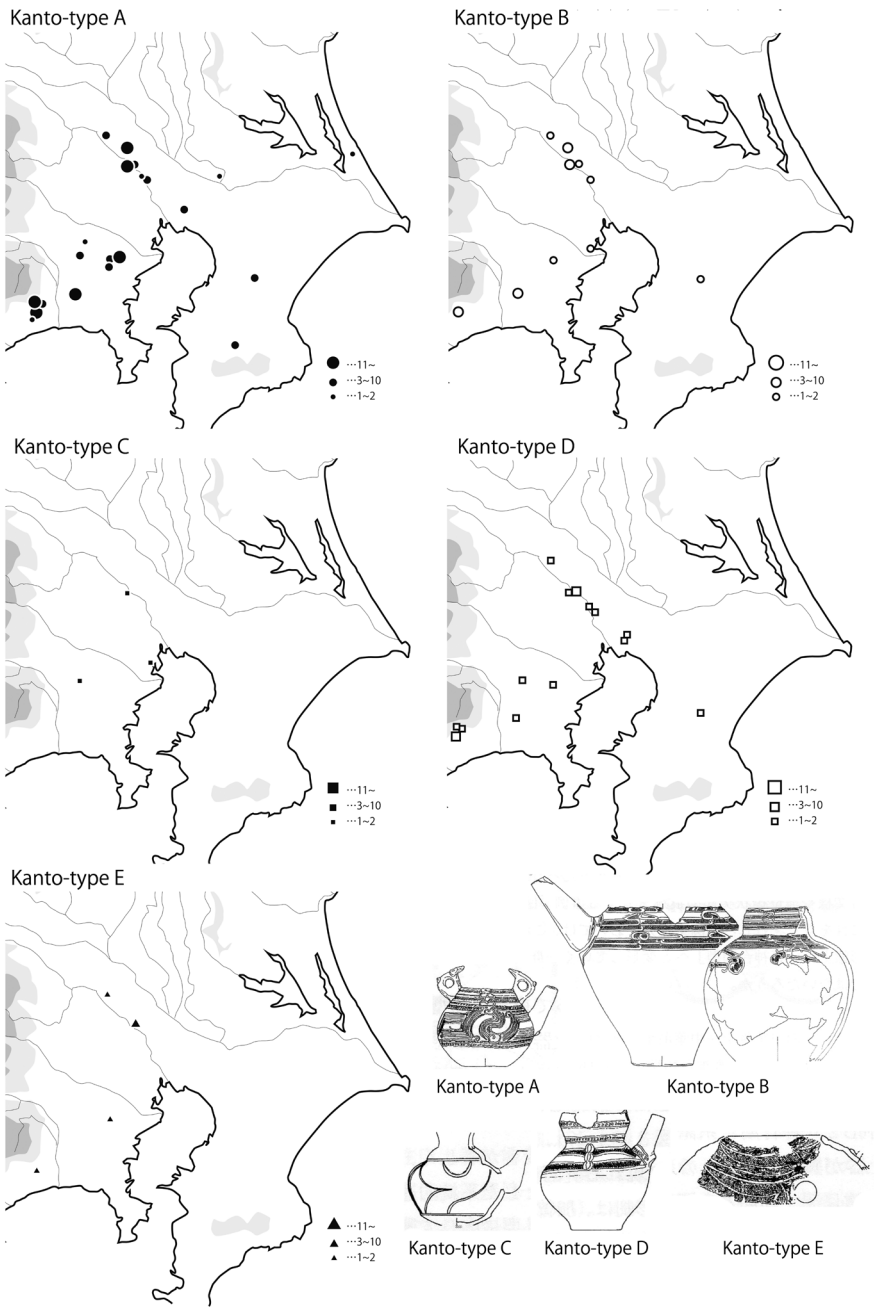


Figure 11. Distribution of Kanto-style spouted vessels.

of vessel type variations decreases, and the types are reduced to three: decorated deep bowl (Form A-10), decorated shallow bowl (Form B-2), and spouted vessels (Form E). A uniformity in vessel type composition can thus be seen throughout western Japan. (Figure 12).

It is not until the Late Jomon period that numerous vessel types begin to appear in western Japan. This happens with the establishment of the widely distributed Shōmyōji- and Nakatsu-style pottery zone, which encompasses an area from Kanto to part of Kyushu. In eastern Japan, in contrast, vessel type variation increases from before that time, and it should be noted that the influence of eastern Japan's Jomon pottery culture can be assumed to be a factor in the increase in vessel type variation in western Japan from the Late Jomon period. Interestingly, the dilution of the influence of the Kanto pottery group and the decrease in vessel type variation in western Japan occurred at the same time. It is thought that the less active exchange between eastern and western Japan compared to the previous phase brought about a change in the Late Jomon pottery culture of western Japan.

(3) Phase III

In Phase III, type E is distributed over a wide area in eastern Japan, centring on the Kanto region (Figure 13). The most noteworthy aspect of type E is the influence of pottery vessels vis-à-vis the Tohoku region. Figure 10 15–17.22 shows Tokoshinai IV pottery of the Tohoku region, and illustrates its similarity to type E. In the case of type D of Phase II there are common morphological attributes only and no common decorative attributes, but with type E there are similarities not only in morphological attributes but also in pattern motifs. It can therefore be hypothesized that the interaction between the two regions became closer than it was in Phase II.

Also in Phase III, spouted vessels of the "Takaragamine type" are seen here and there, which makes it likely that the development and reinforcement of relations between the Kanto and Tohoku groups, which was mediated by spouted vessels and began in Phase II, continued in Phase III. As a result of the accumulation of such interaction, the relationship between the two groups is considered to have become more stable.

In western Japan during Phase III, spouted vessels become a stable type of vessel composition. The distribution of this type of pottery is centred in the Kinki region, and Kinki-style spouted vessels are widely dispersed from the Kanto region in the east to the Kyushu region in the west.

In an earlier paper, I analysed and discussed a group of Kinki-style vessels excavated from the Kuginosengen site in Kyushu's Oita prefecture (Fukunaga 2018). Figure 14 shows the Kinki-style spouted vessels excavated from the site at the same time as a group of local pottery of Phase II and Phase III (type JIIa and type JIIb). This pottery uses the same decoration techniques characteristic of the Kinki and Setouchi areas of Phases II–III, such as continuous piercing within a sunken line (Figures 14.2 and 14.3) and shell-like

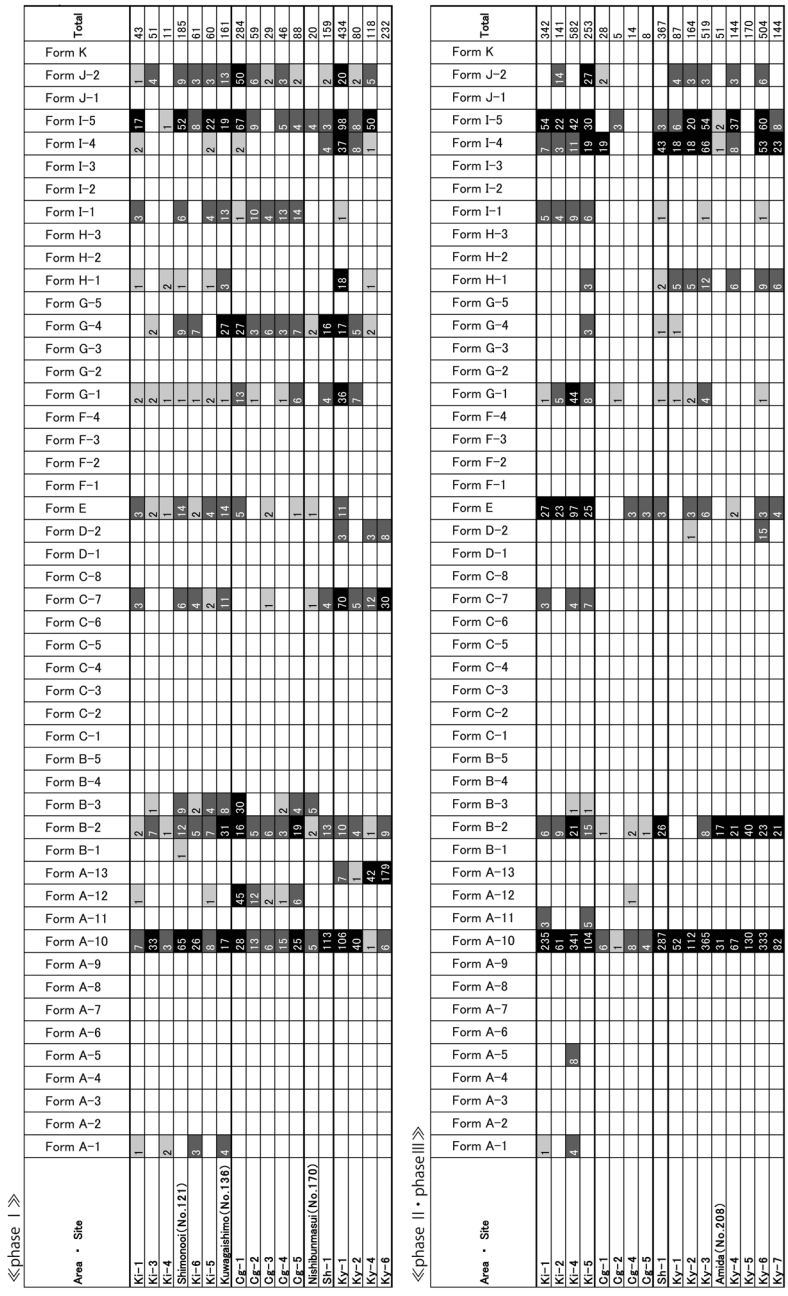


Figure 12. Shape category composition for western Japan.

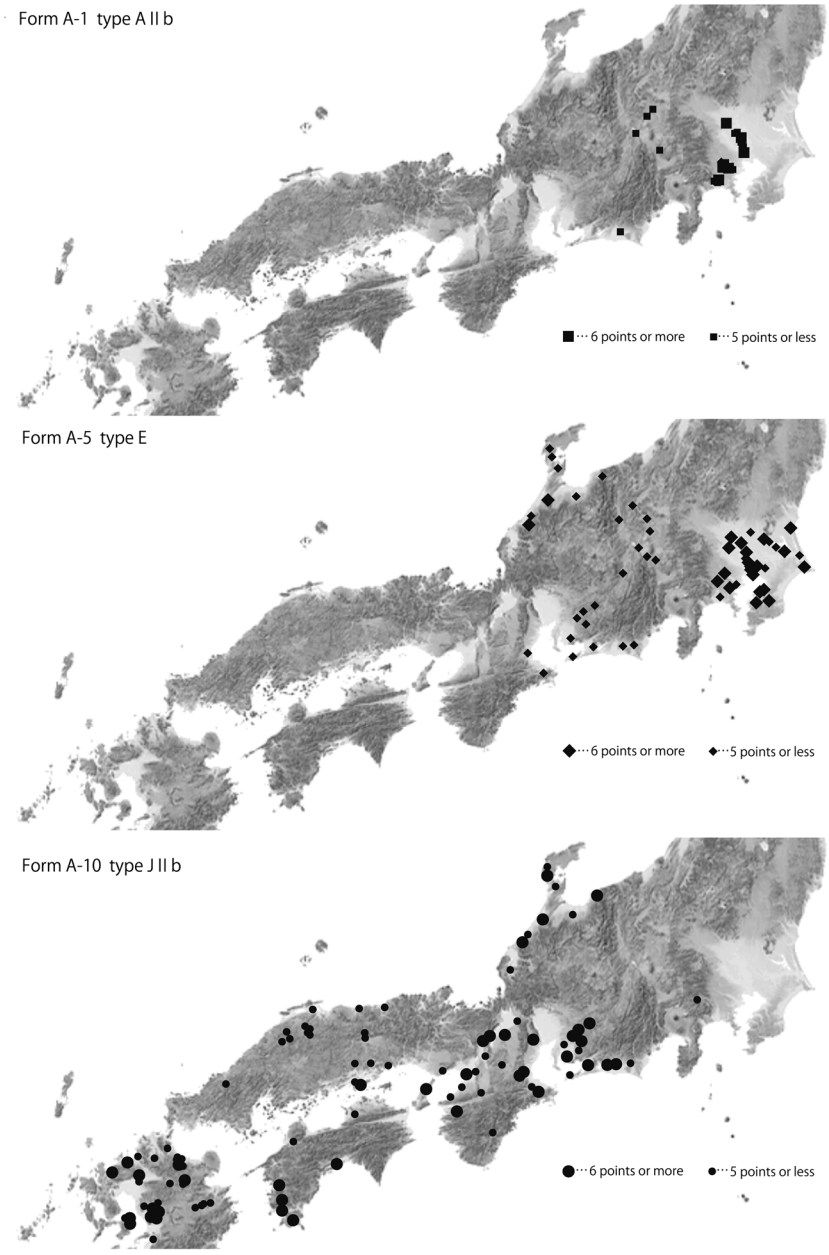


Figure 13. Distribution of each classification unit at phase III.

rope patterns (Figures 14.2 through 14.4). However, because the motifs differ somewhat from the Kyushu region pottery excavated at the same time and the clay is not significantly different from that of the local pottery group (as observed by the naked eye), it is not possible to positively identify them as artifacts brought in from the Kinki area. Therefore, the following three patterns of movement of people, artifacts, and information related to this pottery group are possible hypotheses:

- Group B (a group that produces Kinki-style vessels) migrated to Group A (a group residing at the Kuginosengen site), and Group B people, having altered their own pottery production traditions, produced the pottery in question.
- Group A people produced it by imitating Group B's pottery down as closely as possible.
- Group A people produced it after being given detailed information on pottery production by people of Group B.

I have proposed in the same article that, in light of the fact that almost all of the Kinki-style vessels excavated at the Kuginosengen site are ritualistic-looking spouted vessels (10 pieces), neither the daily interaction between Group A and Group B nor the transfer of people, artifacts, and information triggered by the transfer or migration of Group B people to Group A is sufficient to explain the phenomenon, and that the use of spouted vessels for some kind of ritualistic event which involved the exchange of people, artifacts, and information was also a reasonable hypothesis.

The "ritual event" hypothesized here is the rite of intensification (Coon 1971), which is often seen in ethnographic literature. Such rituals are said to function to reaffirm and reinforce group cohesion by bringing together for a few days or for an extended period

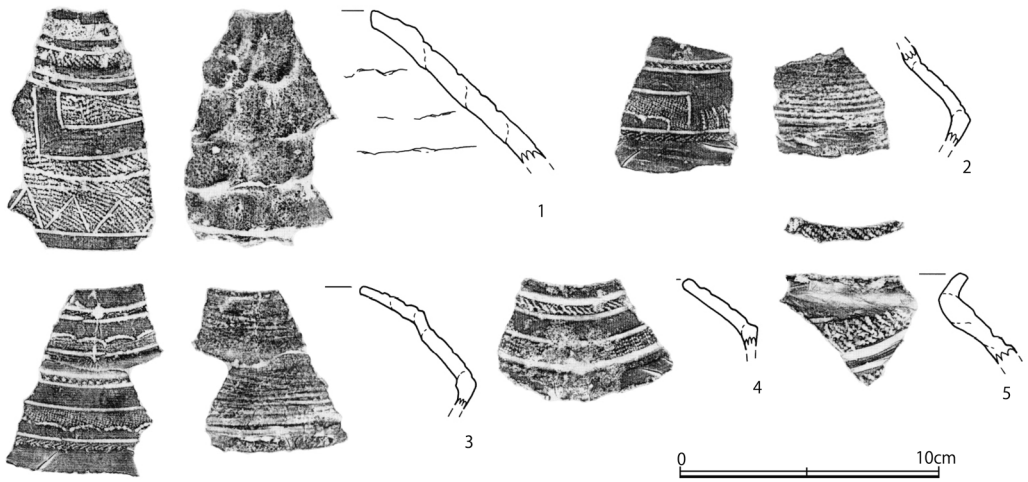


Figure 14. Kinki-style spouted vessels excavated from the Kuginosenken site.

of time people who do not see each other on a daily basis. This is exactly what was hypothesized in the background of the emergence of the "Takaragamine type" in the Kanto region in Phase II: a ritual or social "place" that used spouted vessels as a medium for the development and reinforcement of inter-regional and inter-group relations.

In western Japan during Phase I, spouted vessels of the Kanto Kasori B1 style "Shiizuka-type" are found here and there (Form E; Figure 6), but none are any more than fragments of the body, and it is doubtful whether the inherent social functions possessed by spouted vessels were fully understood. On the other hand, the stabilization of composition and the wide distribution of spouted vessels in western Japan during Phase III is clearly different from the situation during Phase I. In Phase III, the ritual or rituals that used spouted vessels as a medium for the development and reinforcement of inter-regional and inter-group relations, or as a medium for the sharing of such a social "place," as hypothesized from the trend of the "Takaragamine type," are thought to have begun to be practiced in western Japan as well. It is of interest that after this phase, pottery in western Japan became undecorated, forming the "concave lineation horizon" (Okada 2000), a wide area of pottery distribution throughout western Japan. It is also possible that the development and reinforcement of group relationships over a wide area during Phase III, mediated by the Kinki group's spouted vessels, triggered the formation of the "concave lineation horizon."

(4) Other trends in material culture of the Late Middle Jomon period

Above we summarized the spatio-temporal aspects of pottery groups from Phases I to III. As a result, we were able to confirm that the nature of inter-regional and inter-group relationships within the Japanese archipelago differed between Phase I and Phase II onwards. The epoch lines seen between Phases I and Phase II can be seen in other kinds of material cultures, and we would like to review them here.

i) Settlement dynamics

It was found that there are settlement sites that ceased to exist or declined around Phase II, and, conversely, others that began to operate around Phase II (Figures 15 and 16). In addition, when examining the layout of dwellings within settlement sites that existed in both phases, many cases were seen in which such layouts changed from Phase I to Phase II. It is very possible that the location of settlement sites and the layout of dwellings reflect the composition of social groups, and these changes in location and layout are considered to be phenomena linked to the changes in inter-regional and inter-group relationships observed in the pottery artifacts.

It is also from Phase II onwards that a segmented structure of dwelling layout begins to be observed in Kyushu. As Mizunoe Kazutomo has previously noted, there was a

No. in Fig.1	Site Name	Before B.C.3000	Cal.B.C. 3000～				Cal.B.C. 2500～								Cal.B.C. 1200～			
			Later half of Middle Jomon				Late Jomon								Final Jomon			
			Kasori-E1	Kasori-E2	Kasori-E3	Kasori-E4	Shomyoji	Horinouchi-1	Horinouchi-2	Phase I	Phase II	Phase III	Soya	Angyo-1	Angyo-2	Angyo-3a	Angyo-3b	Angyo-3c	Angyo-3d
2	Kataoka							■	■	□	□	■	□	□	□	□	□	□	
11	Shakasaibutsu				■	■	■	■	■	□	□	■	■	■	■	■	■	■	
12	Haraguchi							■	■		■								
19	Gionbara						■	■	■	■	■	■	■	■	■	■	■		
20	Saihiro					■		■	■	■	■	■							
21	Teranodai							■	■	■		□		■					
24	Kainohana			■	■			■	■	□	□	□	■	■		□		■	
25	Gesu-daiichi					■	■	■	■	□	■	■	■	■					
29	Nishigahara	■				■	□	■	■	■	■	■	■	■	□				
30	Ishigami						■	□		□	■			□	□	■	■	■	
33	Okido	■						□	■	■	■								
35	Utaya							■	■	■	□		□	■	■	□			
37	Akagi			■				■	□	■	■	■	■			□	□	□	
40	Kugaharashogakkonai									■	■								
41	Nishinotani							■	□										
42	Keshodai						□	■	■	■	■	■	■	■	■	■	■	■	
43	Komaru	■		■	■			■	■	■	■								
45	Tsurukawa-M							■	■	□	■	■							
46	Nasunahara	■					□	■	■	■	■	■	■		□	■	■	■	
49	Tabata	■					■												
48	Kmitsuchidanaminami							■	■	■									
54	Numame・sakado			■	■		■	□	■	■	■	□							

Figure 15. Kanto: duration of settlement.

rapid increase in the number of pit buildings and also the emergence of two groups of pit buildings flanking a central empty space (Mizunoe 2001, 2012). Mizunoe explains that the background for the beginning of these settlements was the expansion of group sizes due to population growth as well as the organic emergence of a living space in which buildings were placed on either side of a central empty zone so that the groups could be aware of and control each other's existence and thus maintain and sustain the group and its organization.

Certainly, there is no question that there was an increase in the number of settlements; large-scale settlements began to appear from Phase II, so it is natural to hypothesize a population increase from that. However, it is important to note that from Phase II on, many of the dwelling structures become more fragile, lacking postholes or sunken hearths, and there is a decrease in scale as well. It can also be pointed out that the number of dwelling sites varies from settlement to settlement, and that an increase in the number of dwelling remains cannot be seen in every settlement, which casts doubt on the very existence of the population increase assumed to have occurred from Phase II onwards in the Kyushu region.

Based on the aforementioned dwelling structure and dwelling scale, I think it is more reasonable to assume that the increase was the result of people repeatedly moving and

No. in Fig.2	Site Name	Cal.B.C. 2500～										Cal.B.C. 1200～		
		Late Jomon										Final Jomon		
		Nakatsu	Fukuda-K2	Koikebaru-jyoso	Kanezaki-II and III	Phase I	Phase II	Phase III	Mimanda II	Mimanda III	Goryo・Hirota	Koga	Kurokawa	Kizamime-Tottaimon
178	Shimoyoshida				■	■								
181	Yamasaki				■	■		□	■					
182	Ishimachi					■								
183	Kamifukano・heikoshi					■	■							
184	Matsumaru-D					□	■	□	□			□		
185	Nakamuraishimaru			■	■	■	□	□		■				
186	Hasamamiyanoshita				■	■	■							
188	Sachi			■	□	■	■		□					
190	Tsussai			■			□	■						
191	Haraimitsue						□	■						
193	Handanitanda			■	■	■	■	□						
194	Tesaki						■	□						
195	Kuginosengen						■	■						
196	Miyakobaru						■							
203	Sugisono						■	■						
207	Shimosakata						■	■	■	■				
208	Amida						■	■	■	■		■		
209	Katamidori							■						
210	Kashiwada					■								
212	Yamadanishi					■								
218	Kuranoue							□	■	■				
224	Kikoji						■	■						
225	Wakudoishi							■	■	□	□	■		
229	Rokujizo					■								
231	Tsuruhata									■	■	■		
232	Tarozako						■				■	■		
242	Obarushimo						□	□	□	□				

Figure 16. Kyushu: duration of settlement.

returning to the same places, which resulted in settlements where dozens of dwelling remains have been found, rather than assuming an increase in population as the cause of the increase in the number of dwelling remains during this period.

Furthermore, the clear distinction between settlements where a large number of dwelling remains are found and those where not many are found may very likely be rooted in the functional differentiation within the territory where groups of people lived and conducted their livelihood activities. In this regard, it is noteworthy that differences in stone tool composition between sites begin to be observed from Phase II on (Figure 17). At the Shimosakata-nishi and Amida settlement sites, where the remains of more than 20 dwellings have been excavated, there is a good balance between hunting and plant-

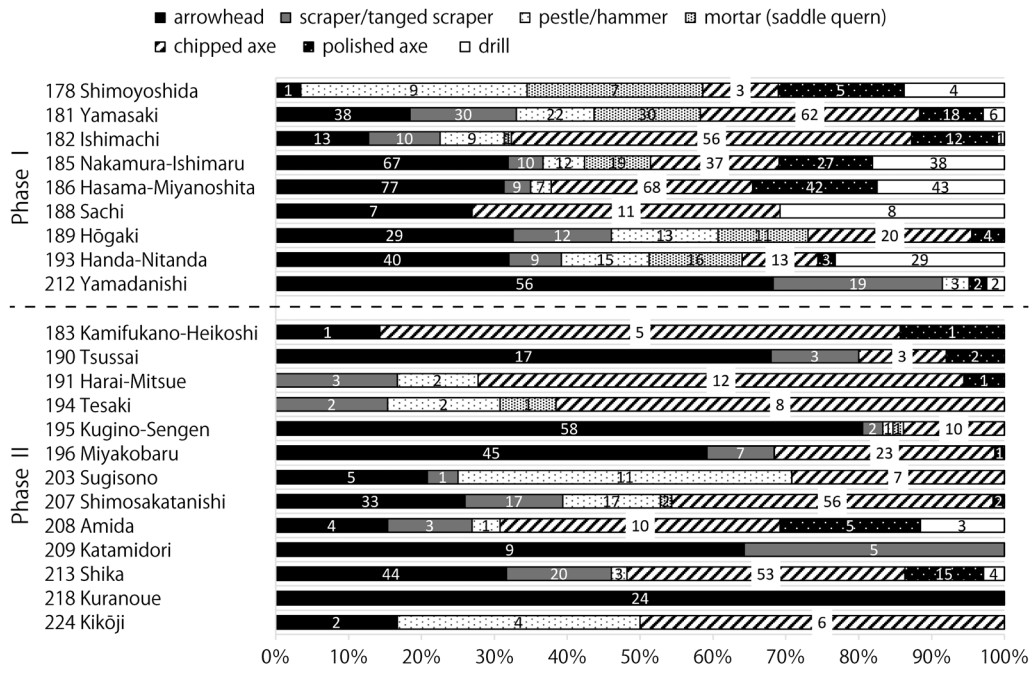


Figure 17. Kyushu: stone tool composition.

gathering/processing tools, while at the Kuginosengen, Katamidori, and Kuranoue sites, where the remains of fewer dwellings have been detected, the proportion of hunting tools is significantly higher.

These differences between sites are likely to correspond to the differences between residential base and field camps (Binford 1980; Habu 1990) in Lewis R. Binford's collector model. Although it is quite possible that such functional differentiation within a territory existed even before this period, the functional differences between sites begin to become especially clear from Phase II on.

Why did the above-mentioned residential forms develop? One possible reason is the introduction of plant cultivation. Recently, the results of multiple studies by Obata Hiroki have confirmed that soybeans and azuki beans were cultivated in the Kyushu region in the second half of the Late Jomon period (Obata 2011, 2016; Obata *et al.* 2007). It is quite possible that the introduction of such plant cultivation activities increased the attachment of groups to specific locations and changed their residential and subsistence activities.

ii) Trends in ritual objects and structural remains

An increase in the number of structural remains and artifacts related to rituals and ceremonies from the second half of the Late Jomon period on has been noted in the Kanto

region (Taniguchi 2017b). One such type of structural remains is large dwellings, and this study too found large dwellings beginning to appear from Phase II on. Although the character of large dwellings is still for the most part unclear, the common view is that they are places where some kind of ritualistic activity took place (Abe 2001, 2017; Takahashi 2001a, 2017b). As seen in Figure 18, the large dwellings are distributed in the area designated as Kn-4–5 (Figure 1), and this area can be described as one where two different pottery lineages, type AIIa and type D, make contact and mingle in Phase II (Figure 9). Considering the time of appearance and the conditions of the distribution, it is possible that rituals and ceremonies to develop and reinforce the above relationships between different regions and groups were performed in the large dwellings.

It has also been pointed out that the number of ritual structural remains and artifacts also increased in western Japan as well from Phase II on. These include the large-scale funerary spaces established in the Kinki region (Okada 2005) and the ritual objects and accessories that increased in the Kyushu region (Ōtsubo 2015; Tomita 1992; Mizunoe 2012; Miyauchi 1980).

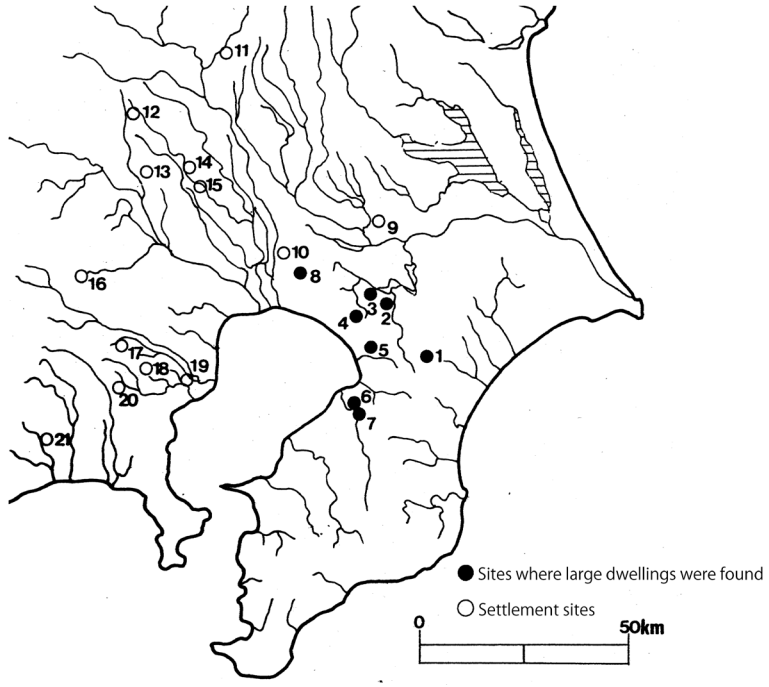


Figure 18. Distribution of large dwellings.

2. The actual mechanism by which the "East–West difference" of Jomon culture emerged

We have confirmed that the direct impetus for the formation of the two major east–west pottery distribution zones, which are thought to have formed in the Latter Late Jomon period, can be traced to changes in interregional and group relations that occurred throughout the archipelago during Phase II. How then, can we explain the oppositional relationship—known as the "East–West difference in Jomon culture"—between the societies of eastern and western Jomon Japan that underlies the two major east–west pottery distribution zones? In this section, building on results of our previous analysis, we propose a model of the Late Jomon societies of east and west and consider the actual mechanism by which the "East–West difference" emerges.

(1) The "East–West difference" as seen in pottery distribution Phenomena

Figures 19 and 20 summarize the relationship between the differences in upper and lower ranks of pottery stylistic structure and the scale of the spatial extent of each type of vessel in the Kanto and Kyushu regions. The first point in common between the two regions is the multilayered nature of the pottery distribution phenomenon. In both the Kanto and Kyushu

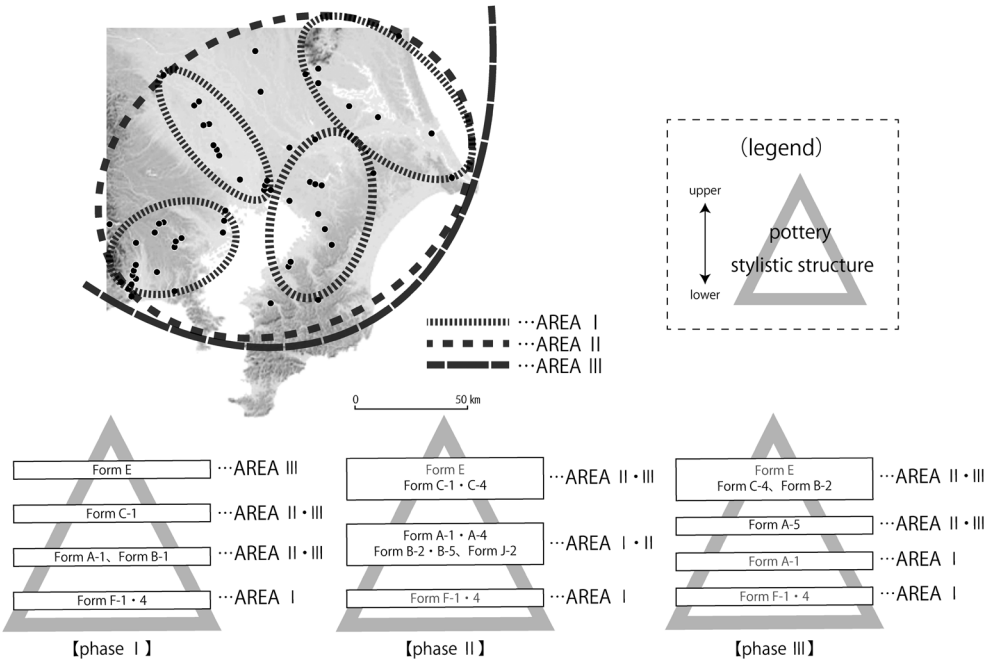


Figure 19. Kanto: difference between higher and lower levels in the pottery style structure and spatial extent of each shape category.

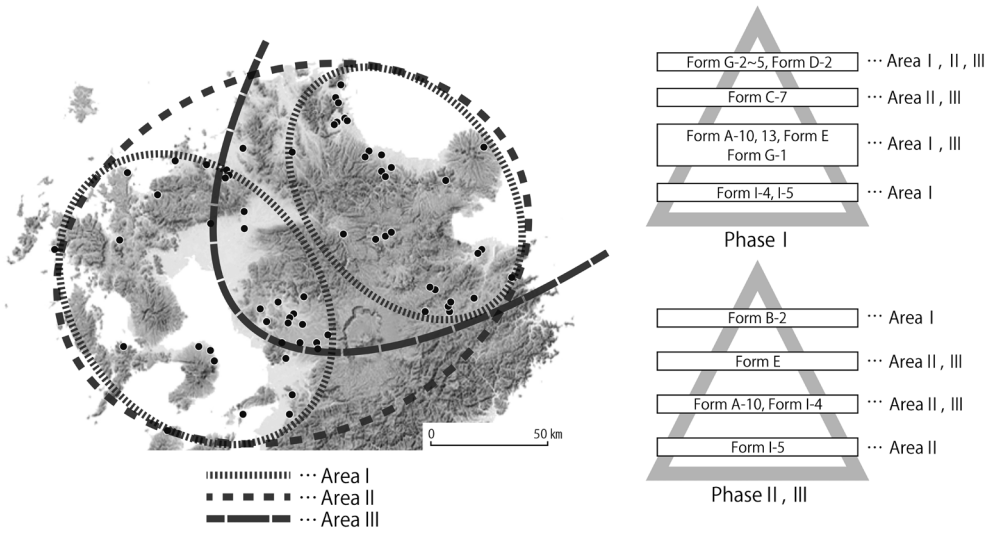


Figure 20. Kyushu: difference between higher and lower levels in the pottery stylistic structure and spatial extent of each shape category.

regions, it is possible to grasp the multilayered structure of the three pottery distribution areas which differ in size—Area I through Area III.

On the other hand, the most notable difference between the two is the scale of Area I. In this study, Area I is the smallest spatial cluster that could be extracted in the comparative spatial examination of vessel composition, but its spatial scale is such that it can be extracted within a radius of approximately 20–25km in the Kanto region, while in the Kyushu region it can be extracted within a radius of approximately 50km. In other words, the scale of Area I in the Kanto region is smaller than the scale of Area 1 in the Kyushu region.

In the Kanto region, spouted vessels (Form E), positioned as a high-level stylistic structure, are the most widely distributed, with the distribution of the decorated bowl (Form C-1 and Form C-4) being about the same as in the Kanto region (Figure 19, Area II or III). The distribution of the decorated deep bowl (Form A-1 and Form A-4) and vessel with notched clay band (Form F-1 and Form F-4), both representing a lower level in stylistic structure, is about the same as in the subdivided areas (Figure 19, Area I) shown in Figure 1. Thus, the higher and lower levels of pottery style structure and the size of their respective distribution areas are roughly correlated (Figure 19). Based on the assumption of the social function of spouted vessels (Form E) as a mediator of local/regional relationships and the assumption that coarse vessels (Form F-1 and F-4) were chiefly used for daily cooking, it is likely that the spouted pottery that is presumed to have functioned

as a mediator of development and reinforcement of group relationships over a wider area was more carefully produced, while the everyday types of pottery had not achieved that level of refinement. We conclude that for society of the Late Jomon period in Kanto, the development and reinforcement of ties with other groups was necessary, and this need was fulfilled through the mediation of material culture in the form of pottery.

In the Kyushu region, on the other hand, it is difficult to find a correlation between the ranks of pottery style structure and the size of their distribution areas (Figure 20). It is possible that in the Late Jomon society of Kyushu material culture played a lesser role in the development and reinforcement of ties with other groups than it did in the Late Jomon society of Kanto.

(2) The movement of people, things, and information in terms of communication systems theory

Why did the above-mentioned differences in pottery distribution phenomena occur? In order to deepen our discussion on this point, it is necessary to clarify the historical issue of what a pottery distribution zone is. Tanaka Yoshiyuki's theory of communication systems (Tanaka 1982; Tanaka & Matsunaga 1984) defined a pottery distribution zone as "a communication systems zone within which information and ideas related to pottery production are guaranteed to be both prevalent and accepted," and tried to explain the variations in the relation among different styles by whether the system was closed or open. However, the clarification of the actual situation of the system remains an issue.

In order to address this issue, we think it is crucial to concretize what has been described as the phenomena of "a closed or open system," that is, the process of communication/acceptance/rejection of people, things, and information. In considering this problem, the style theory discussed from the 1980s, led by Ian Hodder, is also important (Hodder 1982; Hodder (Ed.) 1989; Wiessner 1983, 1984; Wobst 1977). A salient point made by these theory is that commonality of style does not necessarily correlate with the frequency or degree of exchange, intermarriage, or trade. Ian Hodder studied three tribal groups, the Tugen, Njemps, and Pokot, in Baringo district, Kenya, and examined in detail the commonalities and differences in material culture (Hodder 1982). As a result, it was found that differences in material culture can be observed even when interactions between groups are frequent, and that there are clear differences in material culture even when ecosystems and living conditions are similar. This suggests that commonality and difference in material culture cannot be predicted by the frequency of interactions between groups or the similarity of ecosystems and living conditions. Also theorized is the active role of symbols which mediate between material culture and social organization, the problem of group identity, and the importance of each cultural context.

Figure 21 models the transmission/acceptance/rejection of people, goods, and

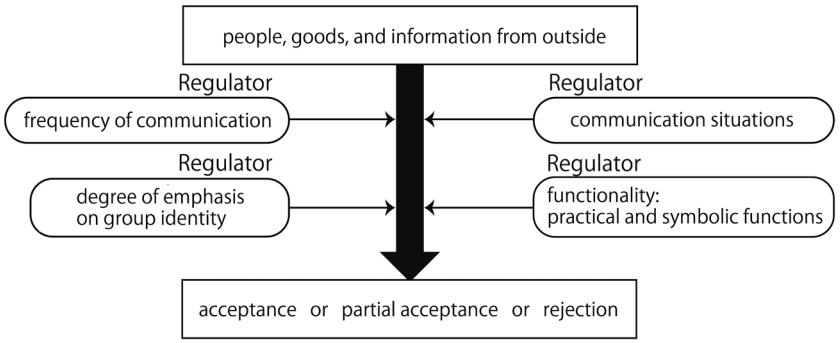


Figure 21. Model of transmission/acceptance/rejection of people, goods, and information.

information based on the various points above. When a person, thing, or piece of information is input from the external environment, four major regulators are thought to be at work before a conclusion is reached about whether to accept it, partially accept it, or completely reject it. The first is the "frequency of communication," the second is the "communication situation," the third is the "functionality" (practical functionality or symbolic functionality), and the fourth is the "degree of emphasis on group identity."

Regarding the first, "frequency of communication," it is expected that the transmission/acceptance/rejection of people, goods, and information will be different in the case of frequent communication and communication that occurs only once a year or once in several years. Regarding the second, "communication situation," it is assumed that differences will arise in acceptance/rejection depending on whether, for example, the communication takes place in the context of daily interactions or in the context of unusual events. The third regulator, "functionality," is at work when, for example, thing A, which has a certain function, enters, but thing B, which has the same function, already exists. In that case, thing A will be rejected. Even if accepted, it may be assumed that the way of acceptance will differ, depending on whether the function is practical or symbolic. The fourth and final regulator, the "degree of emphasis on group identity," is based on the various arguments in the previous discussion on style theory. For example, even if the frequency of communication is high, if the degree of emphasis on group identity is also high, then it is to be expected that people are more likely to reject people, goods, and information from other groups.

The above four regulators are thought to determine whether a person accepts, partially accepts, or fully rejects people, things, or information input from the external environment. It is not always the case that all four regulators act equally, and which of the four regulators acts most strongly in a given situation needs to be determined for each cultural phenomenon treated.

(3) The mechanism of the emergence of the "East–West difference" and a presentation of a model of East–West Late Jomon Society

Based on Figure 21, Figure 22 models the layered structure of the pottery distribution zones in Figures 19 and 20. Area I has a radius of approximately 50km in the Kyushu region and 20–25km in the Kanto region. The usual size of the territory of hunter-gatherers is said to be within a radius of about 10km (Akazawa 1983), which is clearly smaller than the size of Area I. This leads us to assume that multiple territories are contained within Area I.

Area I is the smallest area of spatial cohesion that could be extracted from the comparative spatial study of vessel shape categories carried out in this study. Vessel shape categories express the relationships of tool sets and the expectation is that they would reflect the living conditions of the time (Kobayashi 1933, 1938; Suzuki Kimio 1964; Fujimura 1983). Spatial cohesion, which is characterized by uniform vessel shape categories, is thought to indicate the extent to which information was shared through fairly close group interaction.

The study of housing configurations indicates that each dwelling cluster site contains multiple subunits within it. Referring to the results of previous studies (Tanaka 1998, 2008a, 2008b; Taniguchi 2005, 2018), it is highly likely that each segmental unit represents a descent group. Given the aforementioned active group interaction within

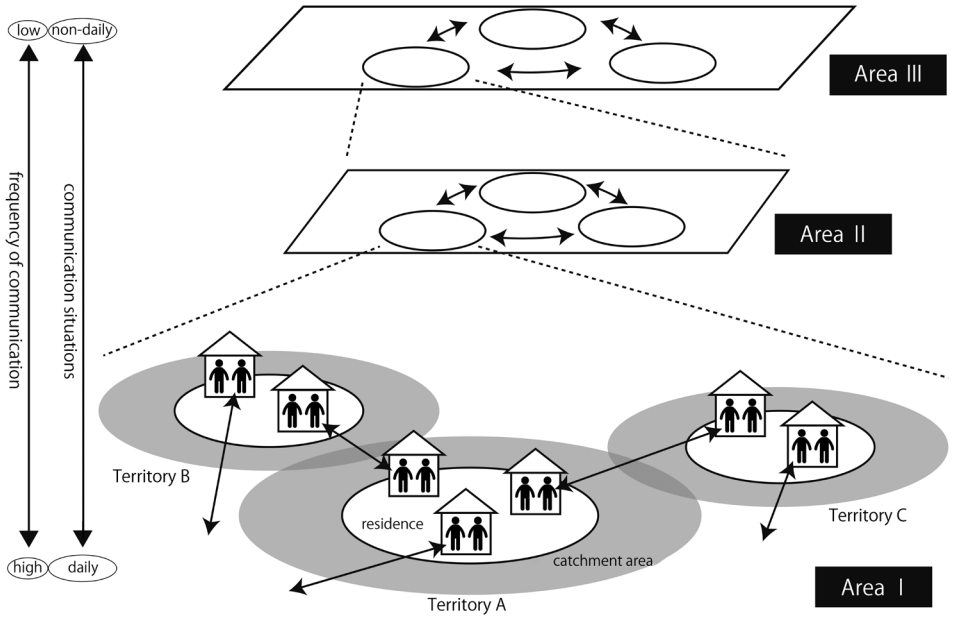


Figure 22. Model of multilayered social structure in the Late Jomon period.

Area I, it is highly likely that the local community was organized as "Type 4" (Keesing 1975) in Keesing's model of the relationship between community and descent group. That is, a single settlement contains several different descent groups, each of which has a relationship with a segmental descent group in the other community (Figure 23). It is assumed that through kinship relationships based on descent, the people established social networks with neighbouring settlements and communities, and communicated with each other on a frequent and daily basis.

The above-mentioned social entities are one segment, and while related to other similar segments, Area II is integrated on a higher dimension, and Area III is integrated on an even higher dimension. As the spatial scale naturally increases in Area II and Area III, communication in each area is considered to have taken place between groups of people who do not see each other on a daily basis, and the frequency of communication in each area is considered to have decreased compared to that in Area I. One of the possible occasions for such communication is in rituals and ceremonies outside of daily life. Thus, the shape category (vessel type) that shows a certain uniformity on the spatial scale of Area III is spouted vessels (Form E) with strong ritual significance. It is thought that the existence of ritual and rites aimed at the development and reinforcement of relationships between broad areas and groups and that the act of sharing the same material culture made visible the ties between these areas and groups.

What kind of social group units can be contrasted with such broad-area social entities as Area II and Area III? Considering that the relationship entities of Area II and Area III are the fusion of multiple descent groups as seen in Area I into a family ideology through rituals and rites, the most reasonable interpretation is to assume the existence of social groups such as "moiety" and "phratry" (Keesing 1975; Service 1971) in the background.

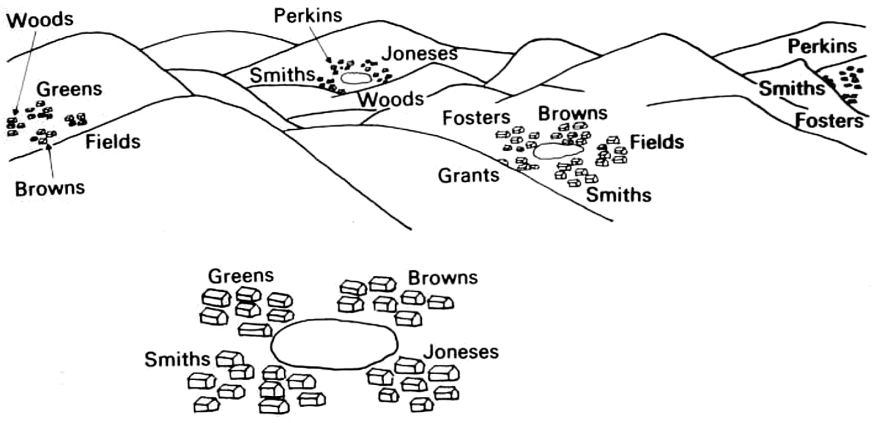
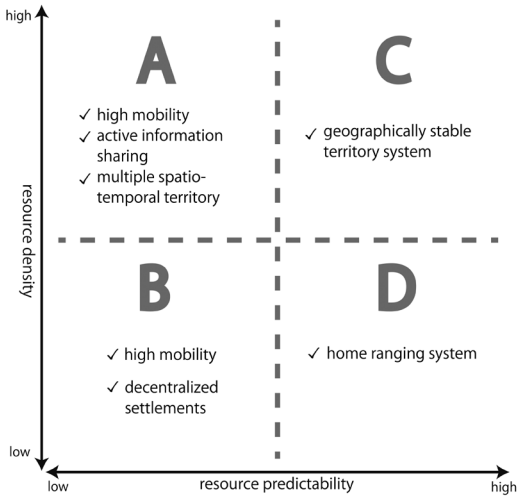


Figure 23. Keesing's model "Type 4."

In terms of the above model of social structure, it is only on the spatial scale of Area I that we find the above-discussed difference between the Late Jomon societies of eastern Japan and western Japan. Dyson-Hudson and Smith's work (Dyson-Hudson & Smith 1978) is relevant here because they focused on two variables, "resource density" and "resource predictability," in considering the territoriality of human groups. Based on the correlation between these two variables, they model four types of economic defensibility of groups (Figure 24). Although it is undeniable that there is an environmental deterministic aspect to this model, we believe that the research results of Dyson-Hudson and Smith are extremely valuable in that they offer an integrated model of the diversity of the natural environment and the adaptation strategies of human groups to it, as well as the nature of relationships among human groups in each environment. Based on this model, how can we evaluate the Late Jomon societies of eastern Japan and western Japan?

First, we would like to focus on the differences in the duration of settlements and the frequency of overlapping dwellings. In the Kanto region, which was used as a case study for the Late Jomon society of eastern Japan, some dwellings continued to occupy the same location for nearly 1 000 years, confirming a high degree of attachment to a particular location (Figure 15). The act of constructing a dwelling in the same location over a long period of time, even if mimetic, is likely to have been done by a group with a sense of kinship.



	resource distribution	economic defensibility	resource use	degree of mobility
A	unpredictable・dense	low	information sharing	high
B	unpredictable・shortage	low	decentralization	very high
C	predictable・dense	high	territoriality	low
D	predictable・shortage	fairly low	home range	a little low

Figure 24. Dyson-Hudson's economic defensibility model.

What made such long-term and recurrent residential and subsistence activities possible was probably the subsistence strategies of the eastern Japan Jomon groups, as pointed out in previous studies. In eastern Japan, it is believed that the ecosystems around settlements were modified for multifaceted use of plant resources (Noshiro & Sasaki 2014; Noshiro 2014; Sasaki Y. 2014a). Thus, by actively modifying the areas surrounding settlements to make a more hospitable environment for themselves, it is thought that eastern Japanese populations were able to engage in long-term and recurrent residential and subsistence activities.

From this, it can be inferred that the groups of eastern Japan modified the ecosystem around their settlements to make it more hospitable, which in turn made it easier for them to predict the plant and animal resources they would acquire there, and that the resource density within their territories would have been high. In the Dyson-Hudson/Smith model described earlier, the groups of eastern Japan would very likely fall into Type C, and their economic defensibility would be relatively high.

It is easy to imagine that long-term and recurrent residence in the same location as well as a stable territorial system would lead to economic defensibility, which in turn would foster group cohesion and genealogical awareness. As group cohesion and genealogical awareness grows, the degree of emphasis on group identity would naturally be expected to increase. Because of this, the groups might be more rigid in their acceptance of people, things, and information that differ from their own. As a result, the spatial scale of Area I may come to appear smaller.

However, in order to ensure the acquisition of things not available in one's own territory or the acquisition of a marriage partner, it is necessary to establish social relationships with other groups outside the group's own territory. It can be inferred that it was necessary to transcend the tendency of group relations to be relatively exclusive and strict in their acceptance of other people, goods, and information and to create social devices to produce and reproduce relationships over a wide area. The existence of monuments such as stone circles and an abundance of ritual and ceremonial items, as well as the previously discussed phenomenon of the development of pottery culture as a mediator of the development and reinforcement of group relationships, can be seen as such social devices. It is also possible that these sorts of social devices played an important role in strengthening group cohesion and genealogical awareness within their own territory (Figure 25).

On the other hand, in the Kyushu region, which was used as a case study of Late Jomon society in western Japan, the duration of settlement tends to be shorter than in the Kanto region (Figure 16). In addition, unlike in the Kanto region, the act of repeatedly constructing duplicate dwellings at the same location is much less common. This suggests that when the people returned to an area, they either constructed dwellings at different

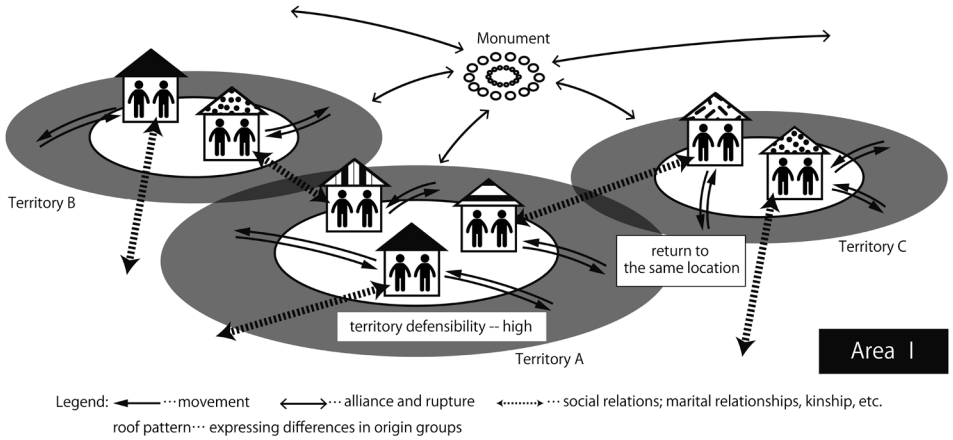


Figure 25. Basic model of regional society in the late Jomon period in eastern Japan.

points in the settlement area or moved to different territories. The movement and migration within and between territories appears to have been more fluid and flexible than in the Late Jomon society of eastern Japan. This fluidity and flexibility can be attributed to the subsistence strategies and labor organization of western Japan Jomon groups (Izumi 1984, 1985; Seguchi 2003, 2005, 2009, 2018), which engaged in decentralized gathering activities of many different kinds of nuts and the like in small groups.

Naturally, the western Japan Jomon groups are also thought to have lived with a thorough knowledge of the surrounding ecosystem, but it is postulated that compared to eastern Japan Jomon groups, which modified the ecosystem around their settlements to make it more habitable for themselves, there was less predictability of resources for the western groups.

In light of the above, it is highly likely that the Late Jomon society of western Japan falls into Type A in the Dyson-Hudson/Smith model. Its members must have shared information about the acquisition of resources with groups inside and outside their territories, and engaged in residential and subsistence activities with fluidity and flexibility. Although it is possible that a certain degree of territorial formation may have taken place, the economic defensibility of the area was probably lower than in eastern Japan.

Given this type of residential and subsistence activities, it can be imagined that groups in western Japan were relatively flexible in interacting with groups outside their own territories, and that this made the development of group cohesion and genealogical awareness less pronounced than in eastern Japan and the degree of emphasis on group identity lower. This aligns with the facts that not only are there no clear traces of ancestral rituals in the Kyushu region, but it is unclear whether or not there was any grave site formation. As a result, they may have been more open to accepting people, goods, and

information different from those of their own group (Figure 21), and the spatial scale of Area I may have appeared relatively large.

Because of the intrinsically fluid and flexible group and social relationships, the development and reinforcement of broad-area relationships to ensure living stability and the reproduction of life were easier to carry out than they were in eastern Japan. There must have been less necessity to set up social devices like those of eastern Japan in the Late Jomon period, devices that gave birth to places for the development and reinforcement of relationships. This is also suggested by the scarcity of monuments and ritual and ceremonial items in western Japan (Figure 26).

It should be noted, however, that the number of ritual and ceremonial remains and artifacts begins to increase in western Japan from Phase II on. In considering this point, the pattern of the Kyushu region from Phase II on is worthy of attention. We have pointed out the possibility that the introduction of plant cultivation activities triggered a return to residential activities, changing the way in which territories were used and in which the composition and relationships between groups within and without their territories were established. The residential and subsistence activities and formation of group relationships hypothesized here are similar to the already-discussed ones of the Late Jomon society of eastern Japan (Figure 25). It is possible that the Late Jomon society of western Japan is approaching the eastern Japan style of society, and it is conceivable that the increase in the number of ritual and ceremonial remains and artifacts from Phase II onward may be due to such social changes.

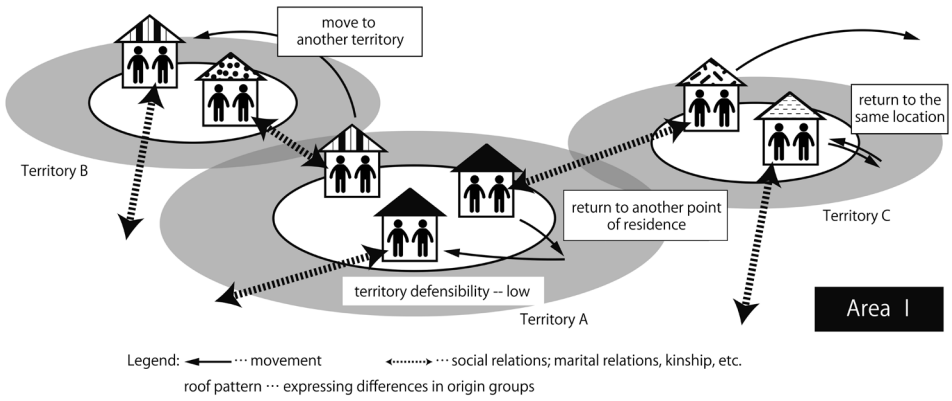


Figure 26. Basic model of regional society in the late Jomon period in western Japan.

3. Social change in the Late Jomon Period

(1) The beginning of the Late Jomon Period—Phase I

In interpreting the Late Jomon period, an important event is the global climatic cooling that occurred from the end of Middle Jomon to the beginning of the Late Jomon period (Kudō 2012). This global climatic change is thought to have caused deterioration in the resource environment throughout the archipelago, forcing changes in the Middle Jomon-style residential and subsistence systems and social systems. This is perhaps best illustrated by the dismantling of ring settlements in the Chubu and Kanto regions and the shift to more dispersed, smaller-scale, and short-term settlements (Ishii 2009; Kanō 2000, 2002; Taniguchi 2005, 2008; Tamada & Shōda 2013; Yamamoto 1977, 2013).

Changing residence, livelihood, and social systems was a high-risk decision for a group at that time, and one can imagine that measures were taken to reduce the risk as much as possible. One such measure may well have been the construction of a wide-area network of social relationships in order to find someone they could rely on in times of emergency. It can be hypothesized that they constructed such a wide-area network by building relationships between remote areas or by creating a bead-like chain of relationships between adjacent areas. The groundbreaking phenomenon of the establishment of the Nakatsu-style and Shōmyōji-style wide-area pottery distribution zone at the beginning of the Late Jomon period may well have occurred against this social background. It is also possible to see here signs of the existence of a practice in which groups share similar pottery vessels with each other, producing and reproducing relationships of mutual bonding.

These social conditions are thought to have continued even after the warming of the climate in the early part of the Late Jomon period. In eastern Japan, spouted vessels became established as a medium for the development and reinforcement of inter-regional and inter-group relations, and multi-burial and stone arrangement remains, which are thought to be traces of ancestral rituals and group consolidation rituals, became prominent (Kosugi 1995; Taniguchi 2017b; Yamada 1995, 2018), along with other inter-group social devices that had the function of producing and reproducing close relationships between groups.

On the other hand, in western Japan, a pan-western Japanese pottery group called the Entaimon Pottery Group, which has a high degree of uniformity, begins to be distributed and developed during this period (Izumi 1981a, 1981b, 1989; Tanaka & Matsunaga 1984), and the transmission and reception of various cultural elements originating from eastern Japan can also be observed (Watanabe Makoto 1968, 1975).

Important to touch on here is the direction of wide-area movement of cultural elements in the diffusion process. The movement of cultural elements during the period in question

has been described as "a phenomenon of wave-like diffusion of cultural complexes originating in eastern Japan" and explained in terms of an east-to-west vector (Ishikawa 2010; Otomasu & Maekawa 1969; Kimura & Shimazu 1972; Koike 1993, 1998; Sawashita 1983, 1994; Tanaka 1982; Maekawa 1979; Matsumoto 2002). Why is the vector of movement of many cultural elements from east to west?

The first thing that must be kept in mind is that at present no traces of large-scale migration of people from east to west can be confirmed (Tanaka 1982; Fukunaga 2017). Therefore, it can be said that, even if there were small-scale movements of people from east to west, this diffusion of cultural elements was basically a phenomenon that occurred in the context of bi-directional interactions between groups. What is important here is the model of transmission/acceptance/rejection of people, goods, and information shown in Figure 21, and the model of east–west Late Jomon period society shown in Figures 25 and 26. Based on these models, when people, goods, and information were exchanged in bi-directional interactions between groups, eastern groups emphasized their own group identity more strongly and were more rigid in accepting different people, goods, and information from other groups, while western groups emphasized their own group identity less strongly. As a result of the lesser emphasis on group identify of the western Japan group, it was more open to accepting different people, goods, and information from other groups. As a result of the eastern Japan group rejecting people, goods, and information from western Japan while the western Japanese group accepted people, goods, and information from eastern Japan to a certain extent, the cultural elements "appear" to have diffused from east to west. Thus, by considering the regulator termed "the degree of emphasis on group identity" in the model shown in Figure 21, it becomes possible to offer some explanations and interpretations for the historical question of why many cultural elements in the Late Jomon Period diffused from east to west.

(2) Phase II and beyond

The fact that there is a breakthrough between Phases I and II is a point that has been emphasized throughout this study. We have confirmed that the relationship between eastern and western Japan, which had involved active relations since the beginning of the Late Jomon period, changed significantly in Phase II, and that Phase II can be considered the trigger or direct impetus for the establishment of the two major east–west pottery distribution zones that were thought to have been formed from the Latter Late Jomon period onward.

The two phenomena that are considered particularly important in evaluating the breakthrough in Phase II are the "expansion of the influence of Tohoku derived cultural elements" and the "transformation of western Japan Jomon society into eastern Japan Jomon society." From Phase II on, the influence of Tohoku cultural elements moved

southward, and type E of this study, which was established as a result of the influence spillover of Tohoku cultural elements, became widely distributed throughout eastern Japan. The Middle Late Jomon period seems to be groundbreaking in the Tohoku region as well. It has been pointed out that in the Early Late Jomon period, three major pottery culture areas were formed—the Tokoshinai culture area in the northern part of the Tohoku region, the Monzen culture area in the central part of the Tohoku region, and the Tsunatori/Minamizakai culture area in the southern part of the Tohoku region—and that these converged in the middle to late part of the Jomon period into the Takaragamine culture area and the Kobutsuki pottery culture area, which in turn became part of the Kamegaoka culture area (Suzuki Katsuhiko, 2013; Sekine 2013).

Furthermore, in this regard, Nishimura Hirotsune has recently shown, through an analytical re-examination of Tokoshinai-2 pottery (Phase I and Phase II of this study), that the entire Tohoku region was suddenly integrated into a uniform pottery type sphere in the Middle Late Jomon Period (Nishimura 2018).

These changes in interregional and group relations in eastern Japan are thought to have led to a dilution of exchanges between eastern and western Japan. Such a dilution of exchange between the two regions was also indicated by the trends in vessel category composition in western Japan.

However, at the Tenpaku site in Mie Prefecture, a wealth of pottery of different lineages from Phase II on, including Tohoku, Kanto, and Tokai lineages, was excavated, and cinnabar, the raw material for vermillion, was also unearthed, suggesting that people gathered from distant places in search of vermillion and conducted trade through it (Morikawa 1995; Oku 2007). In addition, Kinki-style spouted vessels and other pottery of Phase III has been found scattered in the Kanto region (Akita 2015, 2016) (Figure 11, Kanto-type E). In light of these findings, we must assume that exchange between eastern and western Japan continued to a certain extent even during Phase II, although it is thought certain that the frequency was lower than in the previous phase. The establishment of the two major east–west pottery distribution zones in Phase II cannot be fully understood solely in terms of the dilution of exchange between eastern and western Japan.

What is of interest here is the transformation of the Jomon society of western Japan into a society like that of the Jomon society of eastern Japan. In western Japan after Phase II, three things indicate that the Late Jomon society of western Japan was becoming more and more like that of eastern Japan: the increase in the number of structures and artefacts related to rituals and ceremonies (Okada 2005; Mizunoe 2012; Yagiura 2017), the fact that residential and subsistence activities were conducted in such a way that people returned to the same place despite frequent migrations, and the fact that rituals and rites began that used spouted vessel pottery as a medium for the development and reinforcement of inter-regional and inter-group relations. This transformation of western Jomon society into

one like eastern Jomon society may well have occurred as a result, in this phase, of the digestion and absorption into the society's own culture of the information accumulated through exchanges with eastern Japan since the beginning of the Late Jomon period. It is assumed that through these changes in the Late Jomon society of western Japan, the way people, goods, and information were accepted or rejected also began to resemble aspects of the Late Jomon society of eastern Japan. The degree of emphasis on group identity became stronger than in the previous phase, and tolerance for acceptance of different people, goods, and information from other groups decreased. As a result, it seems likely that even if they interacted with groups from eastern Japan, they may be considered to have become more rigid in their acceptance of people, goods, and information from eastern Japan, unlike in Phase I and earlier.

Triggered by the global cooling seen from the end of the Middle to the beginning of the Late Jomon period, the "construction of a wide-area network of social relations" and the "development of a social device capable of producing and reproducing close inter-group ties" progressed through the first half of the Late Jomon period. The result was that when a certain threshold was reached, the changes described above occurred in eastern and western Japan. The complex intertwining of these changes in the two regions and their mutual influence on each other can be considered to have resulted in the establishment of the two major east–west pottery distribution zones in Phase II. Furthermore, the regional framework that was formed there, dividing the Japanese archipelago into two large areas, undoubtedly continued to have an impact until the beginning of the Yayoi period.

The differences in the acceptance of rice farming culture between western and eastern Japan can also be explained in light of the transmission/acceptance/rejection model of people, goods, and information presented in Figure 21 and the east–west Late Jomon society model presented in Figures 25 and 26. Although in Phase II the society of western Jomon Japan was becoming more like that of eastern Jomon Japan, at the same time its fluid, flexible, and open nature was basically open to the acceptance of people, goods, and information different from its own, and it accepted the new culture from the continent relatively smoothly. On the other hand, this was not the case in the society of eastern Jomon Japan, which tended to be more closed and conservative in its acceptance of different people, goods, and information. Eastern Jomon Japan took a considerable amount of time to truly integrate rice paddy agriculture into its own society and culture, although it was aware of its existence. At first glance, the society of eastern Jomon Japan, with its complex material culture, appears to have been a more developed and evolved society than that of western Jomon Japan, but the social and cultural conditions that necessitated such a complex material culture ironically led people to reject the more advanced cultural elements that came from the continent.

IV. Conclusions: Situating Late Jomon Society in Human History

The stratification of Jomon society has dominated theoretical discussions in recent years. (Takahashi 2001b, 2017a; Taniguchi 2005, 2017b; Nakamura 1999; Watanabe H. 1990). This study undertook concrete spatio-temporal and settlement analyses of pottery, but in neither case did we find any definite signs pointing to social stratification.

Watanabe Hitoshi has described Jomon pottery as "luxurious" because of having distinct, specialized types which were traded over long distances, with specially fine pieces being owned by the rich (Watanabe H. 1990). However, in the results from the spatio-temporal analyses of pottery in this study we were unable to confirm phenomena such as distinct, specialized types and limitations on ownership.

As for large dwellings, which have been considered evidence pointing to stratification, it is certainly true that, as earlier research has pointed out, specialized artifacts have been excavated, but it is hard to say that in terms of quality and quantity they are very different from the specialized artifacts found in other dwellings. Rather, if we focus on the distribution of the large dwellings and the timing of their appearance, it might be more productive to interpret these large dwellings in the context of the development and reinforcement of horizontal social relationships that strengthened the bonds between Tohoku and Kanto groups.

It is interesting to consider, as Taniguchi Yasuhiro (Taniguchi 2017a, 2017b) and Takahashi Ryūzaburō (Takahashi 2001a, 2001b, 2014, 2016, 2017a, 2017b) do, that the increased activity and sophistication of rituals and ceremonies in the Late Jomon period promoted social stratification. Certainly, the development of rituals and rites for the development and reinforcement of inter-regional and inter-group relations is a defining characteristic of Late Jomon society. It is also easy to imagine that there were leaders in charge of such rituals and rites.

However, the segmented and multilayered social structure of the Late Jomon period, as seen in the results of the analysis of pottery and settlements in this study and the model of Late Jomon period social structure (Figure 22) derived from those results, shows no traces of the segmented groups being positioned according to rank or hierarchy, or of any development of specific family or status distinctions. In addition, the essence of the rituals and rites that developed in the late Jomon period was the construction of a wide-area social network aimed at assuring livelihood stability and the reproduction of life, and intended to produce and reproduce horizontal social relations by strengthening ties between groups.

In light of the above, the most reasonable interpretation at present is that both eastern and western Jomon societies of the Late Jomon period were societies that can be described within the framework of a typical tribal society (Sahlins 1968, 1972; Service 1971).

How then can we evaluate the differences between the Late Jomon societies of eastern

Japan and western Japan as modelled in Figures 25 and 26? In terms of the degree of socio-cultural integration, the Late Jomon society of eastern Japan has a more advanced system of social integration than the Late Jomon society of western Japan, and in that sense they can be evaluated in terms of a vertical relationship of high and low. However, we must not lose sight of the fact that the differences are only within the framework of tribal society. The differences between the two societies are of a nature that should be discussed in terms of what Service calls "specific evolution" (Service 1971). The construction of societies that deployed the settlement and subsistence strategies best adapted to the geographic and resource environments of each region resulted in the development of superficially different hunter-gatherer and tribal societies in the east and west of the Japanese archipelago. Future research should compare the characteristics of the Late Jomon societies of eastern and western Japan with the characteristics of the societies of the Initial, Early, and Middle Jomon periods, which are considered to be at different stages of social evolution, as well as with the characteristics of the societies of other peoples from around the world who are thought to belong to the same social evolutionary stage.

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