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Site

メタデータ	言語: English 出版者: 公開日: 2010-03-23 キーワード (Ja): キーワード (En): 作成者: 細谷, 葵 メールアドレス: 所属:
URL	https://doi.org/10.15021/00002590

Sacred Commonness: An Archaeobotanical Approach to Yayoi Social Stratification: The ‘Central Building Model’ and the Osaka Ikegami Sone Site

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INTRODUCTION

The transition from the hunter-gatherer Jomon to the Yayoi farmers in prehistoric Japan has been a lively topic of discussion among archaeologists up to the present. The focus of the discussion has varied, from the exact timing of the cultural shift (e.g. Harunari and Imamura 2004) or the transition in subsistence strategy (e.g. Fujio 1993) to the origins of cultivation, or rice agriculture (e.g. Sato 2002). Though varied, most of the discussion has been based on the idea that the introduction of rice agriculture was the key and this has been considered the main characteristic of Yayoi culture.

Although this paper agrees that the rice agriculture is the basic characteristic of Yayoi society, the author attempts to discuss the issue without using the loaded term ‘agriculture’. Here, the state of Yayoi social structuration, which was most likely fundamentally different from that of the Jomon, is discussed not as a dichotomy of pre- and post-agriculture, nor from the viewpoint that the Jomon people, who had already started plant cultivation, were a kind of ‘going-to-be-Yayoi’ people. Instead, the author aims to reconstruct how Yayoi society, which eventually established institutionalised social stratification into the following Kofun period, was formed through their daily routine based on the agricultural production cycle. To reach this objective, an archaeobotanical approach is applied, since archaeobotanical methods enable the reconstruction of people’s daily activities concerning plant foods, spatial arrangements, and its relationship to the specific features of a settlement.

This research presents a new working model of Yayoi social structuration that focuses on the emergence of a powerful leader who was the predecessor of the later Kofun kings. This new model is named the ‘Central Building Model’, because the Yayoi central building, a characteristic feature that emerged in large mid- to late Yayoi settlements, is the focus of the research context. Introducing this substantial archaeological context into the working model makes possible the reconstruction of the dynamic relationship between plant-related activities and the social structuration. Archaeological interpretation of the central building, focusing on the Kinki district which was a hub of Yayoi culture, is employed to explore the social role of this

feature in the Yayoi settlement. Yayoi iconography concerning the central building is discussed both as a clue to the Yayoi people's world view and to the activities that took place at the central building.

Based on those discussions, a case study using archaeobotanical analysis of the central building is carried out at the Osaka Ikegami Sone site, a typical large moated Yayoi settlement. Through reconstruction of the plant-related activities there and their dynamic relationship with the agricultural cycle, this paper discussed how the process of social structuration played into the emergence of the powerful leader in the central building stage.

THE EMERGENCE OF YAYOI SOCIAL STRATIFICATION: A NEW WORKING MODEL

1) Existing models: the Power Extension Model and the Ritual Negotiation Model

The timing of the emergence of a community leader, an individual who took charge of various community-based tasks and held the authority to determine basic social conduct, is a controversial subject in Japanese prehistory. Early studies generally accepted the idea that such a leader emerged at the beginning of the Yayoi period when there was a need for organisers for the newly introduced agricultural economy (cf. Wajima 1948). However, recent excavations have revealed that Jomon hunter-gatherer society was relatively complex, and their settlements had large scale constructions and well-organised settlement plans (cf. Habu 2004). Thus, it is possible that a community leader was established during the Jomon (Takahashi and Hosoya 2002).

According to current archaeological evidence, it seems natural to assume the existence of a community leader continuously from the Jomon to the Yayoi. On the other hand, the archaeological evidence of social stratification and of a leader of a distinguished status seems to occur only during the late Yayoi. The absence of such evidence from the earlier period suggests that the nature of the community leader changed from the Jomon and early Yayoi to the mid-Yayoi onwards. Accordingly, the formation of the subsequent Kofun stratified society in Japanese prehistory was more likely due to a transition in the nature of the leader rather than to the emergence of a leader itself. Therefore, the present paper focuses on this transition process.

The concept that a transition in the role of the nature of the community leader as being central to the study of Yayoi society is not new. Rather, it forms the basis of the study regardless of whether the emergence of the leader is assumed to have originated in the Jomon or the Yayoi (e.g. Kondo 1959, 1966; Hirose 1998b). In either case, consideration is given to the transition from a practical organiser to a high-status leader during the Yayoi period. Thus, the emphasis of the present paper is on a modification of the existing model of Yayoi social transition with respect to its relationship to plant food management.

Previous Yayoi social studies, while holding in common a vague concept about the shift in the role of the community leader, do not provide an explicit theoretical model. Consequently, first, existing ideas about Yayoi social transition are described below and systematised into two models; the ‘Power Extension Model’ and the ‘Ritual Negotiation Model’, after which the author’s own modified model is presented.

The Power Extension Model

The earliest studies of Yayoi social transition were developed in the 1940s–1950s. The theoretical influence of Marxism is obvious in those studies (see Wajima 1948; Kondo 1959). According to Marxist analysis, Yayoi society was originally a union of independent family units which eventually lost their autonomy when they were organised by a powerful ruling leader. On this basis, this research focuses on the process and means by which the leader gained power, and the consequential loss of independence of the family unit.

Early studies were carried out by Wajima (1948), Kagamiyama (1956a; 1956b; 1957; 1959), and Kondo (1959; 1966). Wajima (1948) was the first to demonstrate archaeologically the existence of independent family units within the Yayoi settlement. He argued that independent family units were evident from the visibly separate house complexes of five to six houses, the storage facilities and the well that typified Yayoi settlements. Wajima further explained that the subsequent social transition which led to the family unit losing its independence was due to the nature of the newly founded agricultural economy. That is to say that compared to hunting and gathering, agricultural production required high level of regularity in both the labour and the life cycle, and thus required a community leader with the power to control the economic and social activities.

Kagamiyama (1956a; 1956b; 1957; 1959) further developed the discussion, emphasising the function of the ditch in Yayoi settlements as a border. He argued that the ditch, a characteristic Yayoi settlement feature, served to separate the individual family units. Kagamiyama further maintained that the purpose of the ditch was to establish the land area owned by each unit, and to prevent their mobility. As a result, all the family units were tied to that community and the role of the community leader became entrenched.

Kondo (1959; 1966) constructed a comprehensive theory about the relationship between the Yayoi social transition and agricultural practices. He interpreted the Yayoi community as a unit for agricultural production, such that when large alluvial areas of land had to be developed into large scale irrigated paddy fields, several family units collaborated to complete the work. Furthermore, the maintenance of such an extensive system of agricultural production required well-organised management to insure, e.g. the securing of crop storage for the community and a labour source. Under these circumstances, individual family units would not exclusively own their property such as crop harvests, but rather the property, at least in part, belonged to the whole community. Kondo assumed that this communal

obligation led to contradictions in the originally independent nature of the family unit. A community leader was thus needed to adjust and control the organisation, including community-based rituals to unite the community mentally.

Over time, the significance of the leader was elevated, and eventually the leader's power over the community was strengthened to the point that it encompassed the suppression of the other community members. Kondo argued that the privileged role of the community leader was accepted by the community because of the leader's ability to maintain community unity both practically and symbolically through rituals. Kondo also thought that this shift resulted in the establishment of a stratified society at the end of the Yayoi period. Perspectives on Yayoi society proposed by these early studies, and particularly Kondo's (1959; 1966) theory, formed the basis of interpretation used in subsequent studies of Yayoi social life.

The primary focus of the subsequent research into the Yayoi social transition has been the issue of the 'prime mover'; that is, the principle factor which led to the formation of an extensive community with a powerful leader. Three factors have been proposed as the rationale for the role of the prime mover: the need for communal labour for agricultural reproduction, warfare, and material exchange. The first includes irrigation/water control, the storage of the harvest, and the maintenance of a seed storage bank (Hirose 1996b: 133–134). The association between large-scale irrigation and the formation of an extensive community was originally discussed by Wittfogel (1957). Large-scale irrigation has also been regarded as requiring direction from a powerful leader (Hirose 1997: 111–112, 131–134).

Warfare has also been discussed in association with social stratification, e.g. Carneiro (1981: 63–65). Due to the increased finds of weapons (Sahara 1964) and human remains that show evidence of injuries (Fujio 1998) that have been identified from the Yayoi, it has been accepted that warfare became common during that period. Warfare may have become more common following the rising value of land as a result of the new agricultural economy. On this basis, a hypothesis has been forwarded (e.g. Tsude 1983) that the grouping of family units and the emergence of a powerful leader indicate the need for the protection of the community.

State formation has also been attributed to material exchange (Brumfiel and Earle 1987: 1–4). With respect to the Yayoi, the establishment of regionally systematised exchange networks and the maintenance of regional alliances are thought to have occurred during the middle Yayoi phase. The basic unit of these exchanges was the entire community rather than individual family units (Kondo 1966: 454). This explanation may provide a reason for why the family units gradually lost their independence and became united under the control of a representative community leader (Hirose 1996b: 140; Inui 1998: 143). Furthermore, to obtain privileged goods mainly supplied by continental Asia, tactful negotiations with the provider must have been required. Again, there would have been a dependence on the community leader to negotiate these exchanges (Hirose 1996b: 143; Kondo 1966: 455).

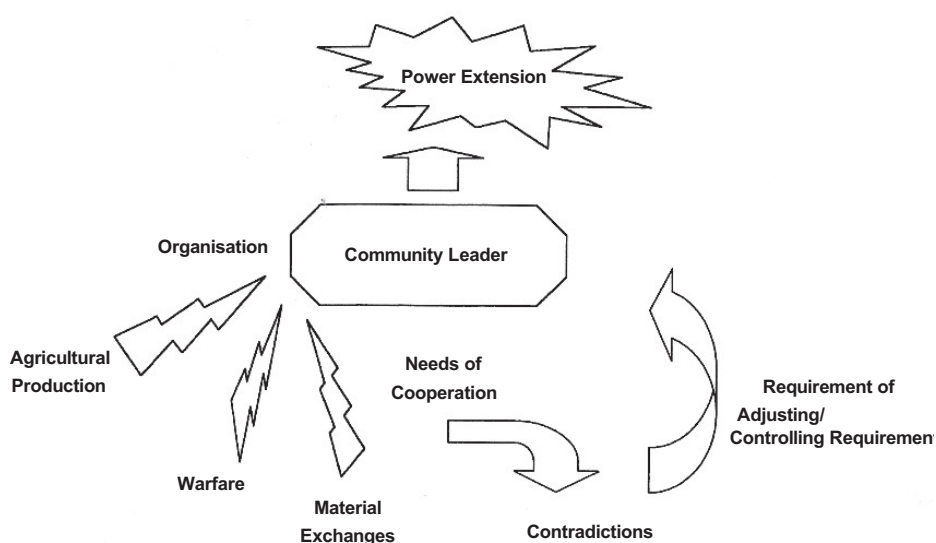


Figure 1 The Power Extension Model.

Researchers have profiled the Yayoi community leader as an individual who was capable of meeting the general needs of the community. This approach paints the Yayoi social transition as a process within which family units gradually became dependent on the community leader in exchange for practical benefits. Research along these lines can be referred to as the ‘Power Extension Model’ (Figure 1).

The Ritual Negotiation Model

Besides securing the economic and practical aspects of community life, another role for the leader has been proposed: that of the organiser of rituals. This idea is primarily based on finds of bronze artefacts, which, due to their contexts of origin, were most likely ritualistic objects. The main bronze artefacts recovered at the Yayoi contexts are weapons and bell-shaped objects called *dotaku*. Bronze mirrors also appear in middle Yayoi (Wang 1992: 24), although they are not as common as the other artefacts. The earliest finds of bronze artefacts, dating from the early Yayoi, are weapons recovered in association with tombs (Oda 1985: 97–101; Sahara 1979: 47). However, the emergence of the *dotaku* bronze bells from the end of the early Yayoi (Tanaka 1970: 40) corresponds with a period when bronze artefacts were no longer associated with a specific individual: *dotaku* bronze bells have not been recovered in individual houses or tombs (Barnes 1993: 191). Instead, bronze artefacts have typically been recovered outside residential areas, from the side of a non-inhabited mountain, where, in most cases, these objects appear to have been intentionally buried (Tanaka 1970: 45). In some cases, a cache of bronze artefacts has been recovered in one spot (e.g. Shinji 1997). Consequently, it is thought that they were not commodities *per se* (Umehara 1963: 9) but were used for distinct activities, most

likely rituals, carried out by a whole community rather than by an individual (e.g. Harunari 1982: 10). Accordingly, the role of a community leader as the organiser of these activities has been the subject of discussion which typically encompasses not only the extension of the leader but also the changing role.

Bronze weapons and *dotaku* bells have occasionally been recovered from a single context (Sahara 1997: 9), but more often the distribution of these objects has shown different tendencies. *Dotaku* bells are more numerous than weapons—indeed, more than 400 bells have been found throughout most of western Japan (Oda 1985: 101). In addition, the decoration of the bells with various patterns and pictures provides iconographic information (see ‘Iconography’ Section). Moreover, in all regions, the *dotaku* bronze bells appear to have fallen out of use almost simultaneously during Yayoi Phase V¹⁾ (Ishino 1991: 3–4). This suggests that the activities that involved *dotoku* reflect a certain systematic organisation which may provide a clue to Yayoi social structure (cf. Oda 1985: 110). Thus, *dotaku* became the main research subject for the interpretation of the Yayoi community’s ritualistic activities.

The *dotaku* ritual has been widely accepted as being associated with farming ceremonies (e.g. Harunari 1982; 1987). This idea is primarily due to the view of Yayoi society as based on agricultural production. Mishina (1968) further pointed out that the manner of the burial of the *dotaku* shows a certain intentionality rather than a mere disposal: *i.e.* no other types of artefacts were been found in association with the *dotaku* bells, and the burial place was typically on a mountain side. While accepting the previous theory that the burial of *dotaku* (Sahara 1960: 104) was for storage, Mishina (1968) argued that the storage process itself was a part of the farming ceremonies. Accordingly, the *dotaku* was buried in order to accumulate the spirits of the earth who promoted crop growth; therefore, the process of uncovering the *dotaku* represented the carrying of the spirit to the community. Harunari (1982), on the other hand, maintained that the *dotaku* were not buried for storage purposes given that the locations tended to be inconvenient for regularly unearthing the bells. Instead, he argued that the *dotaku* were habitually stored in a granary with crop seeds to keep the Spirit of the Crops, and the burial signified the end of its use though it still carried ritualistic implications. Harunari (1987: 12–14) subsequently supported this argument that the *dotaku* ritual was also carried out at a granary.

While opinions are diverse as to how to interpret the burial of *dotaku* (see also cf. Shinji 1997: 98–99), researchers agree on the basic concept of its association with farming ceremonies. In addition, the fact that some *dotaku* bear iconographic representations of what appear to be farming related scenes, such as a crop-pounding scene and a granary (see ‘Iconography’ Section), provides a link between agriculture and the *dotaku* ritual (e.g. Harunari 1987).

To summarise, it is widely accepted by scholars that the *dotaku* ritual was performed as a prayer for the maintenance of agricultural production; in other words, the continuous reproduction of the community, which depended on the products of agriculture. At the same time, it is thought that a community leader was

responsible for organizing the *dotaku* ritual, given that this community-based activity required a representative leader (e.g. Kondo 1966). In contrast with practical activities of community life such as an irrigation and material exchanges, it has been argued that rituals served to unite the community at the mental level (Kondo 1983: 168). Accordingly, the leader may have become the symbol of the community (Kondo 1983: 169) being invested with the ability to mediate between the Spirit of the Crops and the people to ensure the maintenance of agricultural production. Scholars have further speculated that, due to his or her ‘special abilities’, the leader may have acquired a superior status that permanently elevated him or her above other community members (Kondo 1985: 408). The hypothesis was thus constructed that the role of the community leader changed into one of a symbolically superior status, possibly through the leader’s association with the *dotaku* ritual. This newfound power was further extended through the administration of various community-based activities (Kondo 1966: 451).

The above hypothesis is based on studies of the transition in the style of the *dotaku* bells and the timing of the discontinuation of the *dotaku*. From the transitions in the *dotaku* style during the Yayoi, it is evident that the function of these bells changed over time, shifting from an actual instrument to a symbolic object (Sahara 1967; Umehara 1963: 4). The origin of the *dotaku* is thought to have been bronze cattle bells, like those recovered from contemporaneous Korean sites, due to the chronological link and similarity in appearance (Sahara 1978; Takakura 1982). The original Yayoi *dotaku* was comparatively small and simply decorated; the fact that it served as a bell for the purpose of ringing is evident from the presence of a clapper (Sahara 1979: 48; 51). However, in the second half of the middle Yayoi, the *dotaku* transformed in style to a much larger and well-decorated bell shape, and the ringing function appears to have been lost (Tanaka 1970). Tanaka (1970: 50) named this shift the transition from the ‘*dotaku* for ringing’ to the ‘*dotaku* for display’. This phenomenon has been linked to the emergence of the superior status of the community leader. It is thought that originally the *dotaku* was rung as part of a ritual, but over time became a symbol of the leader’s superior status as the organiser of the ritual (Hirose 1996a; Ishigami 1996: 91). As mentioned above, the discussion further encompasses considerations about the abandonment of the *dotaku* in Yayoi Phase V. This suggests that the *dotaku* was originally a tool necessary for mediating between the Spirit of the Crop and the people, but that later the leader alone came to be accepted as capable of mediating between the two so the *dotaku* was abandoned (Kondo 1966: 457; Shinji 1997: 104).

According to the research in the direction shown above, the elevated status of the leader in the socially stratified Kofun was the outcome of a role created through ritualistic activities during the Yayoi. The leader’s ability to organise community-based activities is assumed to have been associated with the sacredness of the leader due to his/her ability to perform rituals. The association of the leader with sacredness, which probably evolved gradually during the Yayoi, is seen as the reason the leader acquired a permanent privileged role distinct from other community

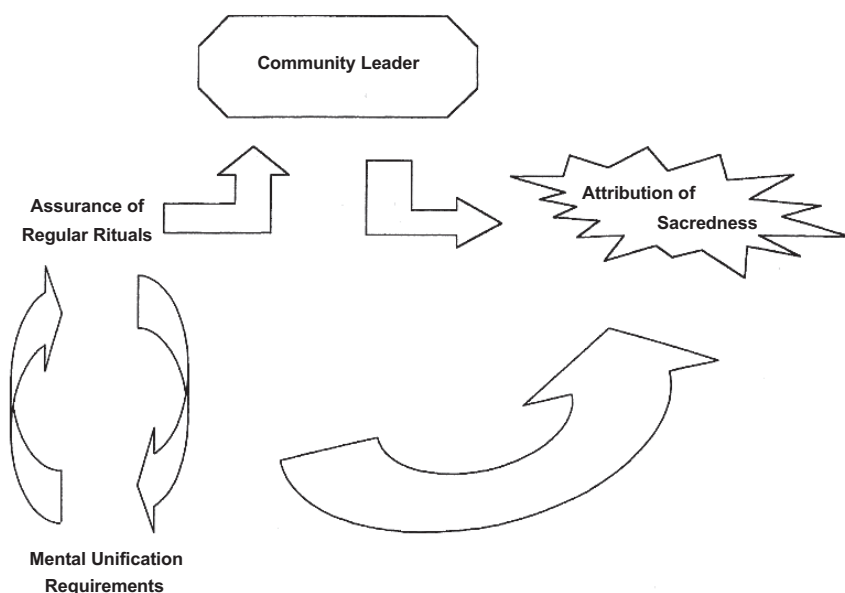


Figure 2 The Ritual Negotiation Model.

members. This hypothesis is supported by the fact that ritualistic objects have been recovered in association with Kofun king's mound burials (Japan Association for Quaternary Research 1998: 184). Hudson (1992: 144) calls this a 'ritual negotiation' between the leader and other community members for the purpose of ensuring the elevated status of the leader. Following this terminology, the author categorises the direction of research above as the 'Ritual Negotiation Model' (Figure 2).

2) A new approach: the Central Building Model

The 'Power Extension Model' (Figure 1) describes the increasing dependence of community members on the leader in order to ensure the economic security of the community. The 'Ritual Negotiation Model' (Figure 2) explains the process of the leader's transition into a symbolically superior individual. While these two models provide reasonable explanations for the Yayoi social transition, given the present archaeological evidence, several points require modification.

Although the two models describe a social transition which took place within the same period, they have not been integrated into one cohesive discussion. Considering that the two phenomena probably occurred in tandem within the Yayoi community, it would be important to discuss how these aspects were interwoven within community life. While the two models appear to deal with separate, distinct activities, namely practical and ritualistic deeds, these activities are at the same time regarded as serving the same purpose: maintenance of the community. Therefore, it is likely that the activities were frequently juxtaposed such that the community's unity was emphasised. Therefore, a proper framework is required that juxtaposes

both practical and ritualistic activities. At present, it is unclear from the existing models how the social transition proceeded in day-to-day community life. In other words, a methodology has not been established that explicitly links the archaeologically observable daily activities to the long-term social process. Such a methodology would aim to provide a means of reconstructing the actual state of juxtaposition of the practical and ritualistic activities. For this, we need to place those daily activities within the context of a longer term process, which is best achieved through contextual analysis. When evidence is found that a specific context is associated with the communal activities, we may be able to discern the specific and typical activities that were carried out there. By focusing on such an explicit archaeological context, we may further be able to demonstrate the nature of farming ceremonies. The Ritual Negotiation Model posits a strong association between farming ceremonies and the emergence of a powerful community leader, yet scholars have overlooked the need to archaeologically reconstruct the ceremonies themselves. Also overlooked by scholars is the substantial relationship between the ceremonies and farming practices. The reconstruction of the Yayoi social transition requires analysis of farming ceremonies in terms of their spatially and chronologically defined archaeological contexts.

The Yayoi central building²⁾, which has brought new insight into the social study of the Yayoi in the last decade, appears to provide the most promising subject for contextual analyses. The central building is a distinguished large *hottate*-pillar building³⁾ that was constructed in some of the middle to late Yayoi large settlements in western Japan and is a distinctly significant facility. (The archaeological details are shown in ‘The Central Building’ Section). The function of this building is still under debate, but several researchers argue that it was associated with ritualistic activities. Thus this feature has led archaeologists to construct an extended Ritual Negotiation Model.

The social significance of the central building is regarded by scholars as similar to that of the *dotaku* bell, as a material symbol of the community’s unity. As with discussions about the *dotaku*, the function of the building is thought to be linked to the elevated status of the community leader. In addition, the distinct activities that took place in the central building are also seen as associated with farming ceremonies. Hirose (1998a; 1998b), an important voice in discussions about the central building, interpreted the structure as a ‘shrine of common illusion’, which served to symbolically unite the community such that members identified themselves as belonging to that particular community. Furthermore, using the Osaka Ikegami Sone example which links the central building with lithic tool making and octopus fishing-related activities (see ‘Case Study’ Section for details), Hirose (1998b: 45) argues that the building encompassed a symbolic union of community members representing various occupations. The central building thus served to preserve and augment the symbolic function and elevated the status of the community leader who probably controlled the activities at this building (Hirose 1998b: 45–48).

Although the existing discussion about the central building, represented by Hirose, tends to emphasise the aspect of ‘Ritual Negotiation’, in fact the reconstruction of the activities carried out in this building may explain how practical and ritualistic factors were integrated within this context. Through this, the nature of the farming ceremony may also be shown. Because this is a well-demarcated archaeological context and because an obviously distinguished feature emerged during the very time that Yayoi social stratification is estimated to have occurred, reconstruction of those activities will be feasible and meaningful. In the present paper, therefore, a modified model of Yayoi social stratification is constructed and focuses on the central building context; it also aims to establish and employ an appropriate methodology.

The theoretical framework

Prior to constructing a model of the Yayoi social transition process, a theoretical framework is necessary. The social structuration theory (e.g. Giddens 1979; 1987) is appropriate for this study because in essence the social transformation model proposed by this theory shares the same standpoint as the concepts about the Yayoi social transition summarised above. On this basis, the social structuration theory provides a methodological framework which is applicable to the archaeologically available material evidence.

Kondo (1983) summarises the Yayoi social transition as it is currently understood by archaeologists:

As these [farming] ceremonies were ... for maintaining and developing productivity, and for maintaining the community, they were therefore originally carried out by the whole community. However, as agricultural reproduction became more intensive, a community leader came to represent the community's productivity and unity, and subsequently to control the ceremonies, which were inevitably associated with productivity. ... Through this performance, the leader probably became recognised as a capable mediator of spiritual existence despite the fact that he/she was a human being. ... Through controlling these agricultural and ancestral ceremonies, the leader's power to rule was attributed to sacredness which thus justified his/her absolute superiority over the other community members. (Kondo 1983: 168–169) [translated by Hosoya]

Discussions about the sequence of the emergence of the community leader here emphasise two significant points. One is that the superiority of the community leader was gradually developed through repetitive ritualistic performances by the leader at public occasions that emphasised community unity. The other is that these performances were carried out on a regular basis in accordance with the agricultural production cycle. Because the ritualistic performances were originally carried out by the whole community, it became customary for the community members to attend. In other words, the community members were organised such that they regularly attended activities which were held at specific times and places. This means that the

people routinely gathered under the community leader's influence, which probably became essential for the activities over time.

Giddens (1987) described the nature of social organisation in the scope of the social structuration theory as:

The concept of the 'setting' of interaction presumes time-space relations. A setting is not just a passive backdrop to interaction. Rather, agents organise the setting as their field of conduct, drawing upon its features in order to warrant and regularise what they do. Similarly, we can analyze the routines of day-to-day life in terms of the time-space paths which individuals regularly follow. ... we can thereby examine the connections between routines of daily life and extended forms of social system which individuals produce and reproduce in their day-to-day actions. (Giddens 1987: 146)

Following Giddens, observations of the Yayoi social system through regular daily actions may be a useful way to archaeologically reconstruct the Yayoi social transition. These daily actions can be considered as practices by way of socially constructed 'explanations' or 'codes' (Giddens 1979: 97). The codes determine the contextuality of the actions (Giddens 1987: 98), namely the time and space in which certain typical actions are performed. This method is applicable to archaeology which has the methodological means for reconstructing typical activities in architecturally defined spaces (Barrett 1988; 1989). When a group of activities in a certain space appear to comprehensively share a particular code, they provide a clue to the nature of the underlying social structure, and also lead to a coherent understanding of those activities. This framework will be useful for the Yayoi case where a methodology is required that discusses practical and ritualistic activities as interwoven factors in the social transition process. This approach will further provide a means by which to interpret those factors which are seen as reflecting routinised social relations (Giddens 1979: 128).

The social structuration theory further encompasses the perspective of 'structure as structuration' (Giddens 1979: 63) and that 'all social rules are transformational' (Giddens 1979: 64). Social relations are thus constructed through routinised activities which are continuously reproduced by the attendants as 'agents' (Giddens 1979: 55). Each time that they repeat these activities, the agents interpret and rationalise them, and through this regular interpretation process the underlying code is reproduced, thus transforming the meaning of activities. This dynamic process can be understood when the social context is understood not only in terms of space but also time (Giddens 1979: 54). When the contextual study of activities is carried out with a focus on how the context is positioned in people's routine movements, it will provide a clue to the routine reconstruction of the dynamism of the context.

As shown by Kondo (1983), the Yayoi social transition is attributed fundamentally to the community leader's power extension through routinised activities. This suggests that the code behind the activities was transformed through

the repetitive routine, and a new type of social relations was produced. Thus, a framework for reconstructing the dynamics of the activities is necessary to explain the transition process. The most characteristic dynamics of the Yayoi routine, compared to the previous Jomon society, are likely the activities associated with the agricultural production cycle. Thus, any useful methodology for the Yayoi social transition issue calls for examining the contextuality of activities in the dynamic agricultural cycle.

The central building context

The present paper focuses on the Yayoi central building as the key spatial context of the social transition process. The settlement patterns and architectural spaces most likely represent a part of the time-space organisation of the society, and thus the activities typically associated with the spaces are likely to reflect the nature of the organisation.

... it (a settlement) is the architectural remains of a residential area where certain relations were maintained in some temporal and spatial; isolation from neighbouring groups. (Barrett 1989: 311–312)

In particular, the emergence of a distinguished building is frequently associated with social complexity. For example, Friedman and Rowlands (1978: 215–216; 247) used the evidence of central long houses in the North Chinese Neolithic to argue for social transformation and the emergence of social stratification. Peebles and Kus (1977: 427) also stated that the emergence of distinct building units that were different from the other structures in the settlement, probably including ‘the office of the chief’, indicated a transformation from an egalitarian society to a chiefdom. Earle (1987), in a discussion of the definition of chiefdoms, stated that:

A more reasonable differentiation of wealth and social inequality can be made with an analysis of energy invested in residential housing. Chiefs can be differentiated cross-culturally by size, construction, and location of their houses. (Earle 1987: 291)

One point that needs modification in these previous studies is that they tend to accept a distinguished building as a display of the already established authority of the leader. It is questionable whether that is always the case, considering that a building, as an archaeological feature, does not represent an association with a specific individual as explicitly as tombs, for example. Earle (1987: 291) stated that buildings ‘involve a daily use and display function much more likely to represent economic and political relationships than burials.’ Archaeologically observable architectural remains thus indicate the nature of a set of activities associated with the space, rather than the existence of an individual. From this perspective, Gidden’s (1987) approach to a distinguished building seems useful for archaeological discussion:

Palaces, temples, ceremonial buildings, are often treated as though they were simply the physical glorification of already existing power. ... But it is also fruitful to see them as 'power containers': physical settings which through the interaction of setting and social conduct generate administrative power. (Giddens 1987: 157)

In other words, in studying the distinguished building in association with social stratification, it may be more productive to discuss the formation of the power through the dynamic social relations produced in the space rather than simply connecting the building with a powerful individual. Following this approach, Junker (1993: 13), for example, reconstructed the elite-sponsored manufacture of prestige goods in a Philippine prehistoric chiefdom based on the attachment of certain workshops to a chiefly or elite residence. She argues that the negotiation of power relationships between elite and commoners was a dynamic process, mediated within the building space, rather than imbuing the building with a static presence of power.

According to Yayoi archaeology, the emergence of a powerful community leader post-dates the emergence of the central building. Evidence of social stratification, such as a distinguished burial appears in late Yayoi, when the central building was already well established in community life. The particular role of the central building was a stage of dynamic production of power relations rather than a mere reflection of an existing power. Thus, here, the activities that took place at the central building are studied as a part of a dynamic process which evolved into a medium for the extending power of the community leader.

Agricultural cycle and social stratification

Again, the principle factor that characterises Yayoi society and distinguishes it from the preceding Jomon is that the Yayoi was based on regular agricultural production. Wajima (1948) attempted to explain the Yayoi social transformation as the result of the introduction of 'regularity' into the labour and life that accompanies an agricultural economy. However, during the last several decades, archaeological and ethnographic studies have revealed that regular scheduling is also necessary in hunting-gathering economies (e.g. Lee and DeVore. 1968). In the Jomon case, it has been demonstrated that nut exploitation, which is thought to have provided a major part of the subsistence, required a highly organised work schedule (e.g. Hirose 1997; Kobayashi 1983: 14; Watanabe 1975). On this basis, the economic shift from the Jomon to the Yayoi needs to be understood as a transition in the types of regular life cycles so that the Yayoi can be examined in association with the characteristic nature of the agricultural cycle. Thus, Kondo's statement (Kondo 1966: 445), '... (in Yayoi society) a different type of social relations from that of Jomon society was established,' seems reasonable.

Indeed, the association between the introduction of the agricultural cycle and shifts in the social structure, including ideological aspects, has been discussed by a number of researchers working in different areas of the globe. This paper, focusing on a particular architectural space, the central building, especially aims at the

reconstruction of a substantial explanation for the association between the agricultural cycle and the formation of a certain type of social structure. The archaeobotanical approach is to provide significant information about the dynamics of activities concerning the agricultural cycle. As Barrett (1989) stated:

... grain has quite distinct meanings in a cycle of arable reproduction; it is both the seed grain required to instigate the cycle, and the food product resulting from that cycle. Grain may be stored for human consumption, or as the seed-grain of a future arable cycle. If ideas of fertility are important, and if such ideas lie behind notions of political authority, then the treatment of grain in these cycles will be socially distinct. (Barrett 1989: 310)

Plant remains are direct evidence of plant-related activities carried out in various contexts. If specific types of activities were carried out within the central building, the archaeobotanical method may allow for analyzing the nature of those activities. Furthermore, the condition of the plant remains can indicate which stage of the food plant processing sequence they represent (Hosoya 2007). Plant remains, thus, may provide evidence about the position of the original activities and the contexts of these activities within the dynamic agricultural cycle. This means that the active involvement of the central building in the routine activities can be reconstructed according to the analyses of the plant remains.

The Central Building Model

The modified Yayoi social transformation model, *i.e.* the Central Building Model (Figure 3), is based on the framework presented above. This model conforms to the basic approach of existing models on these points: 1) throughout the Yayoi period, community unity was strengthened on practical and symbolic levels resulting in an emphasis on the significance of the community leader, and 2) the leader emerged with a symbolically distinct role and performed as the community representative, particularly in ritual organisation. This modified model considers the two streams of the social transition process as one interwoven process. It is assumed that this interwoven process was typically performed within an architecturally defined space. The space will be examined as a stage for the negotiation of the power relations between the leader and other members. The central building is the core factor of this model.

The model, a reconstruction of typical activities associated with the central building, aims to explain the code behind those activities, and further aims to sketch the involvement of the context as an active part of the community's routine activities.

ARCHAEOLOGICAL DISCUSSION OF THE CENTRAL BUILDING

The central building is a typically distinguished *hottate*-pillar building

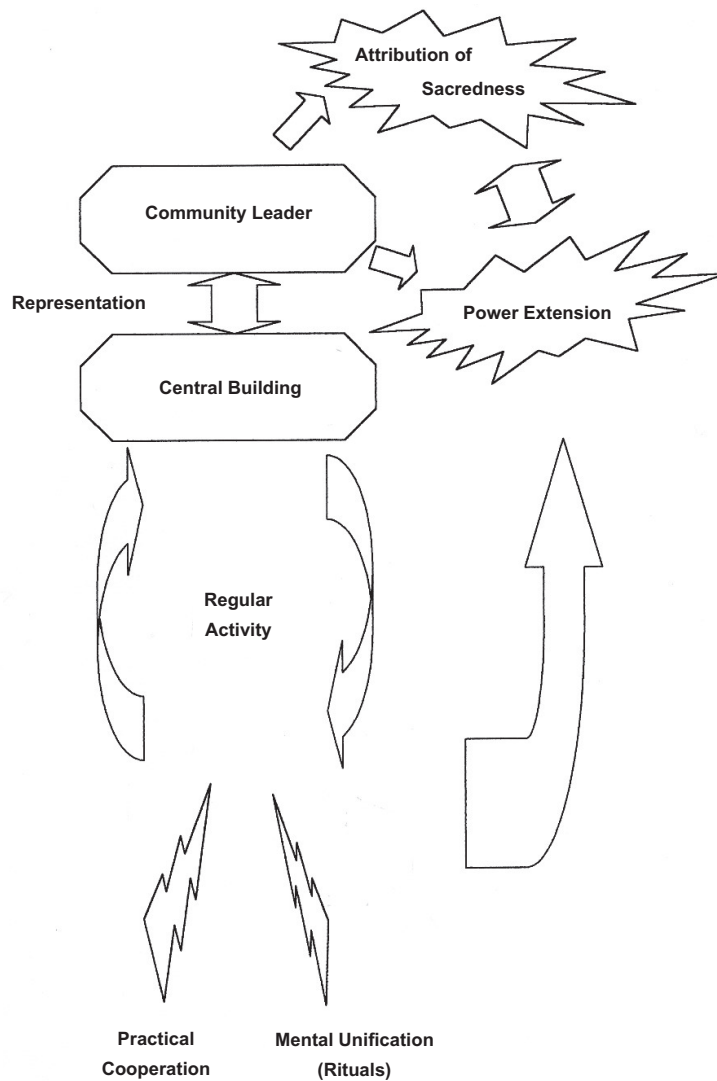


Figure 3 The Central Building Model.

according to its size, style and also geographic situation within the central and/or topographically highest position within a settlement. However, distinctions based on location are often problematic. In addition to exceptional cases in which the building may not have been located in the centre or the highest position of a settlement, excavations of large settlements rarely uncover the whole site. Consequently, the settlement plan is not always recognisable. Thus, other criteria for defining the central building become significant.

The interpretation of a building of notably large size such as the central

building is based on the estimated large labour investment which suggests social significance. This style of interpretation is encountered world-wide (e.g. Earle 1987: 291). Miyamoto (1991: 40) calculated that the size standard for the central building was 40 m² or larger. This is due to the fact that the majority of common Yayoi buildings, both *hottate*-pillar buildings and pit houses, are of a maximum size of 40 m². Takakura (1995: 1–2), further developed the idea. He stressed that extremely large buildings of more than 100 m² have been recovered, particularly in the core areas of Yayoi culture, and therefore must be considered as a distinct category. He also suggested consideration of not only the absolute size but also relative sizes of buildings within a settlement. In other words, even when the scale of certain building itself is not particularly large, if it is notably larger than other buildings of the settlement, it is reasonable to assume a certain special social significance of that building.

The existence of a set of ridgepole-pillars is thought to indicate the architectural style of the central building. A ridgepole-pillar is an extra post made to sustain a ridgepole beam (Figure 4), and normally a set is composed of two. They may be

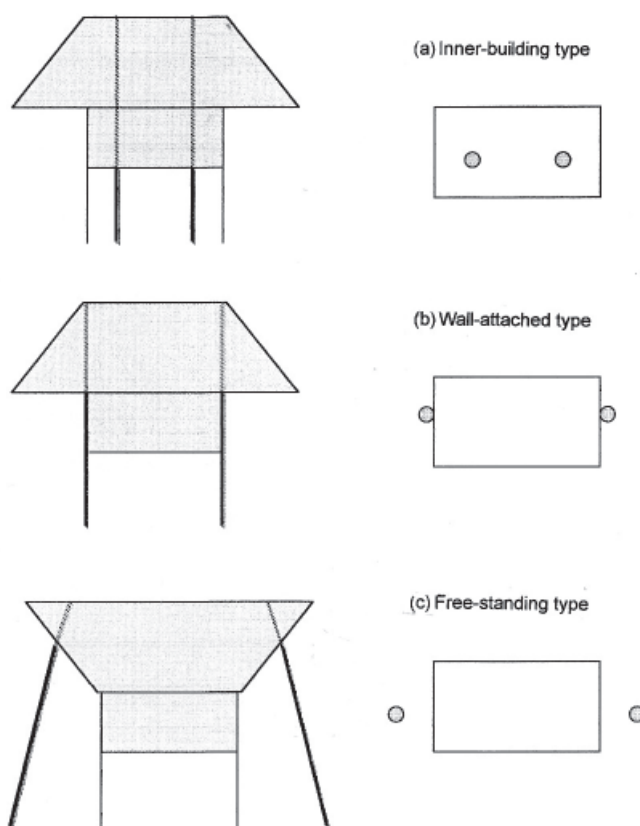


Figure 4 Ridgepole-pillars.

placed either inside or outside of a building. The outside pillars are further divided into two types: pillars attached to a wall, and free-standing pillars. Free-standing pillars are inferred to accompany a wide open gable roof, and possibly a raised floor. This style of roof was probably visually impressive and thus likely to be used as a socially significant building. Limited numbers of buildings of the ridgepole-pillar type have been found in the Yayoi and Kofun periods and interpreted as reflecting a special status (Kondo 1995).

According to Miyamoto (1996), buildings of the ridgepole-pillar type make up only 5 % of all the *hottate*-pillar buildings so far found in Yayoi contexts, suggesting their special status. Moreover, based on examples of 18 mid-Yayoi sites in Hyogo and 8 sites in Okayama, Kishimoto (1998) demonstrated that no more than one building of the style with the free-standing ridgepole-pillars tended to exist in each settlement. He further observed that this type of building was always the largest of all the *hottate*-pillar buildings. The selective depiction of a building with this type of pillars in Yayoi iconography has also been interpreted as indicating its special significance (Kondo 1995).

1) The preliminary appearance

The existence of a distinguished *hottate*-pillar building, which can be defined as the central building, in the earliest western Japanese Yayoi settlements (Table 1) has been acknowledged. However, during the early Yayoi, buildings of this type were not widespread and their size was not strikingly large. In addition, there is a chronological gap between the early examples and typical mid-late Yayoi central buildings. This may indicate that the *hottate*-pillar building itself was introduced in

Table 1 Preliminary Central Buildings.

Site Name	Date	Scale(m ²)	No. of Posts	Ridgepole-pillars	Style	Location	Associated Features
Etsuji (Fukuoka)	final Jomon	58	18	2		centre	6 raised-floor granaries (12 posts)
Tamura (Kouchi)	Yayoi Phase I	26.25	18	none			Hottate-pillar buildings
		28.2	18	none			//
		32.95	16	none			//
		46.4	20	none	raised-floor		2 raised-floor granaries (30 m ² , 8 posts)
Uji-no-matsu (Osaka)	Phase I	25.2	14	1 (free-standing)	surface		3 buildings (20 m ² , 12 posts)
	//	10.8	8	1 (free-standing)	raised-floor		//
Yamaga (Osaka)	middle Phase I	45.1	12				

Reference

Etsuji: Shintaku 1994 / Tamura: Kouchi Prefecture Education Committee 1986 / Uji-no-matsu: Sen'n'an City Education Committee 1995 / Yamaga: Nakanishi 1991

the early stage of Yayoi, but the evolution in its role as a central building reflects particular social demands of the mid-late Yayoi.

The earliest example of the preliminary central building is recognised in the Fukuoka Etsuji site (final Jomon), which also has produced the earliest Yayoi-type raised-floor granaries. A notably large *hottate*-pillar building with inner ridgepole-pillars was found in the centre of the Etsuji settlement (Shintaku 1994).

Several examples of such a building have been recognised in western Japanese early Yayoi contexts. However, they occur only in special types of settlements, namely those comprised of solely of *hottate*-pillar buildings. This type of settlement is generally not large in scale and is almost limited to the early Yayoi. Thus, the possibility is raised that such a community represents the dwellings of continental immigrants who probably settled in Japan at the beginning of Yayoi (Nakanishi 1991: 179). It can be assumed that, as the immigrants mixed with the indigenous people, this particular type of settlement disappeared. For example, at the Kouchi Tamura site, the transformation from an all *hottate*-pillar house unit to a settlement of mixed pit houses and *hottate*-pillar buildings occurred between Phase I and II (Dehara 1991: 143). This may well show the sequence of the immigrants' mixing into the indigenous culture.

Examples of the early central building have been found in several sites as shown in Table 1. With the exception of the Osaka Uji-no-matsu, the central building represents the largest buildings of the settlement. In the Uji-no-matsu case, the central building has ridgepole-pillars. This indicates that the basic style of the mid-late Yayoi central building already existed at this time, probably as one of the cultural traits imported from Continental Asia by the immigrants.

2) The central buildings of Kinki

The major regions in which the middle-late Yayoi central building occurs are the Kyushu and Kinki which are seen as the cultural centre of the Yayoi period. A few central building structures have also been found in the Chugoku/Shikoku districts (Figure 5). Thus far, there have been significantly more Kyushu finds than Kinki finds. This trend may be due to the fact that archaeological excavations have been less extensive in the Kinki region (Iwasaki 1994: 26) rather than reflecting actual Yayoi social trends. Indeed, the archaeological evidence from Kinki indicates that this district was a significant Yayoi culture centre and was not under the influence of Kyushu, where Yayoi culture was first introduced. Nakanishi (1987), for example, lists archaeological finds from the Osaka Yayoi sites which indicate frequent contacts directly between the district and Continental Asia. This means that Kinki Yayoi communities had first-hand access to information and material from Continental Asia where Yayoi culture originated. Also, by the mid-Yayoi, intensively organised material exchange networks had formed in Kinki alongside Kyushu, indicating that the district was a lively culture center. Moreover, Kinki continued to develop as cultural centre throughout the Kofun period and up into the historical ages. In the 8th century AD, the Yamato government, which was the first central

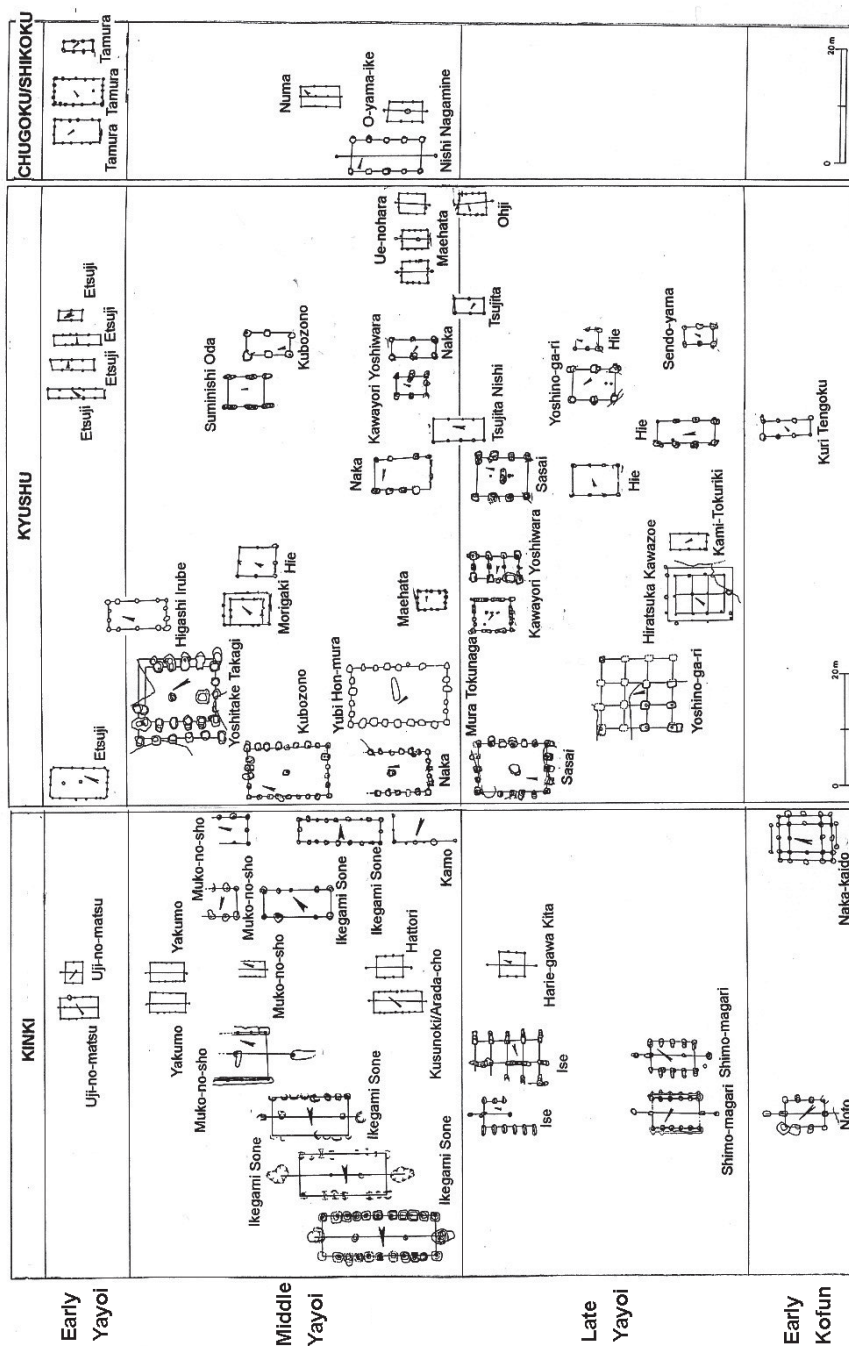


Figure 5 Scale and Dates of Excavated Yayoi Central Buildings.
(From the Heritage Ikegami Sone Site Preservation Committee 1997)

organisation of the Japanese national system, was founded in this district. These developments suggest that the characteristic social transformation towards a complex stratified society was probably more explicitly observed in Kinki than Kyushu. Therefore, in the present paper, the focus of discussion is on the Kinki district.

It has been recognised that the Kinki central buildings (Table 2) were typically constructed with outer ridgepole-pillars which either were free-standing or attached to the wall, or both (Miyamoto 1996: 188–189). This pattern suggests that the building style was generally raised-floor with a gable roof (Miyamoto 1996: 182). The style resembles not only a structure of a raised-floor granary, but the style of the oldest Japanese shrine called the Shinmei style, e.g. the Ise Shrine of the 8th century AD (Hirose 1998a: 76; Miyamoto 1996: 184). Consequently, researchers have inferred the nature of the central building likely signified a granary within which, over time, the process of crop symbolism evolved into an institutionalised ritual. From this point of view, it has been suggested that the crop-related ceremony was carried out in the central building (e.g. Arii *et al.* 1999; Inui 1996a, 1996b). It can be assumed that a certain ceremonial aspect was attached to the building, since there are a few examples of special types of artefacts found in the postholes, such as a bead in the Osaka Ikegami Sone (Akiyama 1999a) and three pieces of crystal in the Shiga Shimo-magari (Saeki 1992: 54). On the other hand, it has also been the case that generally Kinki central buildings are accompanied by commodity-type artefacts (Kondo 1995: 50–51), which suggests that it is unlikely that these buildings were ceremonial facilities. Thus, it seems more appropriate to consider the nature of this building as not directly related to ceremonies, but rather having some other capacity, including this ceremonial factor. It is thus necessary to discuss how the activities using commodity-type artefacts and the ceremonial aspect may have been juxtaposed within this specified space.

In the Kinki case, it seems comparatively easy to define activities associated with the central building, because it is common for the central building to be located in an explicitly enclosed space with accompanying buildings or features, *i.e.* a ‘central arena.’ In general, the enclosure is a ditch, but some late examples such as the Shiga Ise (Kondo 1995: 50) and Harie Kita/Harie-gawa (Kondo 1995: 52) were enclosed by a fence. The emergence of a space defined by a fenced enclosure has been interpreted as showing the transformation in the nature of the central arena, as discussed below. This enclosed central arena seems to have persisted as a special space through time. For example, in Ikegami Sone, the central building was repeatedly rebuilt on the same location from Yayoi Phase III to IV (Akiyama and Kobayashi 1998: 10). In the case of Harie-Kita/Harie-gawa, a complex of four buildings gradually evolved during the course of Phase V rather than appearing at once (Shiga Prefecture Education Committee 1992). This fact suggests that the space itself had explicit social significance, and thus activities carried out there are likely to reflect this significance.

However, it is difficult to reconstruct a single model of activities for the Kinki

Table 2 Kinki Central Buildings.

Site Name	Date	Scale(m ²)	No. of Posts	Ridgepole-pillars	Style	Character forming a complex	Location	Associated Features
Muko-no-sho (Hyogo)	mid-Yayoi	82.56+	10+	inside, apart from the wall			unknown	Marking ditch, assembled <i>hottate</i> -pillar buildings
			12+					
			25+					
			7	inside				
Ikegami Sone (Osaka)	late Phase III	55	12				centre	Large wells, large <i>hottate</i> buildings, assembled <i>hottate</i> -pillar buildings, special pits of artefacts, marking ditches
	late Phase III	87		16 2 inside, 2 free-standing				
	late Phase III	109		18 2 inside, 2 free-standing				
	early Phase IV	57	20					
	early Phase IV	133		22 2 inside, 2 free-standing				
Yaku-yama Maeji (Hyogo)	Phase IV	20	7+	2 free-standing			the highest position	
Minami-yama Takaya (Hyogo)	Phase IV	43.2		16 2 inside, (2 free-standing)				
Kamo (Hyogo)	Phase IV	47+	8+		surface		centre	L-shaped marking fence
Shimo-magari (Shiga)	Phase V	47.5		14 2 free-standing	raised-floor		near a river	4 <i>hottate</i> -pillar buildings, gate, marking ditch
Ise (Shiga)	Phase V-VI	88	12		raised-floor	forming a complex	centre	Square marking fence
		57.6	12					
		46.9	8 2 free-standing					
		11	6 2 free-standing					
		42	14 2 free-standing			later added		100+ fence-enclosed assembled <i>hottate</i> -pillar buildings
Harie Kita/Harie-gawa (Shiga)	Phase V (early)	41.4	6+	1				
		10.75	10			forming a complex	centre	Marking fence, 3 large pottery sediments
	Phase V (late)	15.64	8					
		19.8	8 2 free-standing					
Naka-kaido (Kyoto)	final Yayoi	18.3	10					
			16 (24)		balcony or eave			

Reference

Muko-no-sho: Hanzawa 1997 / Yaku-yama Maeji: Tatsuno City Education Committee 1995 / Ikegami Sone: see 'Case Study' Section / Minami-yama Takaya: Tatsuno City Education Committee 1997
 Kamo: Iwasaki 1994 / Shimo-magari: Iwasaki 1994; Saeki 1992 / Ise: Iwasaki 1994; Kondo 1995 / Harie kita / Harie-gawa: Kondo 1995; Shiga Prefecture Education Committee 1992
 Naka-kaido: Mukoh City Education Committee 1996

central buildings given that the material structure is distinct in each case. The Osaka Ikegami Sone, Shiga Shimo-magari and Shiga Ise are examples in which the central arena was completely excavated, and in each of these the central arena space exhibits a unique structure. In Ikegami Sone, two large wells and several groups of manufacturing-related and fishing-related features were found accompanying the central building (for details, see ‘Case Study’ Section). In the case of Shimo-magari, a feature made up of two post holes was found at the entrance-like position of the central arena. This feature is thought to have been a gate similar to the Japanese traditional shrine gate called *torii* (a bird gate) (Saeki 1992; 1993). In addition, this central arena is not located in the centre of the settlement but on the edge, along a river in a port-like location (Kondo 1995: 49–50). At the Ise site, the central building complex was composed of a dual structure: four buildings enclosed by a fence, and two more buildings located in the west and east of the enclosure (Kondo 1995: 50–51). The building in the east was accompanied by a group of more than 100 *hottate*-pillar buildings marked by a fence (Kondo 1995). In addition, carbonised rice grains were found in association with the building in the west (Iwasaki 1994: 30).

The uniqueness of each of these examples shows that there was no inter-community standardisation of activities for the central building/arena, a fact which accords with how scholars presently understand the mid-Yayoi society (Kondo 1995). Thus, the most important issue in the discussion of the nature of the central building/arena is that of the code behind the set of activities that took place here. Indeed, the code is what may well have been shared by Kinki mid-Yayoi communities rather than the type of activities themselves.

3) The transformation towards the Kofun king’s residence

A discussion has developed regarding the historical sequences of the central building towards the Kofun period. This discussion focuses on its being isolated from the other parts of a settlement and the transformation of its nature into the Kofun king’s residence (e.g. Takesue 1998a; 1998b). Although different trends are recognised among the Kyushu and Kinki/Chugoku/Shikoku Yayoi central buildings, the archaeological data indicate that these trends converged⁴⁾ at some point during this transformation. This phenomenon suggests that the code behind the central building was common and the transformation into the king’s residence can be discussed as an issue of transformation of the code.

Two points have been considered concerning the development of the Kofun king’s residence growing out of the Yayoi central building/arena. One is the emergence of a square-shaped plan of the central building arena during the late Yayoi, which is the common plan for the Kofun king’s residence (Hirose 1995; Tatsumi 1996b: 10–32). Also characteristic of this square plan is that a fence typically demarcates the space. This pattern is new for the Yayoi central building but common to the Kofun king’s residence (e.g. Shiga Prefecture Education Committee 1992: 280). The other point is that, during the late Yayoi, the central building/arena began to show independence from the other parts of the settlement in its own

facilities for defense. This is thought to have culminated in a spatial separation of the central arena from the settlement.

With respect to the first point, the square-shaped marking of the central building was identified at the Hyogo Kamo (Iwasaki 1994: 28) and Shiga Ise sites (Ban'no 1995: 81; Kondo 1995: 50). L-shaped fences in the former and square-shaped ones in the latter were found surrounding the central building. Thus, a square-plan is believed to have been applied to both settlements. In addition, although the actual shape is unknown, demarcation of the central building/arena with a fence has been found in the late Yayoi large settlements such as the Shiga Harie-Kita/Harie-gawa site (Kondo 1995: 52) and the Nagasaki Haru-no-tsuji site (Soejima and Shobayashi 1995). In addition to these examples, the Oita Osako Tsujibaru site, which is the oldest Kofun king's residence known thus far, shows the probable transitory state. At this site, three squares of a ditch and earthwork of 10,000 to 15,000 m² have been found. These have been traced to having been constructed in sequence from the final Yayoi to the early Kofun (Ogasawara 1995: 2). The only remaining features in the squares were a few post holes of a *hottate*-pillar building. However, since it was recognised that this area continued to be used for the king's and feudal leader's residences right up to the historical ages, the three squares have been considered as the preliminary appearance of such a residence (Takakura 1995: 4). The oldest square co-existed with a Yayoi style moated settlement, but was spatially separated. Thus, it has been thought that this shows that the square-plan king's residence originated as a part of the Yayoi settlement plan (Ogasawara 1995: 2), probably succeeding that position of the central building/arena.

This emergence of a square plan with a fence for the Yayoi central building in the process of transforming into the Kofun king's residence has been discussed as demonstrating a transforming social perspective. Before this, the common Yayoi settlement plan was basically a circular layout, as shown by the enclosure of the moated settlement. Accordingly, it was inferred that the emerging social stratification was reflected in the square layout of the settlement plan (Takesue 1998a; 1998b). In addition, a hypothesis was raised that the eventual construction of a fence emphasised the exclusiveness of the central building/arena (Hirose 1998a: 79).

The Saga Yoshino-ga-ri site exemplifies the growing independence of the central building/arena in terms of defense facilities. During the late Yayoi, this site developed a central arena that was divided into two parts with the enclosing ditches of each having four square corners. In each corner there was a *hottate*-pillar building which resembled the allocation of lookouts in Han dynasty Chinese walled cities. It has thus been suggested that the Yoshino-ga-ri had similar lookouts which were influenced by the contemporary Han dynasty (Shichida 1995a). If this is the case, the Yoshino-ga-ri central arena was constructed for its own defense rather than for the defense of the entire settlement. The oldest Kofun king's residence at the Osako Tsujibaru site also has square corners (Ogasawara 1995: 2) similar to early to mid-Kofun examples such as the Fukuoka Fukada, Kumamoto Nishioka-dai, Gun'ma Mitsu-

dera I and the Nara Nagae king's residences (Ogasawara 1995: 3). Therefore, it is likely that this plan for defense facilities was indeed a character of the Kofun king's residence and this exemplifies an evolution from the Yayoi central arena.

Here, if in fact the Kofun king's residence developed in successive stages from the Yayoi central building/arena, serious consideration must be given to the nature of the transition. The basic architectural features which have been acknowledged as associated with the central building/arena, including a large *hottate*-pillar building, a well, a raised-floor granary and a metal molding workshop, seem to have been succeeded by the king's residence (Hirose 1995: 5; Tatsumi 1996b). This indicates that the style of the king's residence, namely the necessarily associated factors, indeed originated in the central building/arena but possibly the significance of the building and features were eventually associated with the king's power.

On the other hand, a characteristic factor which was added to the Kofun king's residence is the fact that the space was internally divided into two areas. It is likely that these rooms served distinct functions. An example is the Gun'ma Mitsu-dera I site (mid-Kofun), where the king's residence is divided in half by a fence. One division has a notably large 170 m² *hottate*-pillar building accompanied by a well and a stone-paved area, whereas the other has several pit houses (Tatsumi 1996b). A similar dual structure has been recognised in the Hyogo Matsuno king's residence (mid-Kofun). In this case, one division has *hottate*-pillar buildings, two of which have ridgepole-pillars standing apart from a wall and a balcony. The other division has raised-floor granaries (Tatsumi 1996b). The stone-paving, recognised in one division of the Mitsu-dera I, has been found in Kofun contexts and is characteristically associated with non-commodity type artefacts, such as beads and pedestaled bowls which suggest that it may have been a ceremonial facility (Ishino 1991: 13). On the other hand, the other division of the Mitsu-dera I has pit houses which represent domestic type facilities.

Judging from these examples, it can be inferred that the divisions of the king's residence were meant to separate ceremonial spaces from domestic spaces. In other words, this may show institutionalised⁹⁾ ceremonial space as differentiated from the king's living space. From this point of view, it is notable that the ceremonial division also contains a strikingly large *hottate*-pillar building. *Hottate*-pillar buildings are also found in one division of the Matsuno example, and the style is similar to the Yayoi central building, as is the large building of the Mitsu-dera I. This suggests that, in the Kofun context, this style of building became associated with institutionalised ceremonies. Considering that the Yayoi central building has been recognised as associated with both commodity- and non-commodity-type artefacts, with much more emphasis on the former; particularly in the case of the Kinki region, it seems likely that the social code behind this building changed. In addition, the fact that the space of the central building was transformed into a dual structure in the king's residence suggests that ceremonial and domestic aspects were first juxtaposed in the Yayoi central building. The transformation of the space from a central building to a king's residence thus suggests that the process of the juxtaposed implication was

formally divided and institutionalised. As this transformation took place in stages, this issue must be discussed within the scope of the day-to-day social structuration which resulted in the change of the social code.

ICONOGRAPHY AND THE CENTRAL BUILDING

Above, the possibility was raised that the Kinki Yayoi central building/arena became the mediator of the centralised power due to its role in the agricultural cycle. In addition, it was suggested that crop-related ceremonies were carried out in this space, justifying the existence and extension of the centralised power. Here, to further develop the issue, the association of the central building/arena and crop-related ceremonies will be discussed in terms of the Yayoi iconography.

Figurines of various subjects occur in the Jomon, representing the earliest Japanese art, but iconographic representation did not appear until the Yayoi (Sahara 1980: 114). *Dotaku* bronze bells and pottery vessels are the main artefacts on which iconography is inscribed. The iconography on the *dotaku* first appeared in the Yayoi Phase II and increased in numbers significantly in Phase III (Harunari 1991b: 8). On the other hand, pottery images emerged in Phases II-III, and with the exception of a distinctly early example from the Fukuoka Yoshitake Takagi in Phase I (Hashimoto 1996: 11), they are found in the greatest numbers in Phase IV (Hashimoto 1996: 115; Harunari 1991b: 8; Kinoshita 1988: 80). By Phase V, *dotaku* bronze bells seem to have fallen out of use, and the icons on pottery were replaced by symbols which also disappeared by the Kofun period (Harunari 1991b). Similar types of icons appeared again later on cylindrical *haniwa* (clay models) during the 5th–6th century AD (Ishino *et al.* 1996: 93). However, the differences both in chronology and context, prevent identical interpretation of these icons. Thus, it appears that the iconography is characteristic of the Yayoi society, particularly in the middle to late stages.

The two most notable characteristics of the Yayoi iconography are the selectivity of objects and their stylised depiction. On the first point, although 55 *dotaku* (Ikeda *et al.* 1997: 66) and 271 pottery pieces (Hashimoto 1996: 13) have been found with icons, the objects depicted are limited to 16 kinds for *dotaku* and 9 kinds for pottery (Harunari 1991b: 9; Hashimoto 1996: 14). Moreover, all these pictures seem to follow uniform patterns in the stylised depiction of each object. Hashimoto (1996: 21) suggests that this pattern reflects a shared concept of iconography by the Yayoi communities.

Together, these two points suggest that the Yayoi iconography had iconic implications rather than being naturalistic depictions (as suggested by Harunari 1991b). Thus, the analyses and interpretations of these iconic implications may provide a clue to the nature of the ideas that Yayoi people metaphorised in these icons. As discussed below, pictures of buildings imply association with the Kinki style central building in terms of the chronological and geographical distributions. Thus, it is possible that through these pictures we can get an idea about the social

specific social contexts. Of particular significance both in terms of chronological and regional patterning is the concentration of pottery with pictures of buildings in the Phase IV Kinki. Again, this does not reflect the archaeological record in which the distribution of the actual *hottate*-pillar building is much broader. Consequently, the patterning suggests a distinct social meaning associated with specific *hottate*-pillar buildings, which characterise the Phase IV Kinki.

Both the pottery and *dotaku* bronze bell iconography depict the building as a stylised pattern: the perspective is always from the flat side; if a ladder is illustrated, it is typically placed at the right-hand side of the gable. On the other hand, the styles of buildings themselves do show some variation. Harunari (1991a: 55–61) set three categories for these building styles (Figure 6): 1) a raised-floor building with a gable

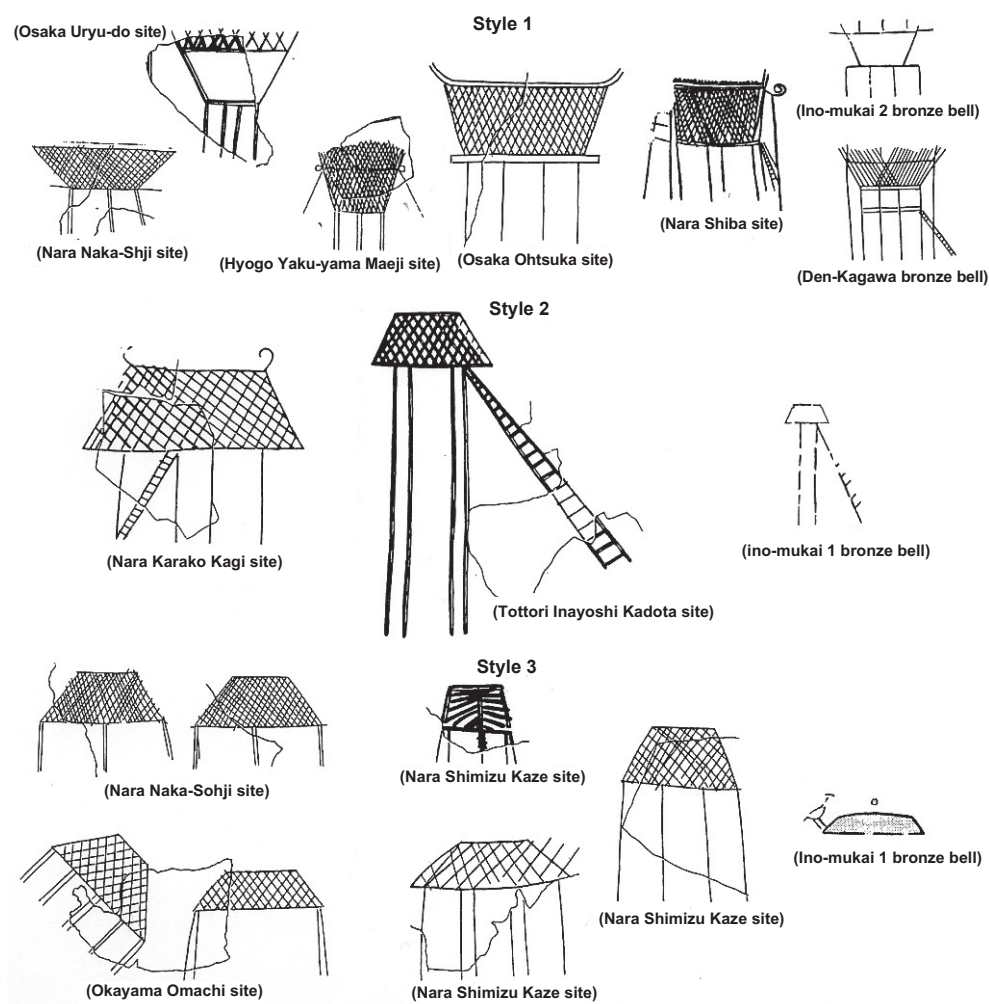


Figure 6 Yayoi Depictions on Buildings.

roof, in some cases with a ridgepole-pillar and a ladder; 2) a remarkably high building with a hip roof and a ladder; and 3) a surface building with a hip roof, in some cases drawn as a part of a group of two or three buildings combined with the category 1) type of building. Generally, the preservation of pictures on artefacts is not good enough to allow discussion of whether there was indeed a difference in the iconic implications of these different styles of buildings. On the other hand, on a quantitative basis, it seems apparent that category 1, namely a raised-floor building with a gable roof, was the most commonly depicted architectural subject: it appears in at least 18 of 41 pottery pictures and 2 of 4 pictures on *dotaku* bronze bells. One hypothesis is that the category 1 building may be a depiction of leaders' residences, but due to their comparatively small scale and the absence of the characteristic wall (Harunari 1991a: 55), it is unlikely that they represent residences. Instead, it has been proposed that, based on ethnographic analogy, this structure resembles a raised-floor granary (Harunari 1991a: 64; Shimizu 1997), thus, the Kinki style central building.

The basic difference between the archaeological contexts of the *dotaku* bronze bells and that of the pottery with pictures is that the former has always been found outside the residential area, whereas the latter has mostly been found within the residential area. The apparent concentration of the pottery finds within residential areas might be the result of sampling methods, given that pottery shards are usually collected from residential areas. However, it is reasonable to emphasise the fact that different spatial trends exist between these two types of artefacts which may well indicate different types of associated activities.

Among the 18 examples of pottery with pictures, of which excavation reports are available to clarify the contexts, 14 were found in possible waste disposal contexts within residential areas, such as a ditch and backfill of a pit house, regardless of the style of the building depicted on the pottery specimens (Table 4). This suggests that activities which were associated with the pottery were likely carried out within the intra-settlement context. In addition, it is believed that the pottery was not imported but locally made, at least in the cases of Karako Kagi (Fujita 1995: 71), Kuboki, (Okayama Prefecture Education Committee 1997: 335) and Yaku-yama Maeji (Tatsuno City Education Committee 1995: 153). This suggests that the pottery was both produced and used in the present settlement.

The fact that the pottery depicting a building was fabricated in the present settlement also raises the possibility that the building actually existed within the settlement (Fujita 1995: 71). Indeed, among the 18 examples, there are some that show an apparent association with a contemporary *hottate*-pillar building. In the case of the architectural structure shown on the Kume-ike Minami pottery example, the picture corresponds to one of *hottate*-pillar buildings excavated at that site, a building which was located in the central and highest position of the settlement (Takamatsu City Education Committee 1989: 131). In the Yaku-yama Maeji site, the location of the pottery find was spatially associated with the only *hottate*-pillar building at the site, and this building was again located in the highest position of the

Table 4 Pottery with Pictures of Buildings.

Site Name	Context	Pottery Type	Description
Kinki			
Karako Kagi (Nara)	Enclosure near the entrance (Phase IV)	Large pot (50cm) [neck]	2-layered roofs (hip-roof/decoration)
"	Ditch in the place of the enclosure	Large pot (50cm) [body]	post, ladder
Shiba (Nara?)	Settlement ditch (latter-mid-early-late Yayoi)	Pot [body]	raised-floor (gable-roof/ridgepole-pillars/no wall/ladder/decoration)
"	"	Jar [rim]	roof only (hip or gambrel? roof/no wall?)
Sakae-no-ike (Osaka)	Settlement ditch (Yayoi Phase III-IV)	-	roof only
Uryu-do (Osaka)	Ditch between tombs (Yayoi Phase II)	Pot [body]	raised-floor (gable-roof/ridgepole-pillars?/no wall/decoration)
Ikegami Sone (Osaka)	Associated with the Central Building (Yayoi Phase III-IV)	Pot [neck]	raised-floor (ridgepole-pillar/9 posts)
"	Pit of the Central Building (Yayoi Phase III-IV)	-	raised-floor (ridgepole-pillar/4 posts)
Karasuma Aya-no-koji (Kyoto)	Peat layer (mid-Yayoi)	Large pot (50cm dia.)	raised-floor (gable-roof/ridgepole-pillars/decoration)
Yaku-yama Maeji (Hyogo)	Pottery middens (mid-late Yayoi)	Large pot [body -6sherds]	3 raised-floor (gable-roof & hip-roof/decoration)
Chugoku/Shikoku			
Kuboki (Okayama)	Settlement ditch (early-late Yayoi)	Pottery stand (50cm high)	surface (hip-roof/7 posts/wall)
Shinjo Onoe (Okayama)	Backfill of a pit house (latter-mid-early-late Yayoi)	Pot [shoulder -2 sherds]	raised-floor (hip-roof/high/decoration/wall/ladder?)
Omachi (Okayama)	West edge of settlement (latter-mid-Yayoi)	Pot [shoulder]	2 hip-roof buildings
"	Pottery layer (late Yayoi)	Pot or jar	raised-floor (gable-roof)
Bunkyo (Ehime)	Pit house (latter-mid-Yayoi)	-	deer or roof
"	Pottery layer (latter-mid-early-late Yayoi)	Pot [body -3 sherds]	2 roofs (gable-roof/raised-floor?/decoration)
Kume-ike Minami (Kagawa)	Near a pit house (latter-mid-Yayoi)	Large pot [neck-shoulder]	raised-floor? (gable-roof/ridgepole-pillars/decoration)
"	"	" [shoulder-body]	ladder

Reference

- Karako Kagi: Tawara Hon-machi Education Committee 1986 / Shiba: Shimizu 1996, 1997 / Sakae-no-ike: Kishiwada Archaeology Research Group 1979
 Uryu-do: Osaka Prefecture Education Committee 1980 / Ikegami Sone: see 'Case Study' Section / Karasuma Aya-no-koji: Kyoto City Tourist Centre 1992
 Yaku-yama Maeji: Tatsuno City Education Committee 1995 / Kuboki: Okayama Prefecture Education Committee 1997 / Shinjo Onoe: Hasegawa 1992 / Omachi: Masaoaka 1991
 Bunkyo: Ehime University 1992 / Kume-ike Minami: Takamatsu City Education Committee 1989

settlement (Tatsuno City Education Committee 1995: 163). Furthermore, the Yaku-yama Maeji *hottate*-pillar building was accompanied by an accumulation of non-commodity pottery shards such as pottery stands, where the pottery depicting the building was found (Tatsuno City Education Committee 1995). This raises the possibility that this *hottate*-pillar building was associated with particular kinds of activities involving the pottery with pictures.

The above points support the argument that the pottery with pictures of a building was used for activities associated with a specific building in the settlement. This suggestion further raises questions about the nature of that building. Based on the examples in Kume-ike and Yaku-yama Maeji discussed above, it seems that the associated building was of a *hottate*-pillar style, the same as that depicted on the pottery. Thus, it seems reasonable to make inferences about nature of the building based on the pictures themselves. The difference in the styles of the depicted building does not seem to have especially influenced the contexts of the pottery. This suggests that all the building types were involved in the basically same type of activities. On the other hand, the fact that a gable-roof raised-floor style building was the most commonly depicted raises the possibility that this building type was more commonly associated with the activities in question. On this basis, it can be inferred that, when the activity area was large scale with a complex of several buildings, other types of buildings also existed. For example, the Kuboki picture example shows a hip-roof surface building standing between two large buildings, one of which is of a gable-roof style (Okayama Prefecture Education Committee 1997). If such a building complex is illustrative of how the large activity area appeared, it is remarkably similar to the central arena in Kinki large settlements. In addition, the date usually associated with the picture pottery, namely the Yayoi Phase III to IV, corresponds to the date of the emergence of the central arena. Thus, it is highly probable that the central arena was the activity area associated with the pottery inscribed with pictures of buildings. This assumption is supported by the Osaka Ikegami Sone case as shown below (in 'Case Study' Section), in which two examples of pottery shards with pictures of buildings are indeed associated with the central buildings in terms of their archaeological contexts and the architectural structures depicted on the shards.

Moreover, the type of pottery that is inscribed with pictures may provide a further clue to the type of the activities in question. In general, most of the pieces of pottery with pictures are large pots, including those specimens that depict buildings (Kanaseki 1985: 69). Table 4 shows that almost all the pottery shards were from large pots, except for an example from the Kuboki site which was a stand for a pot. One of the possible uses for such a pot is storage of crop grains, as pottery pots are suited for keeping the grains dry and preventing bacteria (Masuda 1982). This suggests that the activities associated with this special pottery involved crop storage, and accordingly that there was an association between the central arena and the crop-related activities.

2) The iconic combination of buildings and other objects

The pottery pictures occasionally depict buildings in combination with other motifs, namely deer, a bird, a boat and a person, but most frequently a deer. Kanaseki (1985: 69–70) suggested that all two-dimensional motifs on Yayoi pottery originally included a building and other objects, but that not all of these images were preserved well enough to be recognisable. While there is no conclusive evidence for this notion, it is believed that a picture of a person is always accompanied by a picture of a building (Tatsumi 1996a). Thus, it may be helpful to consider the iconic implication.

The combination of a building with deer occurs in seven examples from the Nara Shimizu Kaze, Nara Karako Kagi, Hyogo Kawadoko Kawashima and Osaka Higashi-nara sites (Harunari 1991b: 9; Hashimoto 1996: 21) (Figure 7a). A single example of a building and a bird was found at the Nara Shimizu Kaze site (Heritage Ikegami Sone Preservation Committee 1997: 49). In this case, the bird is on the roof of a tall building that belongs to Harunari's category 2 building (Figure 7b). A picture that illustrates a building and a boat has been found in one example from the Tottori Inayoshi Kadota site (Figure 7c). As mentioned earlier, this is a motif of people in a boat, wearing feather-like ornaments. In fact, in almost all the examples of pictures, people are shown wearing feather-like ornaments or a bird-like costume, as seen in the examples from the Nara Karako Kagi and Okayama Shinjo Onoe sites (Harunari 1991b: 29, 32) (Figure 8a). A motif found in the Nara Karako Kagi site is an exception, and shows people not depicted in a costume climbing a ladder to a raised-floor building (Hashimoto 1996) (Figure 8b).

Three points are suggested by the patterning of these motifs. Firstly, it has been assumed that the motifs of a deer, a bird and a boat with a building, imply an association with the Spirit of the Crops with the building. The deer, the most common subject in Yayoi iconography, is a typical mythical subject linked with crop symbolism in historical documents. In *Harima no Kuni Fudoki* (Harima District Folklore), a document from the 8th century AD, there is an account of rice germinating overnight after having been planted in the fresh blood of a deer (Hudson 1992: 146). Similar stories occur in other mythical texts (Hudson 1992; Nomoto 1996). This argument is supported by the fact that, in Yayoi faunal remains, the proportion of deer bones is significantly less than that of pigs (Ikeda *et al.* 1997: 74–75; Tatsumi 1996a: 24). This suggests that the frequency of deer in Yayoi iconography does not reflect the commonness of actual deer exploitation, but rather points to another kind of specialty. The argument that deer have a sacred status is further supported by the fact that deer bones represent approximately 80 % of Yayoi oracle bones (Hudson 1992: 151). If it is the case that the deer is invested with crop symbolism, its depiction in association with a building may also link this symbolism to the building.

Similar implications have been discussed for the bird and the boat. Both subjects commonly appear in Japanese and south-east Asian myths as 'carriers of

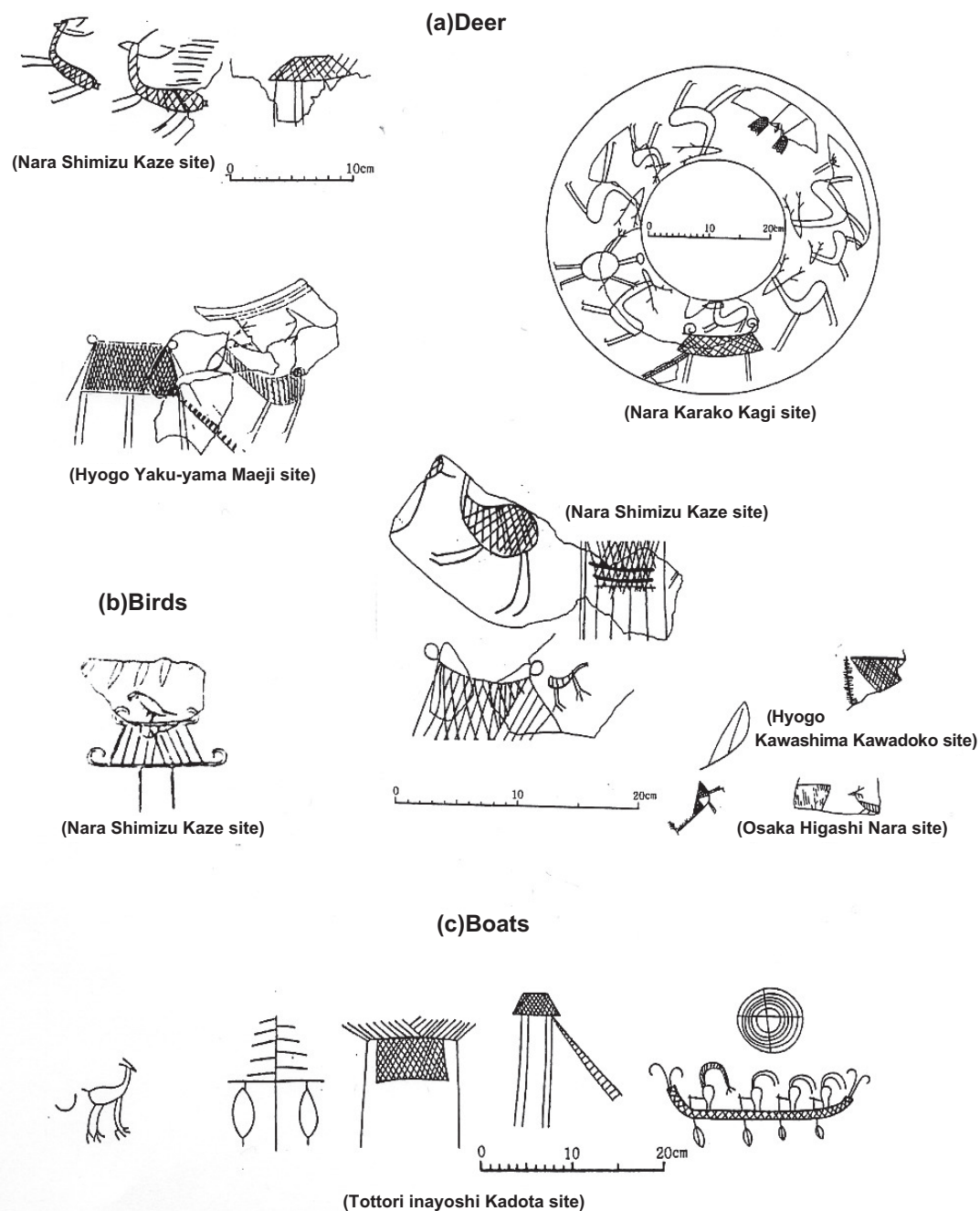


Figure 7 Combination of Depictions of Buildings and Other Objects on Pottery.

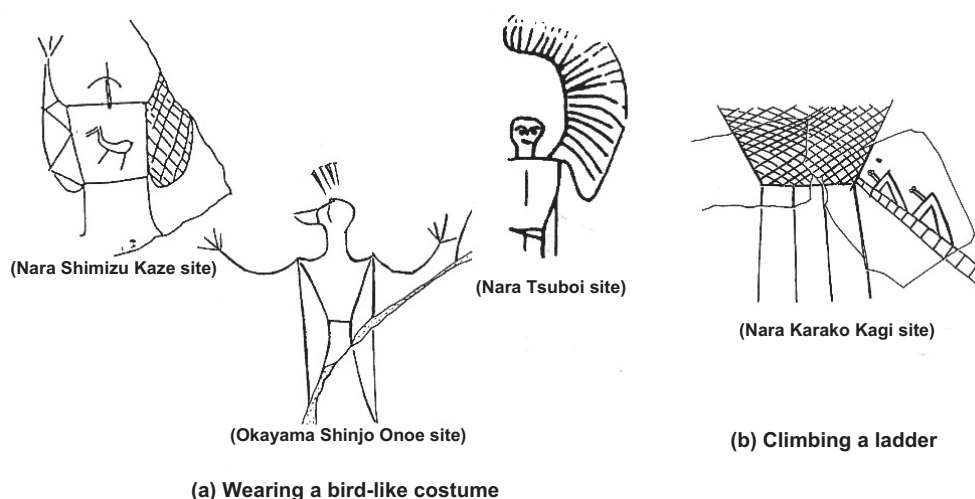


Figure 8 People Depicted on Pottery.

spirits' (Harunari 1987: 21–22). In the case of the bird, it is characteristic for wooden figurines to have been found in the Kinki Yayoi Phase II–IV contexts which suggest an association with a farming ceremony (Yamada 1996). Combining this relationship with a farming ceremony and the possible implication as a carrier of spirits, Kanaseki (1983) suggested that the bird icon, both as a figurine and iconography, represented the Spirit of the Crops being carried by the bird. He (Kanaseki 1982) also suggested that, towards the Kofun period, as the farming ceremony became explicitly controlled by a ruling leader, the bird became more associated with the leader's tomb, transforming the symbolism to a carrier of the spirit of a dead. Indeed, archaeological finds from the Yayoi Phase V show that wooden bird figurines shifted from residential area to tomb contexts (Yamada 1996).

The second point suggested by the patterning, which is of motifs of people, is the possibility that the drawings depicted actual scenes of ceremonial activities carried out at a specific building. Harunari (1987: 13–15; 1991b: 34) argued that, assuming that most of the depicted buildings were granaries, the pictures showed scenes of a ceremony at a granary. He interpreted the illustrations of people in the special costumes as depicting shamans to intermeditate with the Spirit of the Crops, and the action of rowing a boat and climbing a ladder depicted ceremonial procedures. Kanaseki (1985: 69) also suggested that the pictures showed ceremonial scenes, particularly the Inayoshi Kadota example. In this image, in addition to the boat approaching two raised-floor buildings, a tree is depicted with two objects hanging from it. Kanaseki interpreted these hanging objects as *dotaku* bronze bells, and argued that this motif illustrated a scene from the *dotaku* ceremony which resembled the Korean Su-tu ceremony. If this is the case, it shows that the *dotaku* ceremony was probably associated with a specific building within the residential

area.

The third point is the possibility that the people depicted on pottery illustrate specific individuals present in the scene of activity. People are common subjects in the *dotaku* bell pictures as well, but they are not shown in the bird-like special costume. In addition, the types of actions of the people depicted are notably different between *dotaku* and pottery. On the former, the people are fishing⁶, hunting deer or wild boar, pounding crops, fighting, rowing a boat, and chasing a snake (Sahara 1982; National Museum of Japanese History 1997). On the latter, the people are standing, rowing a boat or climbing a ladder. Not only is the variation in human activities broader with the *dotaku*, but also the *dotaku* pictures show more routine activities. If the special costume represents a distinguished individual, the above suggests that the existence of such an individual is emphasised more commonly on the pottery iconography. If the pottery picture motifs show activity scenes at the central building/arena, as considered above, this may represent a distinct individual who took a central part in the activity.

The trend mentioned above supports this view, *i.e.* the people depicted tend to be combined with buildings in the pottery iconography. The fact that the humans are wearing a costume that looks like a bird, a symbol possibly associated with the Spirit of the Crops, may well indicate that the people depicted here represent of a mediator between people and the Spirit (Hirose 1996a).

3) Iconic associations of buildings with crop pounding scenes

Comparing the images of buildings on the pottery with those on the *dotaku* bells, the basic code of the motifs seems same. For example, the Fukui Ino-mukai 1 Bell (BC 1C) illustrates the two buildings in combination with a bird on the roof, and boats and deer-like animals (Figure 9). On the other hand, two other pictures of a building on the Den-Kagawa Bell (AD 1C) and the Fukui Ino-mukai 2 Bell (150 BC) show no combined motif. In the latter examples, instead, there is another pattern associated with a crop pounding scene.

The image of one or two people pounding with a mortar and pestle has been interpreted as the ‘crop pounding scene’ (Figure 10). Indeed, pounding with a mortar and a pestle is a common crop processing procedure throughout Southeast and East Asia, especially for regions that use the panicle-picking harvest method (Hosoya 2007) (Figure 11). In addition, ethnographic examples show that it is common practice for two people to work face to face in this procedure (Thompson 1996; Yawata 1947). Although a mortar may be used for other purposes than crop pounding, such as kneading, a large mortar is more typically used for pounding (Goda 1988: 20). Those depicted in the Yayoi pictures seem large in comparison with the size of the accompanying people. Thus, based on all these factors, it seems reasonable to interpret the motif as a crop pounding scene.

Crop pounding scenes are much more common on *dotaku* bronze bells than on pottery, which, by contrast, typically show a building. So far, nine examples of the pounding scene have been found on *dotaku* (Goda 1988), while only one example

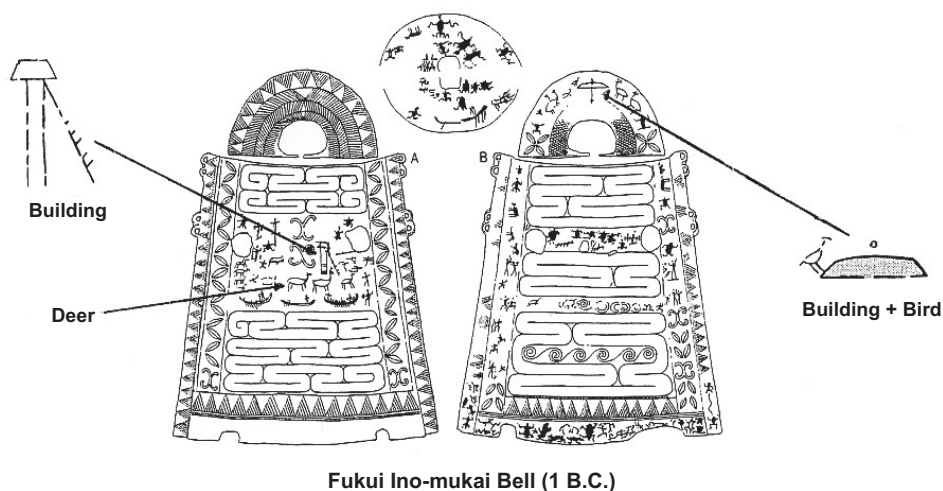


Figure 9 Building-Animal Relationship on the *Dotaku* Bronze Bell

has been found on pottery (Goda 1988: 198; Sahara 1980: 106).

Dotaku pictures appear to have been adapted from a limited number of original templates (cf. Hudson 1992: 145). Thus, one type of picture motif, such as the crop pounding scene, could have been imitated over time. For example, the Tokyo Museum 36667 Bell (BC 1C) shows mixture of pounding and a fighting scenes (Figure 12), which suggests some confusion in the handing down of the template from one generation to the next (Ikeda *et al.* 1997: 78). This suggests that the original iconic implication was also handed down through generations. The crop processing scene first appears during the Yayoi Phase III as do most of other *dotaku* picture objects. This indicates that its appearance precedes the major time of the depiction of buildings on pottery, namely Phase IV, and thus shows a distinct chronological difference (cf. Oyamada 1997).

Two types of crop pounding scenes are depicted on the *dotaku* bell. This first type is found on the Ino-mukai 2, Tokyo Museum 36667, Den-Kagawa and Kamika 5 (AD 1C) bells. In this type, the pounding scene fills one section of the square divisions on the *dotaku* surface (Figure 10a). On all these bells, the position of the section with the pounding scene is on the bottom. In addition, in the cases of the Ino-mukai 2 and Den-Kagawa, a picture of a gable-roof raised-floor building, likely to be a granary, is in another section at the bottom (Figure 13). There is some controversy among archaeologists as to the iconic reference in this arrangement. Yukio Kobayashi (as shown in; Sahara 1982: 276; Ikeda *et al.* 1997: 160) pointed to the fact that those objects related to hunting and fishing tend to be positioned in the upper parts of *dotaku*, whereas objects related to farming were placed in the bottom

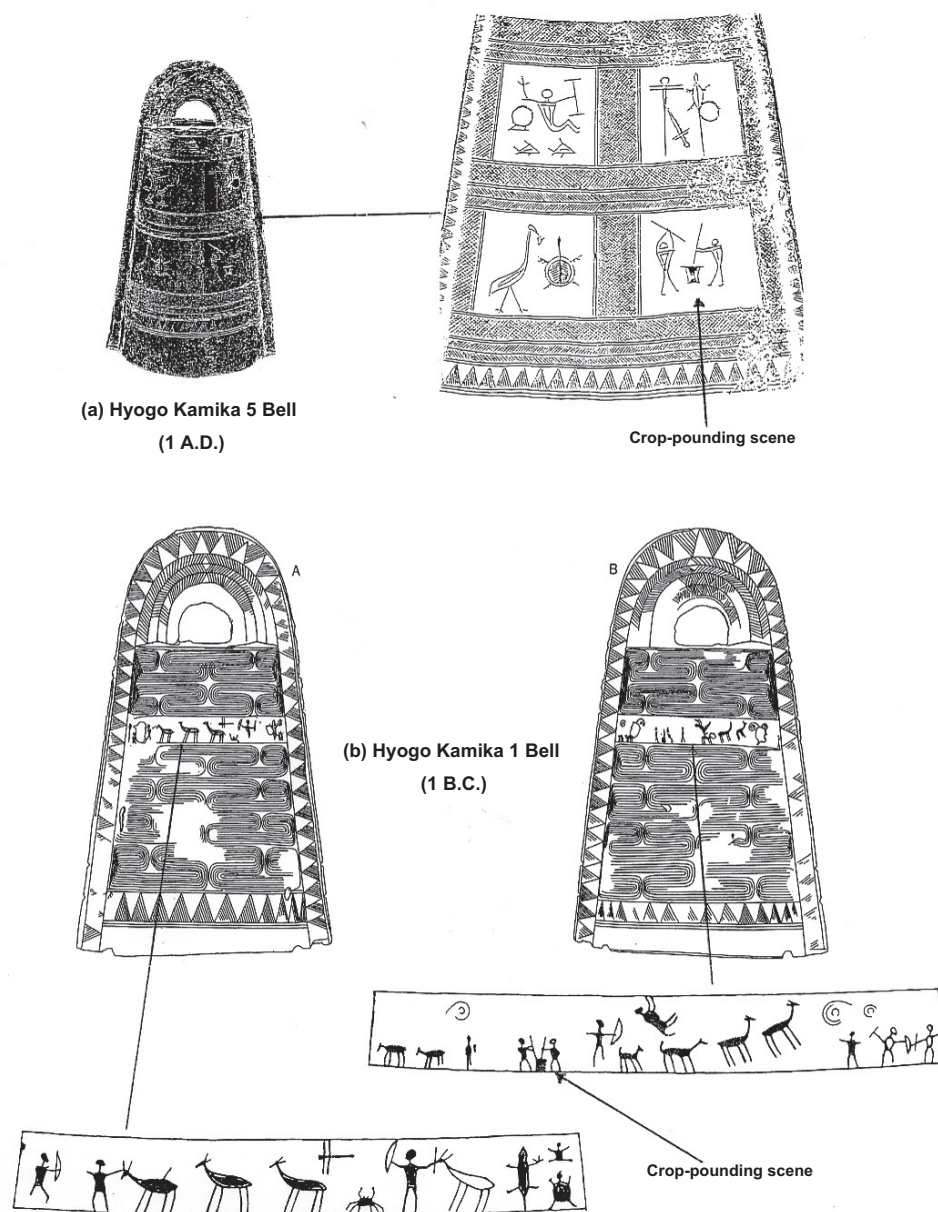
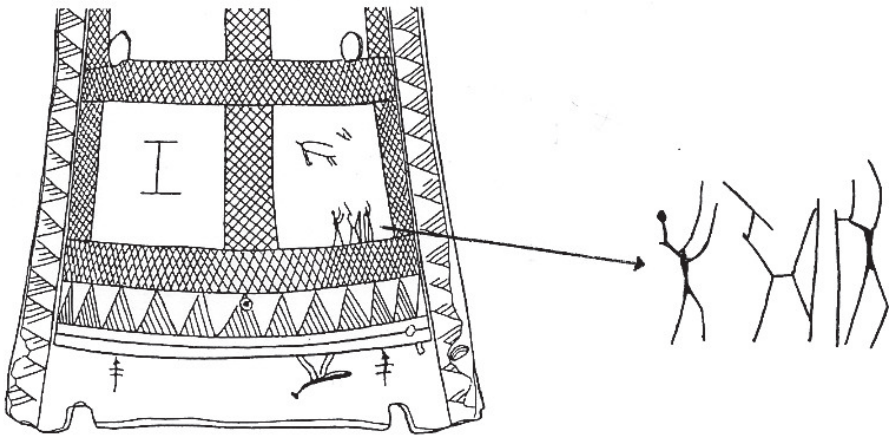


Figure 10 Crop-pounding Scenes Depicted on *Dotaku* Bronze Bells.



Figure 11 Rice Pounding in Bali.



Tokyo Museum 36667 Bell
(1 B.C.)

Figure 12 The Confusion between Crop-pounding and Fighting Scenes.

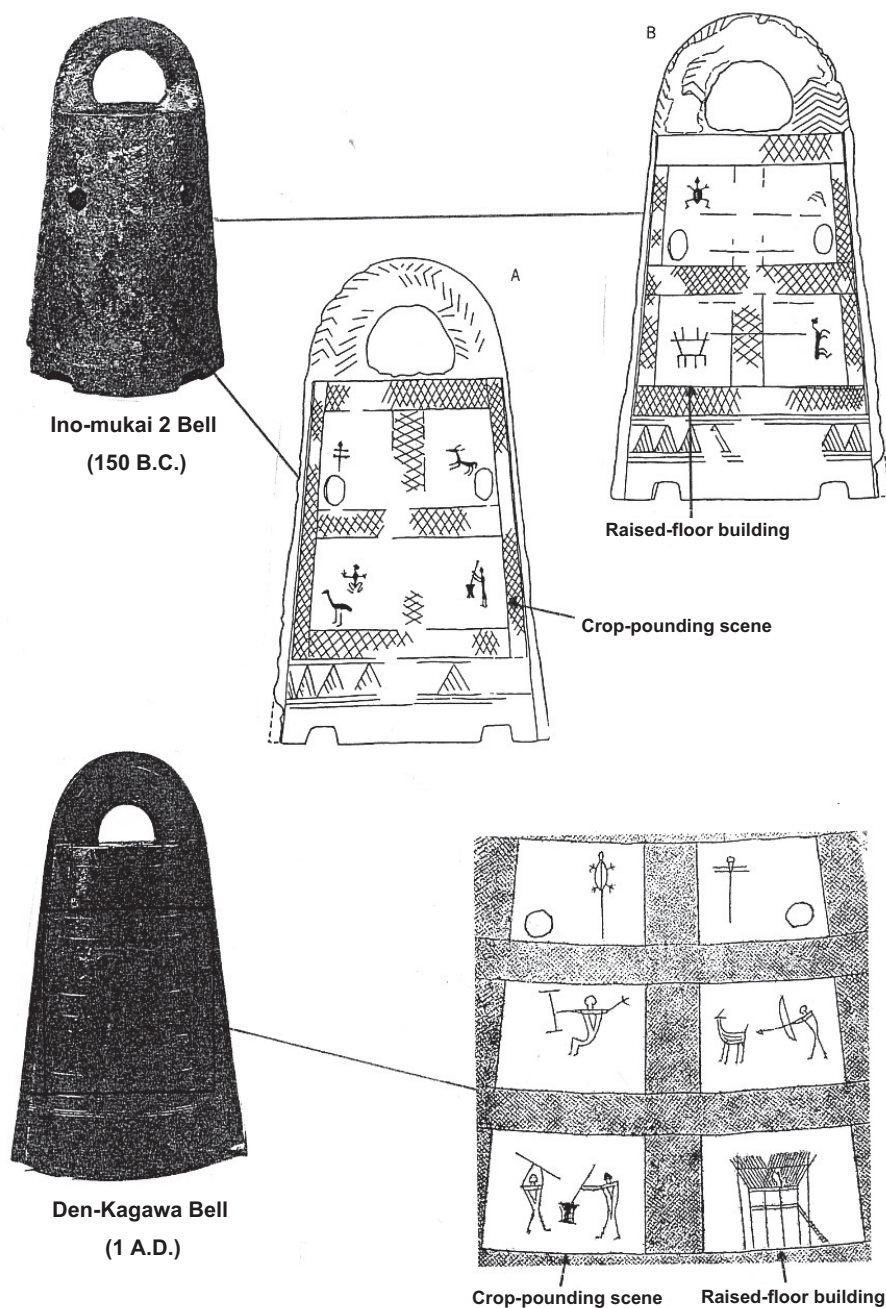


Figure 13 The Relationship between Crop-pounding Scenes and Raised-floor Buildings.

divisions. He then argued that the pictures progressed in a historical order from the top to the bottom, showing the history from the hunting-gathering age to the farming age, to express the present situation as the 'better' situation. Sahara (1982; 1997) developed a more systematic analysis of the arrangement of these pictures. He determined that there was a fixed order to the patterning: small animals, such as a dragonfly or a frog, were positioned at the top; a scene of hunting or fishing is the middle or at the bottom. When farming scenes were shown such as a crop pounding scene and a raised-floor building, they were always at the bottom. Whichever interpretation is taken, it appears that the crop pounding scene and the raised-floor granary were placed in the same category in *dotaku* iconography.

A second type of crop pounding scene is found on the Kamika 1 (BC 1C), Tatsuma Museum 405 (BC 1C), Tatsuma Museum 404 (BC 1C), Shinjo (middle Yayoi) and Tomari (middle Yayoi) bells. This pounding scene is made up of a linear series of pictures (Figure 10 (b)). These bells were obviously made with a single mould (National Museum of Japanese History 1997: 192–193). Characteristic of this image type is that building is absent, and the crop pounding scene is accompanied by a group of deer. Considering the frequent combination of deer and a building in the pottery iconography, it can be assumed that the crop pounding scene on this type of *dotaku* picture is the counterpart of a building in pottery pictures.

Together, these two types of *dotaku* pictures of crop pounding scenes suggest that 1) the buildings depicted and the crop pounding scene were treated as the same category; and 2) the crop pounding scene in the *dotaku* was the counterpart of the building on pottery. The first point suggests that the iconic implications of the building and the crop pounding scene were in the same category. On the other hand, as the second point shows, in pottery iconography the emphasis was on the building whereas with *dotaku* the crop pounding scene is emphasised. As mentioned above, there is a chronological difference with the *dotaku* pictures preceding the pottery images. Consequently, it can be inferred that this specific iconic implication was transferred from the crop pounding scene to the building, from the Phase III to IV.

In considering the possible meanings of this imagery, it must be noted that the crop pounding scene is the only depiction of a farming-related activity⁷⁾. This raises the idea that this scene represents the whole of the agricultural cycle, in the manner defined by Tilley (1999) as metonymic expression, namely a part representing the whole as a sort of symbol. This seems to be the common style for the *dotaku* iconography, considering that each scene of human action corresponds to one type of activity, such as hunting and fishing. Accordingly, its later replacement by the picture of a building may indicate that this metonymy of the agricultural cycle was transferred to the building. In other words, the whole the set of activities of agricultural reproduction became reduced to an image of a building. If the hypothesis raised above, *i.e.* the depicted building was associated with the central building, is indeed the case, this transferral of metonymy to the building may reflect this metonymic attribution to the central building itself. The corresponding timing of the iconographic change and emergence of the central building supports this

interpretation. This suggests that the central building became a material metaphor for the agricultural cycle. Tilley (Tilley 1999: 264) argued:

Because material metaphors are solid and spatial, rather than spoken and transitory, the process of 'reading' them is immediate. There is no need to explicitly name, delimit or identify them. Material metaphors have a quality of density in that every aspect of an artefact contributes continuously to its meanings and is interdependently significant. By contrast written language is not dense and is discontinuous in nature. Solid metaphor operates, for the most part, at the routinised level of practical continuousness of social actors.

If indeed the metonymic implication was transferred from the crop pounding scene to the depiction of the building, and at the same time to the central building, the most notable change would be that argued by Tilley: the metonymic implication was attributed to a substantial materialistic body. That is to say that as a specific visible space, the central building may have been a solid, continuous representation of the agricultural cycle. Accordingly, when a specific individual plays a significant role associated with maintenance of the agricultural cycle, such as by regularly mediating between the Spirit of the Crops and people, the influence would also be solid and continuous throughout existence of the building. From this point of view, one can explain the depiction of a person in the special costume as a part of the building motif. Assuming that the special individual was associated with leadership raises the possibility that the motif symbolises the role of the central building in consolidating the leader's influential power on the continuous life cycle of the community.

4) Iconic interpretation for the central building

The above analyses of Yayoi pictures of a building suggest an association among the depicted building, crop storage, the Kinki style central building, the Spirit of the Crops, the agricultural cycle, and a specific individual. This interpretation not only accords with the hypothesis that the Kinki style central building signified a granary, but also supports the argument that the role of the central building was both a part of the agricultural cycle and a mediator of the Spirit of the Crops. In addition, a distinct individual is associated with the building in the pottery iconography. If this association shows a causative relationship, it can be assumed that this individual also played the role of metonym and mediator. The fact that this specific individual became a metonym of the agricultural cycle may well indicate his/her influential power over the cycle. As the agricultural cycle is likely to have been the basis of community life, the power and influence of this distinct individual would be connected with solid leadership. In addition, the role of a mediator for the Spirit of the Crops would be a sufficient reason to accept his/her leadership and extension of power. This raises the possibility that this iconography represents the process of a specific individual gaining extensive leadership and sacred attribution in association

with the central building. This process accords with the proposed Central Building Model of the transformation of the nature of a community leader from the Yayoi to the Kofun. From this point of view, it appears that the transformation of iconography towards the Kofun period reflects this process, namely the extensive ruling power of a leader and a sacred attribution to the person of that leader.

First, towards the end of the Yayoi, a centralised organisation is suggested by a more well-defined stylisation of the iconography and probably the activities associated with the iconography as well. Towards Yayoi Phase V, the scenic pictures on pottery disappeared and were replaced by symbols. Harunari (1991b: 36) stresses that this replacement happened within a short period rather than gradually, which suggests a formalisation of the pottery ritual. At the same time, the nature of the *dotaku* bronze bell appears to have transformed from an instrument to a symbolic display (Tanaka 1970), before being abandoned altogether. This abandonment also happened over a very short period, probably again indicating a formalisation of new rituals rather than a gradual falling out of use (Harunari 1982). In addition, the fact that these changes occurred simultaneously within a number of settlements suggests that the stylised ritual organisation was established on an inter-settlement level. This may indicate that the nature of the ritualistic activities was transformed to such an extent that they took on more political implications (Harunari 1991b: 38).

Second, with the exception above of the archaeological context of a wooden bird figurine found in an individual tomb in Yayoi Phase V rather than a residential area, the sacred attribution to a community leader is not clearly visible within the Yayoi. However, the attribution becomes explicit in Kofun iconography. In the Kofun period, the tombs of kings can be identified in huge burial mounds, and various types of *haniwa* pottery have been found in association with those burial mounds, probably representing the offerings. In the mid- to late Kofun period (AD 4th –6th century), pictures were drawn on the *haniwa*, especially on the cylinder-shaped types (Harunari 1999). Among 70 finds, 39 objects show deer and 20 have boat imagery (Harunari 1999: 207), also common subjects of the Yayoi image. The depiction styles are also similar, and the distribution is concentrated in Kinki, like the Yayoi pictures on pottery (Harunari 1999). There is a 200-year gap between the disappearance of the Yayoi pictures and the emergence of the Kofun pictures and it is therefore unlikely that there was a direct association between them (Harunari 1999: 216–217). Nevertheless, the commonness in the objects suggests that the iconic reference made by the deer and boat, which was probably the Spirit of the Crops, was handed down to this period (Harunari 1999). This indicates that, in the Kofun period, this reference was explicitly attached to the person of the king.

Above all, Yayoi iconography can be interpreted as showing the changing nature of the Yayoi community leader towards the ruling and sacred Kofun king. Furthermore, this transformation process can be linked to the crop-related activities at the Kinki style central building/arena. In order to demonstrate how this transformation took place, a case study of the Osaka Ikegami Sone site with a focus on crop related activities is presented below.

CASE STUDY: ARCHAEOLOGICAL RESEARCH AT THE OSAKA IKEGAMI SONE SITE

The author took a part of the 1995 excavation of the Osaka Ikegami Sone central arena and collected carbonised plant remains by the flotation method. Based on the analyses, crop related activities at the central arena were reconstructed and the social meanings are discussed below.

1) The site profile

The Ikegami Sone site, a representative Yayoi large moated settlement, is located on the Osaka Bay coast in the Kinki region (Figure 14). The area was one of the hubs of Yayoi culture, presumably due to its accessibility to Continental Asia and other Yayoi core areas. The settlement appears to have been first constructed in Yayoi Phase I and lasted till Phase IV (Ishigami 1977). Particularly during Phase II – IV, it became one of largest Yayoi moated settlements and at its greatest extent in the Phase IV, the whole sphere occupied 600,000 m² with an enclosed residential area of 110,000 m² (Inui 1996a: 18–20). The population at the time has been estimated at 500 to 750, but some argue that it reached 1,000 or even more (Inui 1998: 138–139). In addition, it has been shown that the Ikegami Sone was a regional centre surrounded by satellite settlements (Figure 15), alongside other central settlements of the area, located approximately every 4 – 5 km (Inui 1998). Archaeological research has suggested that, as the regional centre, this settlement controlled the circulation of raw materials of limited availability for commodities such as stone knives, though it did not reach the level of specialised manufacturer (Hachiya 1983; Sakai 1986). Archaeological patterning also suggests that the Ikegami Sone economy was based on reciprocal exchanges with other settlements, besides farming, and *iidako* octopuses were exported as the local specialty of the Osaka Bay (Kuze 1989).

In the 1995 excavation, the central building of 133 m² (19.4 m × 7.2 m) and the accompanying large well (2 m in diameter) with a roof structure were discovered in the centre of the enclosed residential area (Kambayashi 1996) (Figure 16). The central building has four ridgepole-pillars: two free-standing and two inner-building. In terms of the style and proportion, the building is believed to have been in the raised-floor style with a gable roof 9 m high at the apex, and a raised-floor 4 m high (Inui 1999) (Figure 17).

The excavations revealed that the central building was rebuilt three or four times in the same position within a comparatively short term: from the late Phase III to Phase IV (Akiyama and Kobayashi 1998: 10) (Figure 18; Table 5). Construction of the large well that goes with the building is estimated to have taken place in early Phase IV, based on the typology of pottery shards found in the outer fill of the well frame. This is the same time as when the second central building was constructed, and at that point the well appears to have also been rebuilt in the same position as the central building was rebuilt. This indicates that the central building and the well

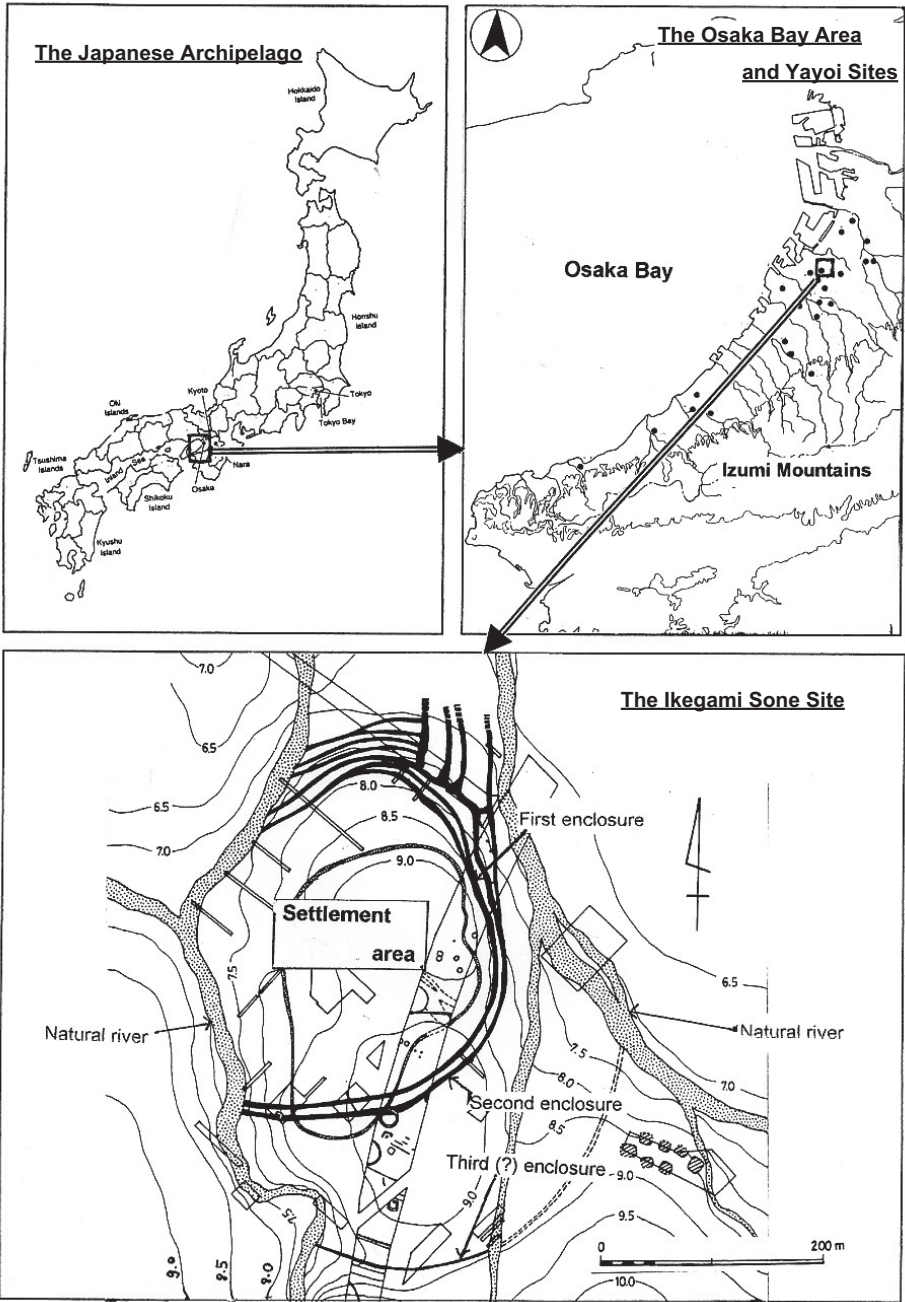


Figure 14 The Ikegami Sone Site (1).

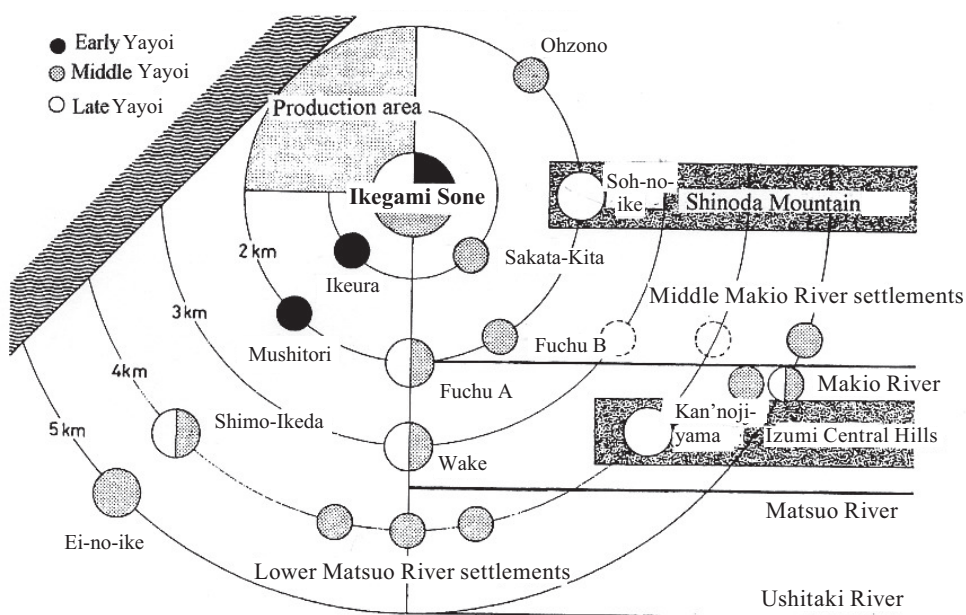


Figure 15 The Ikegami Sone Site and the Settlement Complex (From Inui 1996a).

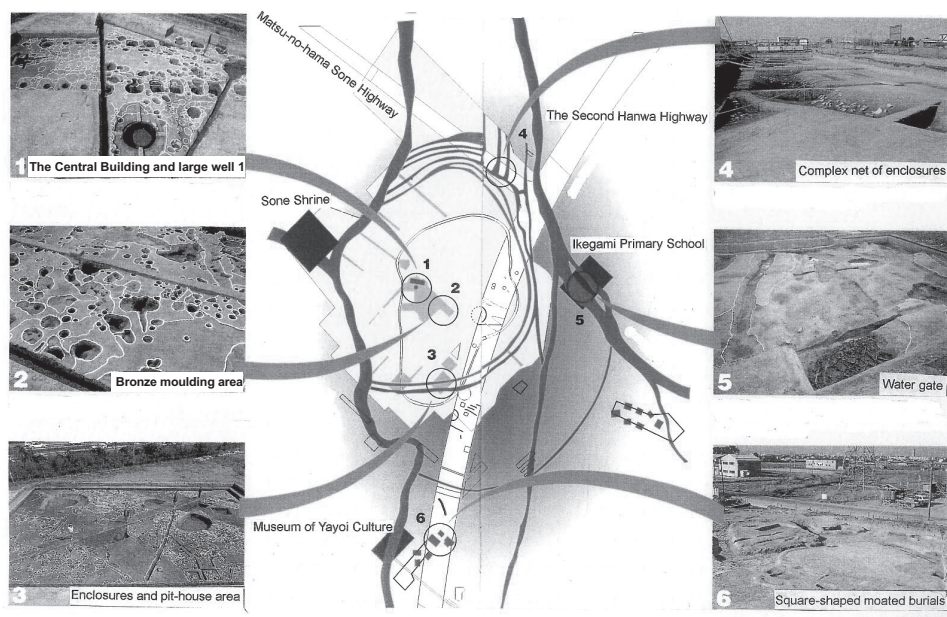
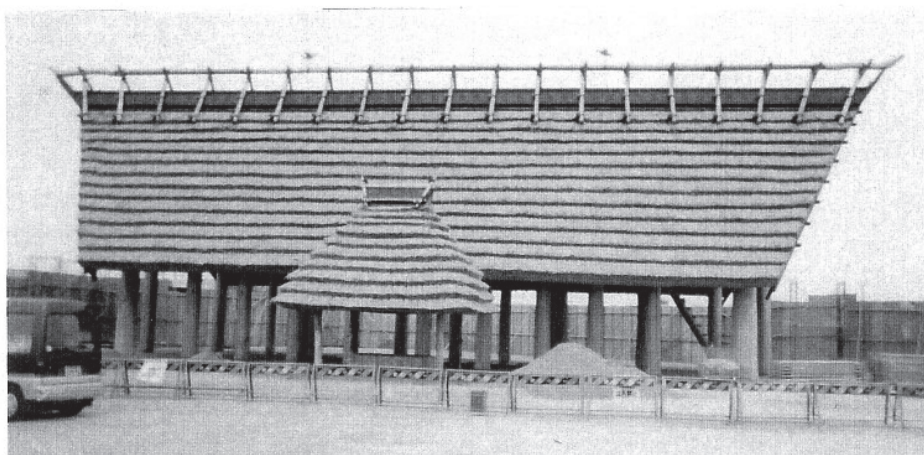


Figure 16 The Ikegami Sone Site (2) (From the Ikegami Sone Site Committee 1996).



Ridgepole-pillar

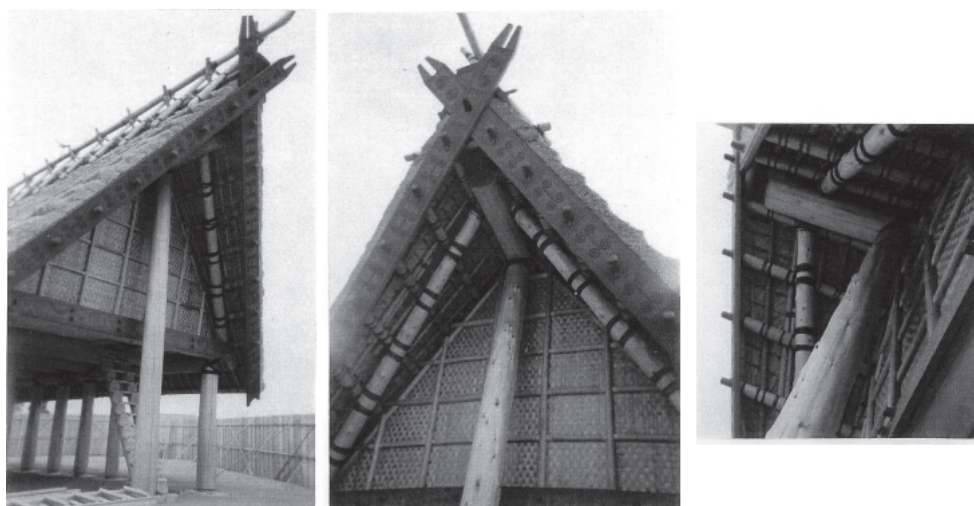


Figure 17 Reconstruction of Ikegami Sone Central Building.

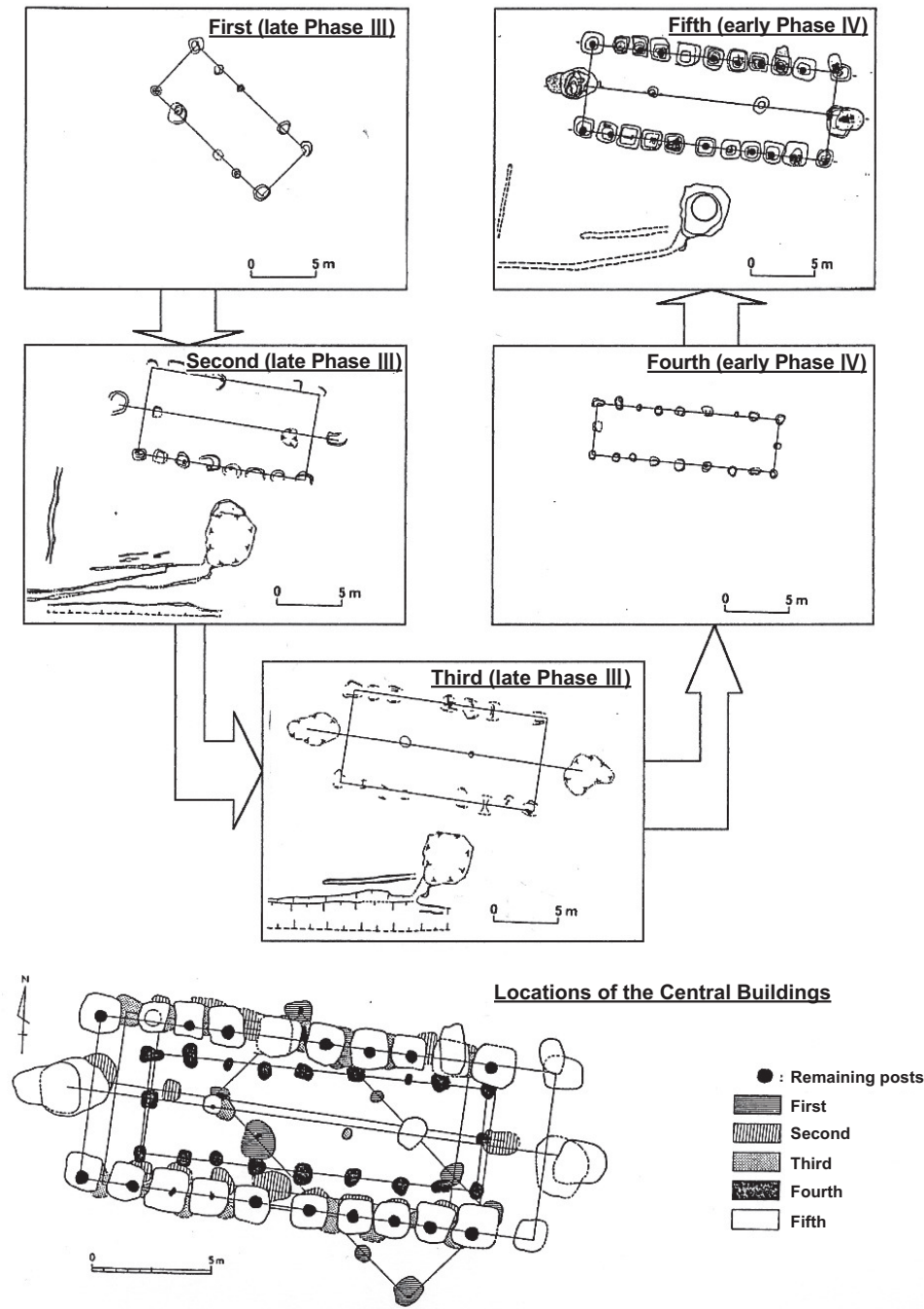


Figure 18 The Rebuilding of the Ikegami Sone Central Buildings.
(From Osaka Heritage Centre 1999)

Table 5 Central Buildings.

	Date	Scale (m ²)	Posts (No.)	Ridgepole pillars
First	IV-2 (late Phase III)	55	12	-
Second	"	87	16	4
Third	"	109	18	4
Fourth	IV-3 (early Phase IV)	57	20	-
Fifth	"	133	22	4
Abandonment	IV-4 (late Phase IV)			

were related facilities (Akiyama and Kobayashi 1998: 10). Eventually both facilities seem to have been abandoned at the same time, namely late Phase IV (Heritage Ikegami Sone Site Preservation Committee 1996: 24–25).

The space for the central building, *i.e.* the central arena, is demarcated from the pit-house area in south by a natural ‘valley’ (a linear dent) (Akiyama and Kobayashi 1998) (Figure 19). There is no common type of pit house within the central arena, but *hottate*-pillar buildings and several characteristic types of features have been found (Figure 20), such as pits of unfinished stone knives (Akiyama 1999a) and features related to bronze-moulding (Izumi City Education Committee 1998). In addition, two shards of pottery with pictures were found in the central arena, while two others were found in the residential area. The two found in the residential pit house area show deer (Phase IV) and a dragon (Phase V), whereas the two in the central arena both show buildings (Inui and Akiyama 1996) (Figure 21). Within the central arena, both shards were associated in particular with the central building spatially: one was found 20m south of the central building (Inui and Akiyama 1996) and the other in a pit of the central building (Akiyama *et al.* 1997: 31). The former picture (Figure 21: Building 1) shows a raised-floor building constructed of at least nine posts on one side and a gable roof. The latter (Figure 21: Building 2) shows a raised-floor building constructed with four-posts on one side and a gable roof, and special accessories: a balcony, roof decorations and a ladder with a handrail. These images are unique and are thought to depict the existing buildings of the Ikegami Sone central arena (Akiyama *et al.* 1997: 36; Inui 1999: 43). The shard with a picture of 4-post building (Building 2) is dated at early Phase IV based on the typology. The pit in which this shard was found is estimated to be older than the post holes of the existing central building. Thus, it is thought that the shard is from the time just prior to construction of this building (Akiyama *et al.* 1997: 40). On the other hand, the other shard (Building 1) is also dated Phase IV, and judging by the scale and style of the depicted building, it is assumed to be a representation of the existing central building (Inui 1999: 43). Their apparent association with the central building in Ikegami Sone provides substantial support for the argument that there is a relationship between the building depicted on the pottery and the actual central building.

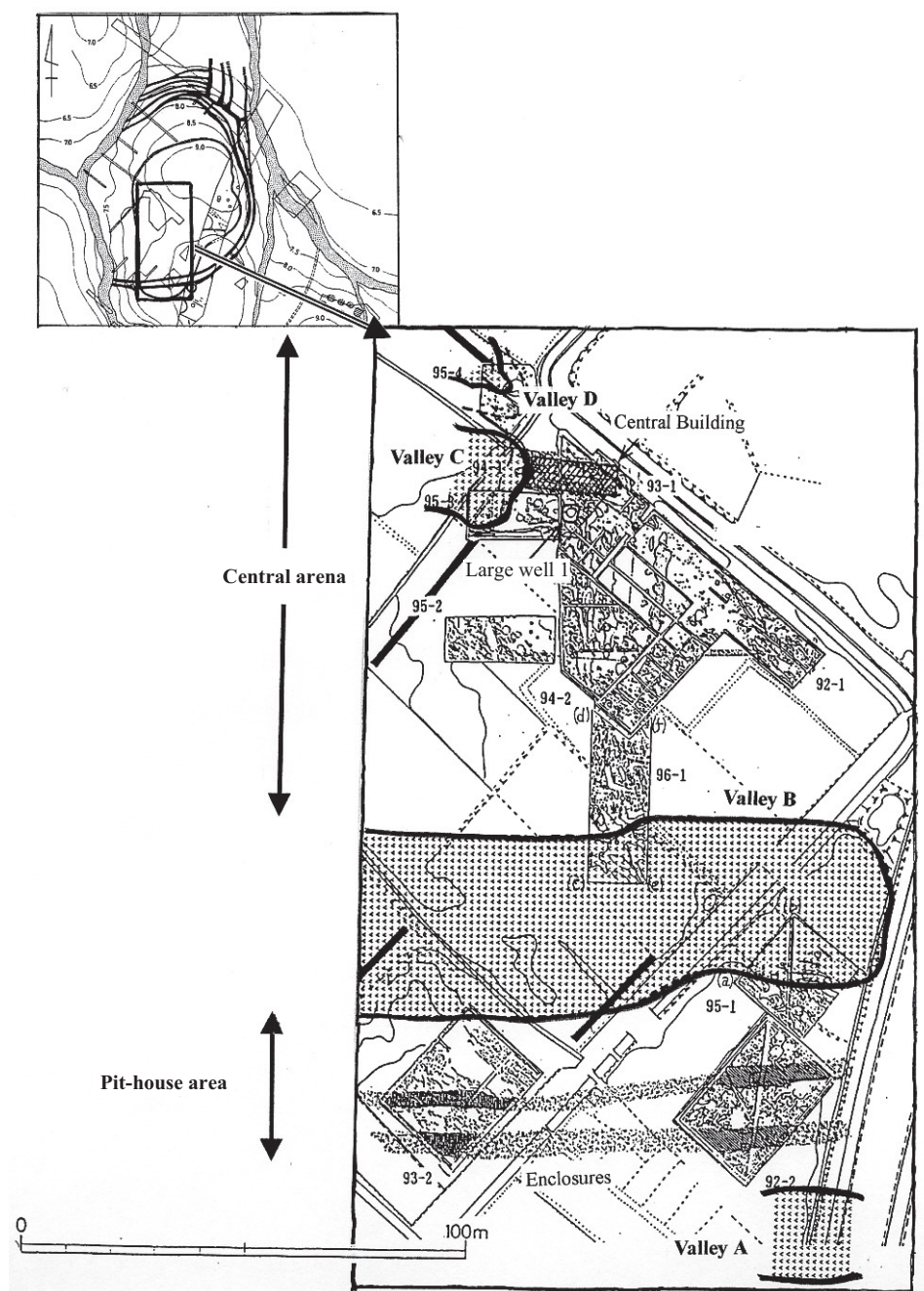


Figure 19 The Ikegami Sone 'Valleys'.
(From Akiyama and Kobayashi 1998)

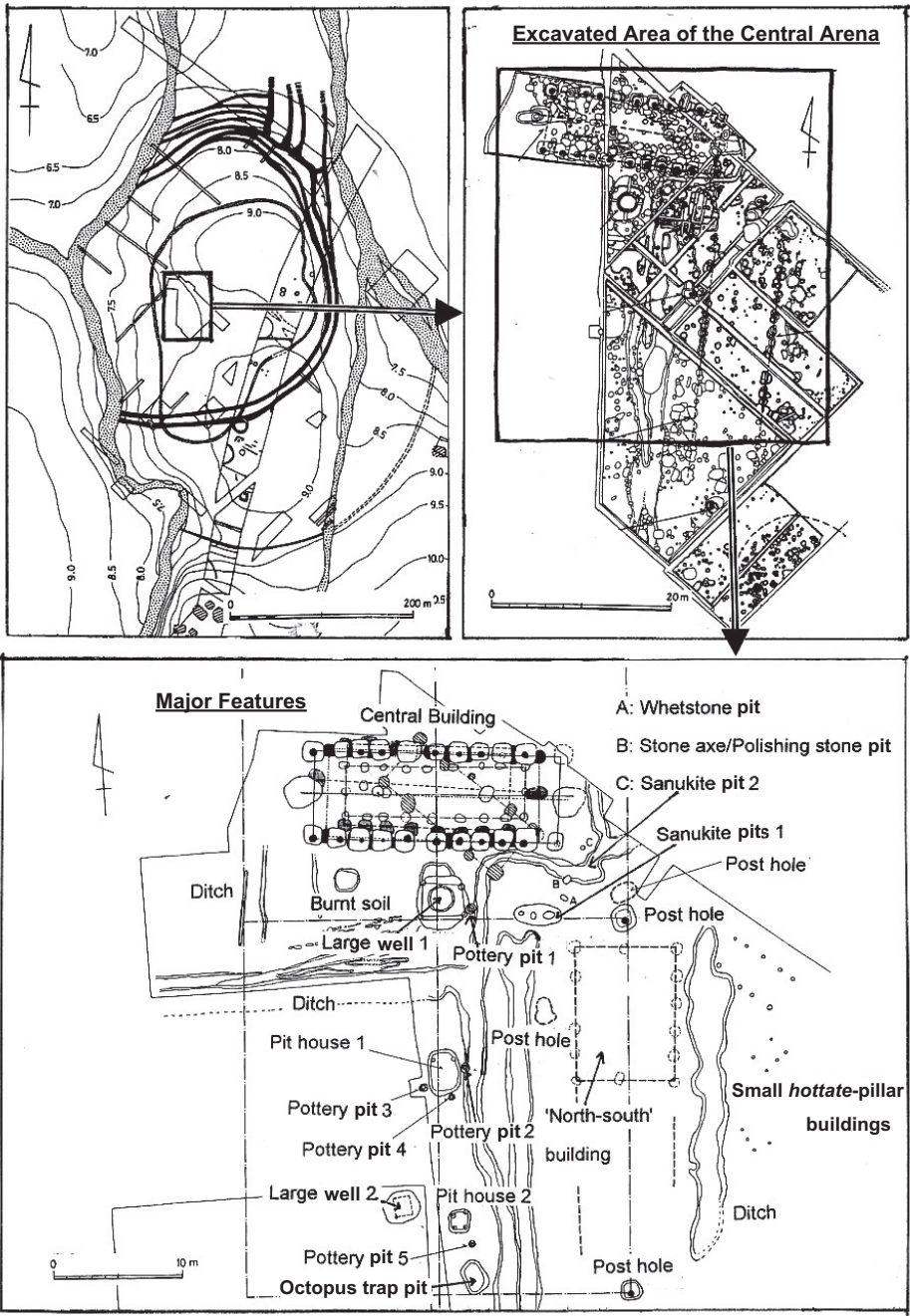


Figure 20 The Ikegami Sone Central Arena.

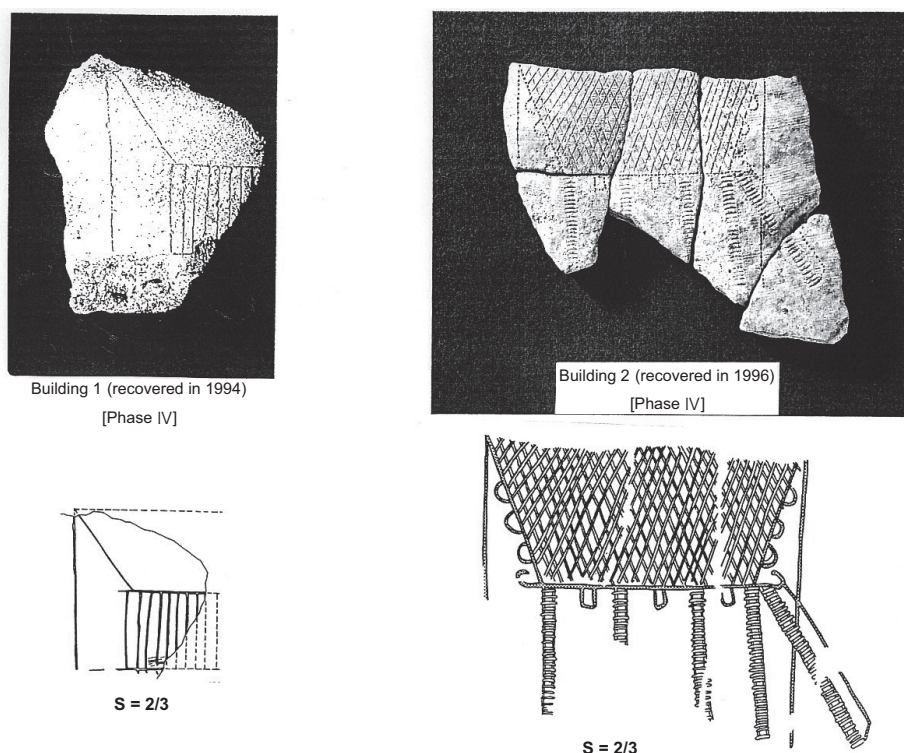


Figure 21 Ikegami Sone Pottery Iconography (From Heritage Ikegami Sone Preservation Committee 1997).

2) Sampling area and strategy

In the 1995 excavation, 750 m² of the central arena was excavated. The excavated area was divided in two sections: Area I and Area II (Figure 22). Area I included the central building and a large well, and also a characteristic pit containing a large pottery jar in an upright position with the edge and bottom removed. The function of this pit as ritualistic or as a small well has been a topic of discussion. (Akiyama 1999b; Inui 1999). In addition, previous excavations revealed an group of three pits east of the large well, that contained a large amount of Sanukite⁸⁾ flakes which had been prepared for making stone knives (Figure 23); a stone axe and a polishing stone; and a whetstone—all of which comprise the whole set of stone knife making components (Inui 1999) (Figure 20). As mentioned above, the archaeological evidence has suggested that the Ikegami Sone community did not reach the level of specialised manufacturer of tools. Instead, these features probably indicate a control centre for circulating rare materials over the region, in a state ready for the making of stone knives (cf. Hachiya 1983; Sakai 1986).

Area II includes three groups of features. Two of those groups are assemblies of a small pit house (3.6 m × 2.4 m) (not believed to have been for residential use due

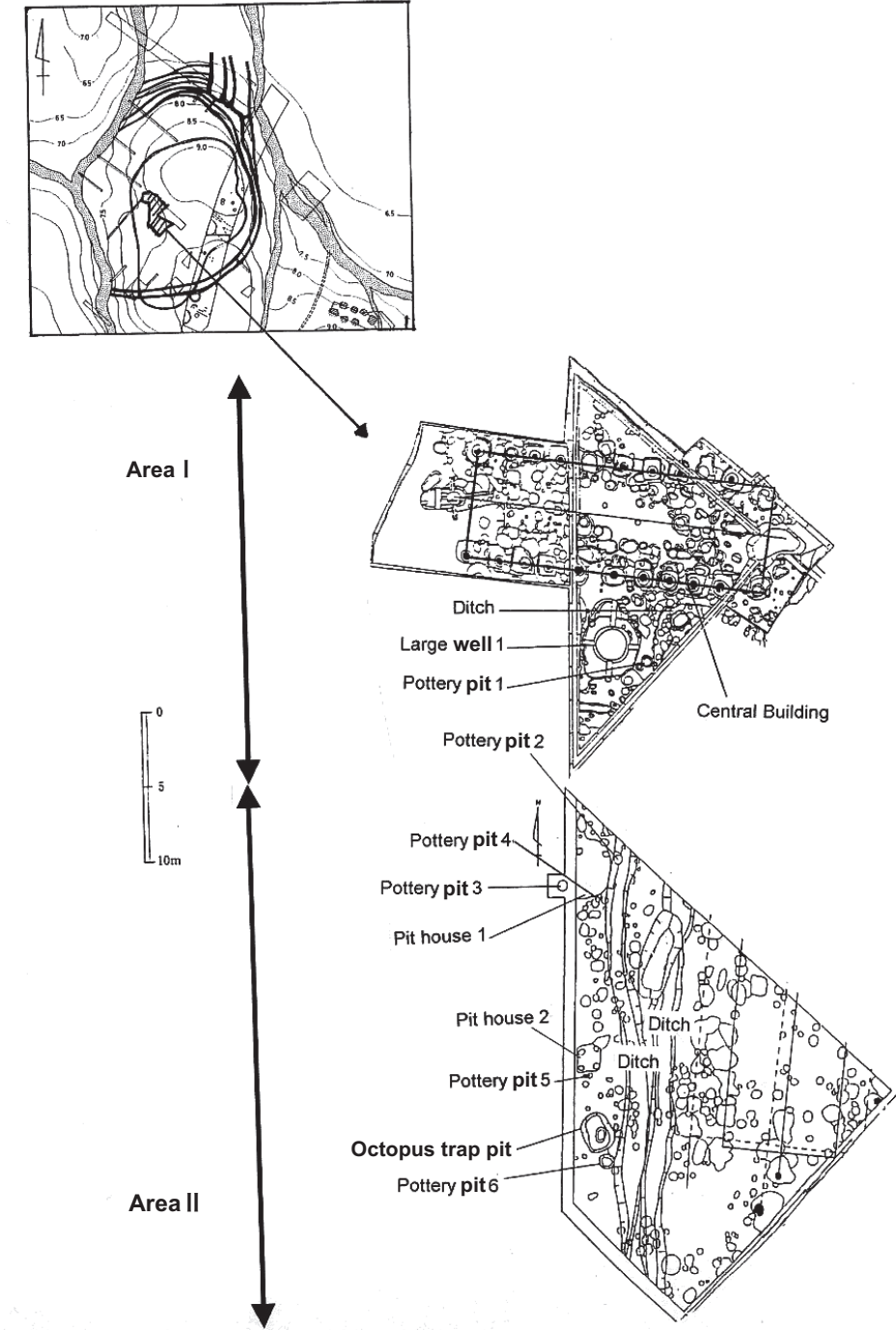


Figure 22 Sampling Areas in the Ikegami Sone Central Arena.

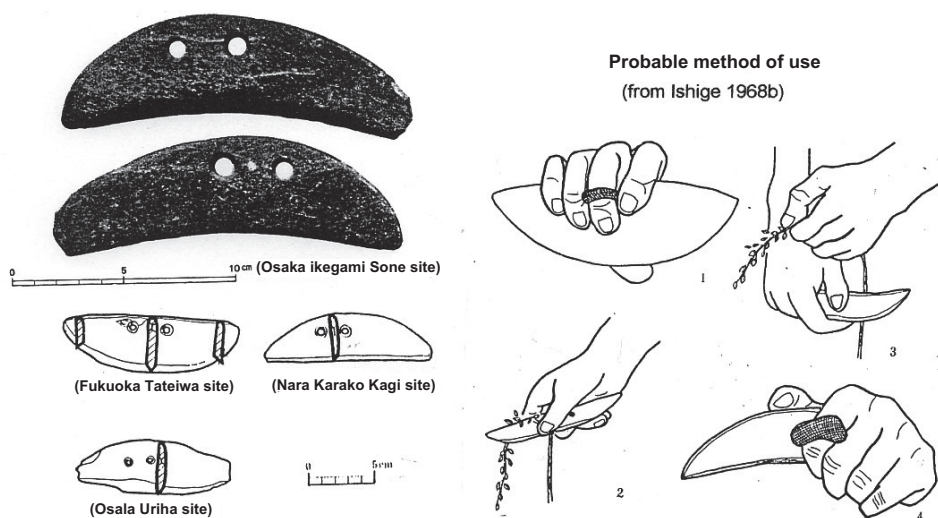


Figure 23 Yayoi Stone Knife.

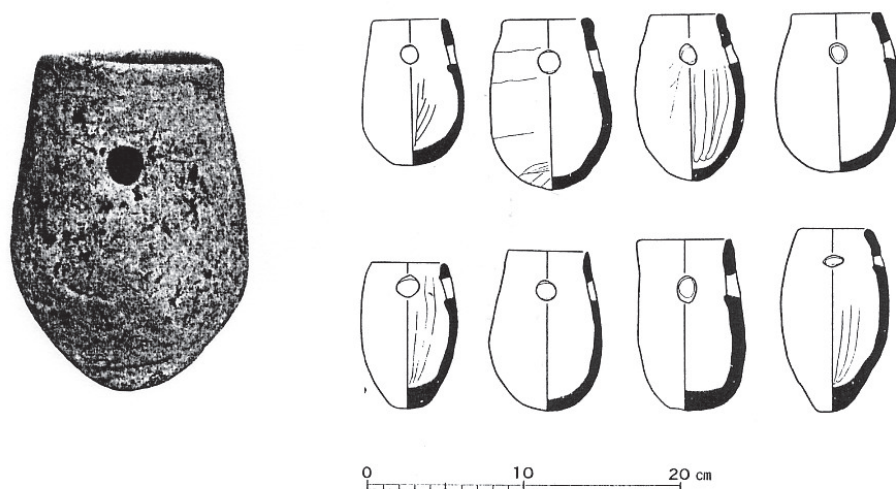


Figure 24 Ikegami Sone Octopus Traps (From Osaka Heritage Centre 1979).

to its extremely small size) and pits containing large pottery jars in the same state as that in Area I. The other group, besides also having a pit with a large pottery jar, included a square-ish pit (2.5 m × 2 m × 4 m in depth) containing more than 40 ceramic octopus traps (Figure 24). The size of those traps indicates that they were for catching *iidako* octopus (Kuze 1989), which are presumed to have been the special export of Ikegami Sone. Area II also included part of a large *hottate*-pillar

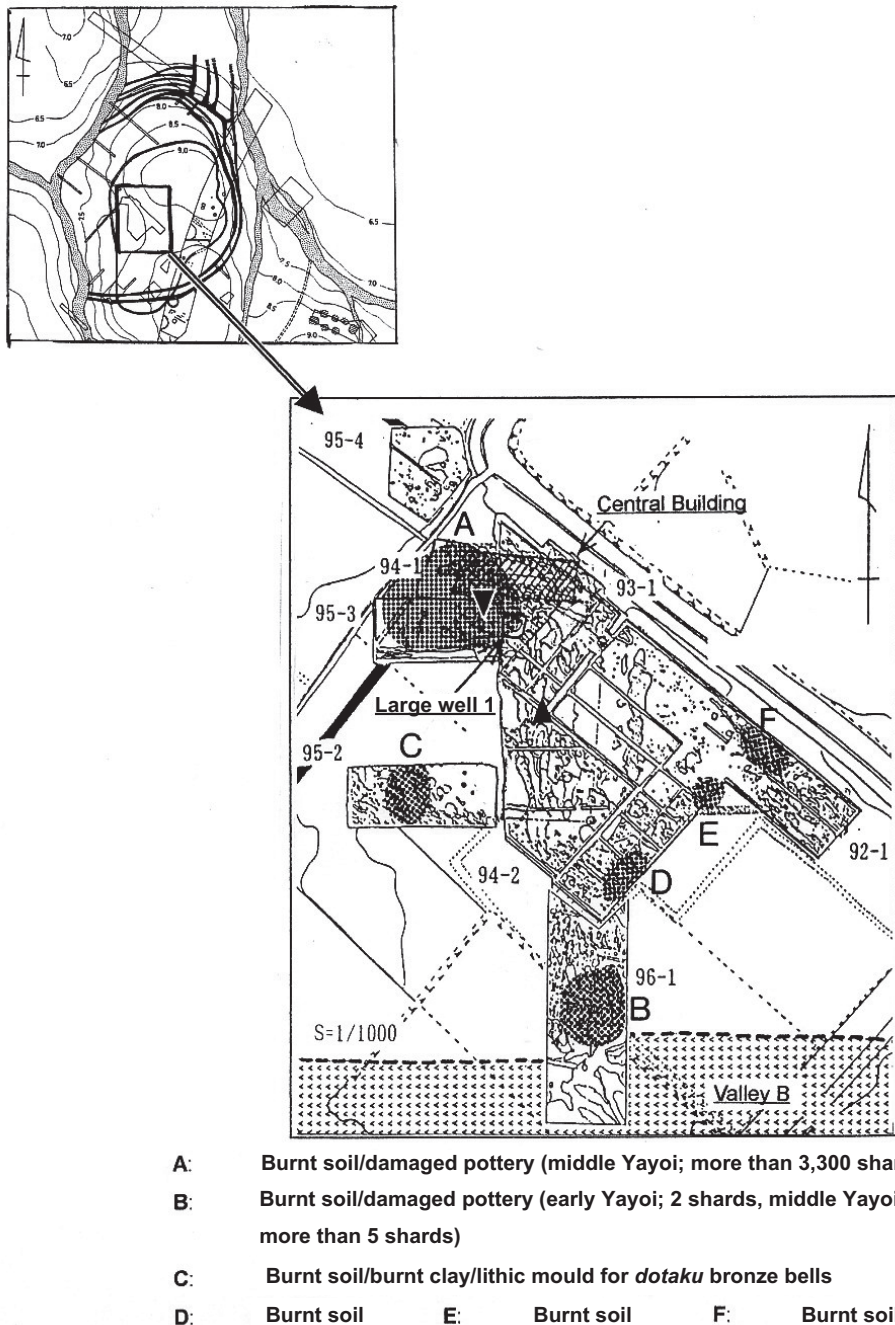


Figure 25 The Ikegami Sone Distribution of Features and Artifacts Related to Bronze Moulding (From the Izumi City Education Committee 1998).

building in the east which may have formed a complex with the central building (Inui 1997a). In general, both areas contained numerous pits besides those specific features.

It has also been inferred that metal moulding was carried out in the central area, based on finds of burnt soil, pottery deformed by heat, and the remains of moulds. The metal moulding finds of Ikegami Sone were indeed concentrated within the central arena (Izumi City Education Committee 1998) (Figure 25). Questions have been raised as to whether the moulded material was bronze or iron. Judging by the fact that all the moulds found thus far are for *dotaku* bronze bells, bronze production is considered more likely (Arii *et al.* 1999: 149).

Soil samples for the archaeobotanical analyses were mainly collected from the Yayoi Phase IV layer, which was the final period of the existence of the central building. Collection was made from all the special features shown above as well as from as many pits, postholes and ditches as were available to evenly cover all the areas. The sample size was 10 to 15 litres each, and a total of 114 samples from Area I and 72 samples from Area II were collected.

A flotation machine with a 0.25 mm sieve (Figure 26) was applied to extract carbonised plant remains. Identification of the plant remains was carried out in the George Pitt-Rivers Laboratory, McDonald Institute for Archaeological Research,

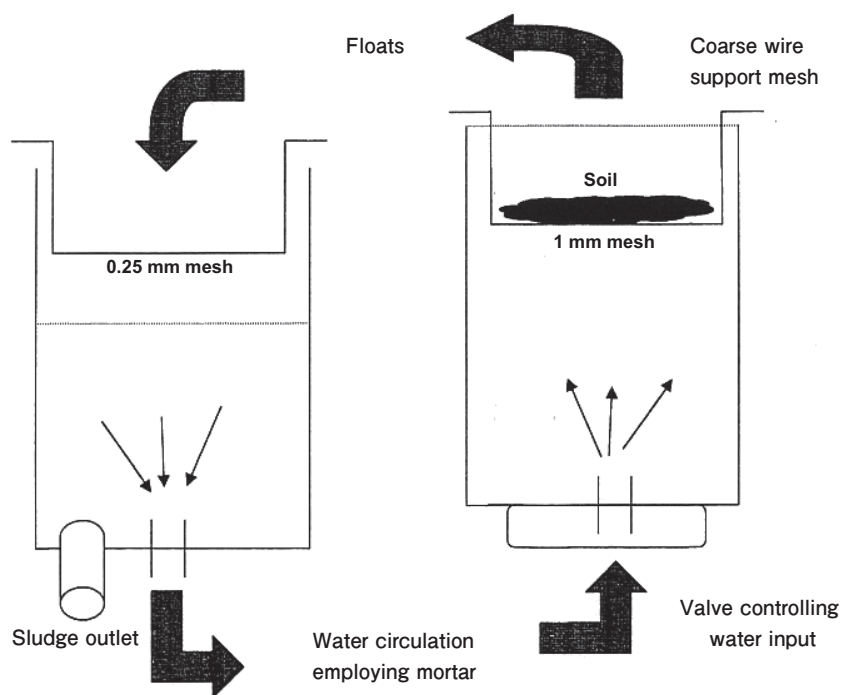


Figure 26 The Flotation Machine Used in This Research.

University of Cambridge with a stereomicroscope.

3) The data analyses

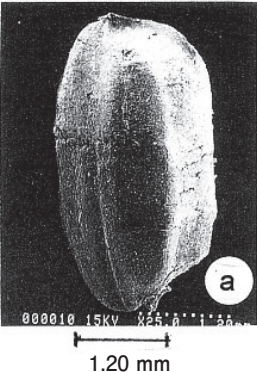
An overview of the central arena and plant-related activities

The general character of the plant remains was first compared between Area I and II. Table 6 presents both the total count and proportion of the recovered seed and chaff remains in those areas. The patterning in the proportion is similar in Areas I

Table 6 Absolute Count and Relative Abundance of All Seed and Chaff Remains.

	Seeds	Chaff	SUM
Area I	3793	1507	5300
	72%	28%	
Area II	1898	527	2425
	78%	22%	

Rice (*Oryza sativa* L.)



Rice Glume Base

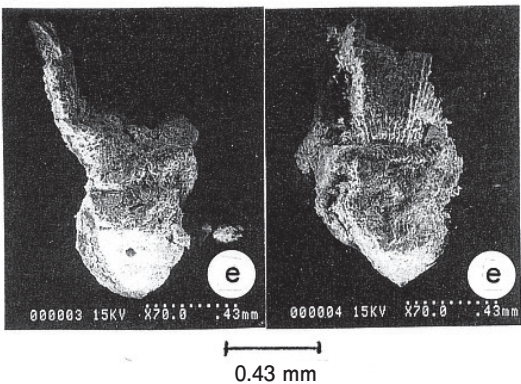


Figure 27a SEM photos of a rice grain and rice glume bases.

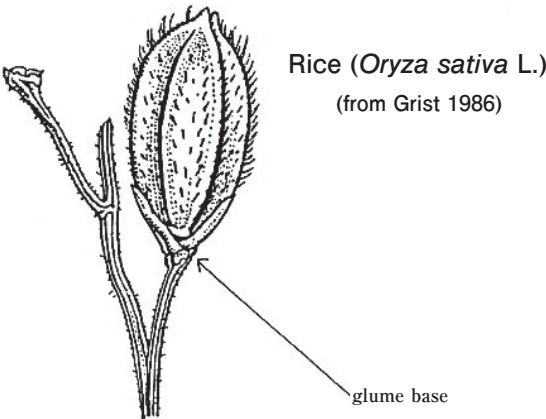


Figure 27b Rice Glume Base.

and II: seeds occur approximately three times as frequently as chaff. Studies show that chaff is generally less likely to be preserved than grains (Boardman and Jones 1990) so this pattern may not directly reflect the actual proportion at the time of deposition. Approximately 97 % of the chaff was identified as rice glume base (Figures 27a, 27b), and a small number of miscellaneous rachises were also recovered. However, no lower stem was found. The rice glume base was also the only identified spikelet type of chaff recovered in the Ikegami Sone central arena, though a certain number of millet grains were also recovered. Among the seeds, weeds (plants not identified as food plants) slightly outnumbered food plants in both areas. Rice grains dominate the food plants in both Area I and II accounting for approximately 90 %.

The low number of the lower plant parts, such as stems and culm nodes, cannot be explained as serving as animal fodder. The single possible domesticated animal known from Yayoi contexts is the pig, which is typically fed the soft parts of plants such as the husks rather than the stem parts (Hosoya 2007). Thus, the dominance of the upper plant parts in these contexts probably represents the original composition of the plant remains. This pattern appears to indicate that the Yayoi harvesting methods involved panicle-cutting (Hosoya 2007; Thompson 1996). The likely explanation for the overwhelming dominance of rice both among chaff and food plant grains is that rice was used more intensively than other food plants in the activities of the Ikegami Sone central arena. The proportional dominance is too high to be simply explained as a preservation bias.

More about the nature of the plant-related activities in the Ikegami Sone central arena was interpreted from analyses of the ratio of food plant seed, glume bases and weed seeds, using the method designed by Stevens (1996) to observe the distribution of typical by-products from different stages of crop processing (Figures 28, 29). Although this method was designed for wheat processing, it is applicable to the present analyses which focus on rice, because the ethnographic evidence (Hosoya 2007; Thompson 1996) indicates that the basic processing sequences are common to both wheat and rice. The ratio of grains to weed seeds (Figure 28) and large weed seeds to small weed seeds (Figure 29) indicate typical types of crop processing carried out at the sampled space. Given that rice was obviously the main crop in the Ikegami Sone central arena, the analyses focus on the rice processing sequence, and the classification of weed seeds was made according to the size of the rice grains. The size of the rice grains recovered from the Ikaegami Sone central arena was almost uniform: 4.5 mm long and 2.5 – 3.0 mm width. This size fits Nagamatsu's standard (1977: 326) for the japonica type. Accordingly, weed seeds smaller than 2 mm are classified as 'small weed seeds' and those larger than 2 mm are as 'large weed seeds'. Among the seeds collected, the former include *Chenopodiaceae* and *Polygonaceae* and the latter include *Poaceae* and *Rubiaceae*. Referring to Thompson's (1996) ethnographic research on rice processing in Thailand, small weed seeds are likely to represent coarse sieving, whereas large weed seeds represent fine sieving or pre-cooking hand sorting. The logged ratio⁹⁾ of glumes to

grains indicates whether the crops were husked and the crop dehusking took place at the area. In the analyses, samples with less than 15 grains, glume bases or weed seeds were omitted to avoid the over-representation of a small number of items (cf. Stevens 1996). Different types of features, namely pits, postholes and wells, are indicated in the figures.

The results indicate that the general distribution of plant remains is similar in Areas I and II. First, in both areas, the measurement of the grain-weed in proportion

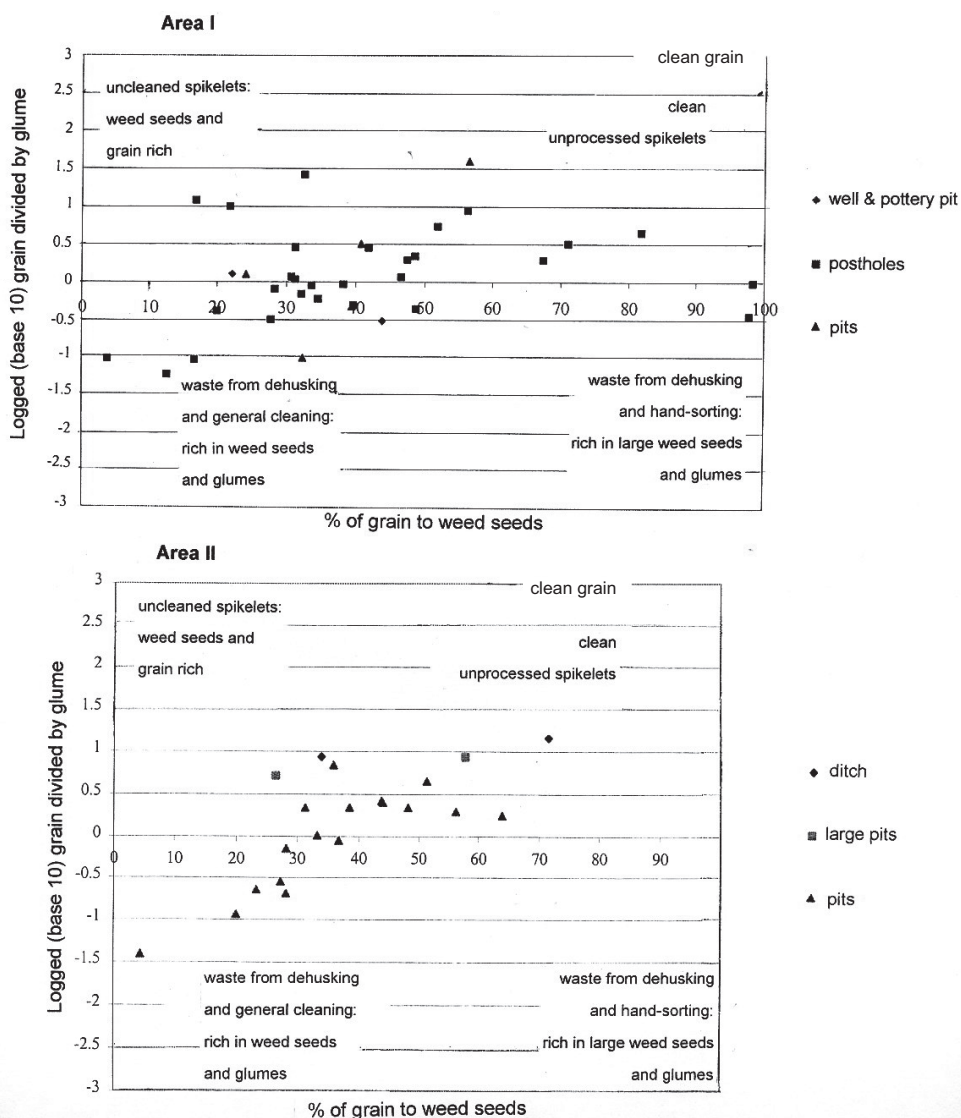


Figure 28 The Distribution of Plant Remains in the Ikegami Sone Central Area (1).

to the grain-glume ratio (Figure 28) indicate that weeds are typically more common than grains, and grains are more common than glumes. The proportion of grains appears slightly higher in Area II than in Area I. It is notable, however, that although not the majority, there are samples with a markedly high proportion of glumes to grains. Considering chaff's susceptibility to breakage, these samples probably contained a relatively large number of glumes in their original state. Second, the large-small weed seed proportion (Figure 29) showed a markedly higher proportion

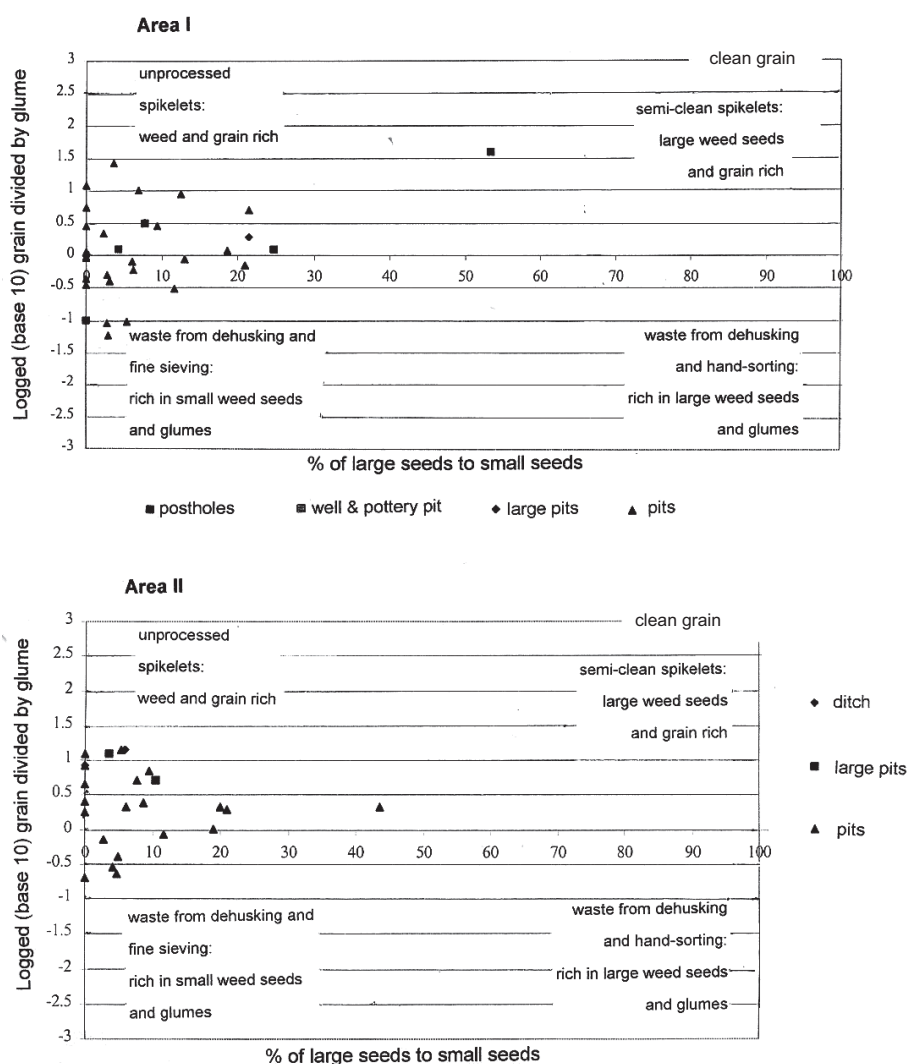


Figure 29 The Distribution of Plant Remains in the Ikegami Sone Central Arena (2).

of small weed seeds.

The high proportion of small weed seeds provides evidence that these samples represent the by-products of coarse sieving, which happens just after the dehusking sequence. This kind of sieving is also likely to produce typical dehusking by-products, i.e. glumes and broken grains (Hosoya 2007), and indeed, as shown above, the Ikegami Sone samples include considerably large numbers of rice glumes. Given that dehusking typically occurs just before consumption (Hosoya 2007; Thompson 1996), it is probable that the central arena plant remains represent stored grains rather than crops brought directly from the harvest. It is thus inferred here that the Ikegami Sone central arena was a venue exclusively for the post-storage stages of the crop processing sequence.

Setting the micro contexts

For detailed spatial analyses in order to link plant-related activities with specific features of the Ikegami Sone central arena, Areas I and II are further classified into several micro contexts. Table 7 presents the classification, which was basically made on spatial position; however, several micro contexts: I-1, I-5 and II-6 were divided for their characters of features. I-1 is a posthole of the central building, and the bases of the posts were found remaining within those holes. Postholes are filled by posts while the building is in use, consequently the plant material in those contexts was likely deposited either before or after the use of the building. In the Ikegami Sone case, the posts were not pulled out, so it is likely that the plant remains were deposited at the time that the building was constructed. Thus, in this context, the plant remains probably represent activities which occurred in the area before the construction of the existing central building. On the other hand, in the I-5 and II-6, *i.e.* the large well and the octopus pits/pits of large jars, the plant remains were presumed to represent activities during or after the abandonment of the central arena. The large well and pits containing large jars, which are also interpreted as small wells, are likely to have been regularly cleaned during use to fulfil the

Table 7 Chronology of the Ikegami Sone Central Arena Micro Contexts.

Central Building 4		I-1 (Central Building post holes)
Central Building 5	Phase IV	I-2 (Central Building pits) I-3 (pits: Area I north) I-4 (pits: Area I south) II-1 (pits: Area II northwest) II-2 (pits: octopus trap pit area) II-3 (pits: Area II south) II-4 (pits: 'north-south' buildings south) II-5 (ditch)
Abandonment		I-5 (Large well 1 & pottery pit) II-6 (Octopus trap pit & pottery pit)

function of a the well. In the case of the large well, analyses of the fill showed the high possibility of regular cleaning. Thus the deposit of the plant remains is likely to have occurred at the time of the abandonment of the features rather than during their use. In the case of the octopus trap pit, the deposit also appears to have occurred in the time of abandonment of the area, since the octopus traps in the pit are interpreted as having been left buried when the area was no longer used. In micro contexts other than those three contexts, the plant remains are presumed to represent activities during the use of the central arena with the existing central building.

A comparison of the micro contexts (1)

A comparison among micro contexts was made using the Jones' (1985) methodology with triangle diagrams to show the proportions of selected components of plant remains. First, the proportion of food plant seeds, weed seeds and chaff was calculated and analysed (Figure 30). Some distinct patterns are evident in Area I, while no distinct patterning was seen in Area II. In Context I-1 and I-2, i.e. the central building post holes and associated pits, notably high concentrations of chaff that outnumbered the food plant seeds was found. In the sampled area, 34 % of all recovered chaff was from these contexts. As shown above, most of the chaff has a rice glume base. In Context I-4 and I-5, i.e. the southern part of the central building and the large well, the numbers of plant remains are large but the proportions of the food plant seeds, chaff and weeds are almost even. In more detailed analyses,

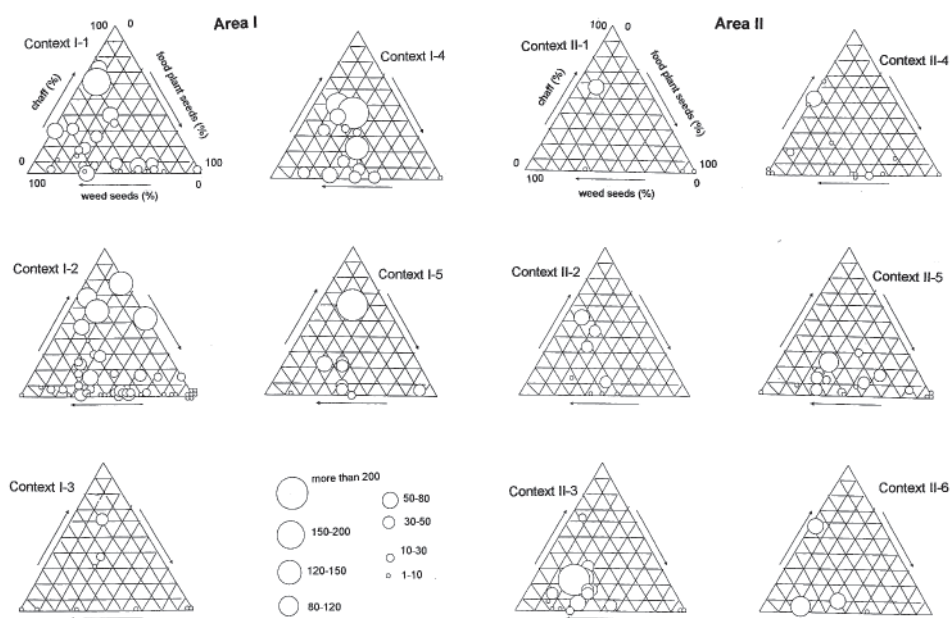


Figure 30 Ikegami Sone Central Arena Micro Contexts.

however, these two contexts show a different character. Namely, while Context I-4 includes some spots of chaff concentration, Context I-5 shows less of that, and its food plant remains are dominated by millet which can be distinguished from the generally rice-dominated central arena context. Not only does Area II fail to show distinct patterning, but the amount of plant remains per sample is smaller than that in Area I overall, except for the comparatively plant-rich Context II-3: in the pits in the south part of the area the major plant component is rice seed.

A comparison of the micro contexts (2)

Rice grains and different sizes of weed seeds were used (Figure 31) in the second comparative analysis of micro contexts. For the analysis, the ratio of large weed seeds and small weed seeds and rice grains was examined; the classification criteria were the same as that shown in the previous section. The classification is concerned with reconstruction of sieving activities as discussed above.

The results show that in general, in both Areas I and II, the proportion of rice grains and small weed seeds is consistently large compared to the small proportion of large weed seeds. One exception is in Context I-5: the large well, where the proportion of large weed seeds is large. In addition, in Context I-1: the postholes of

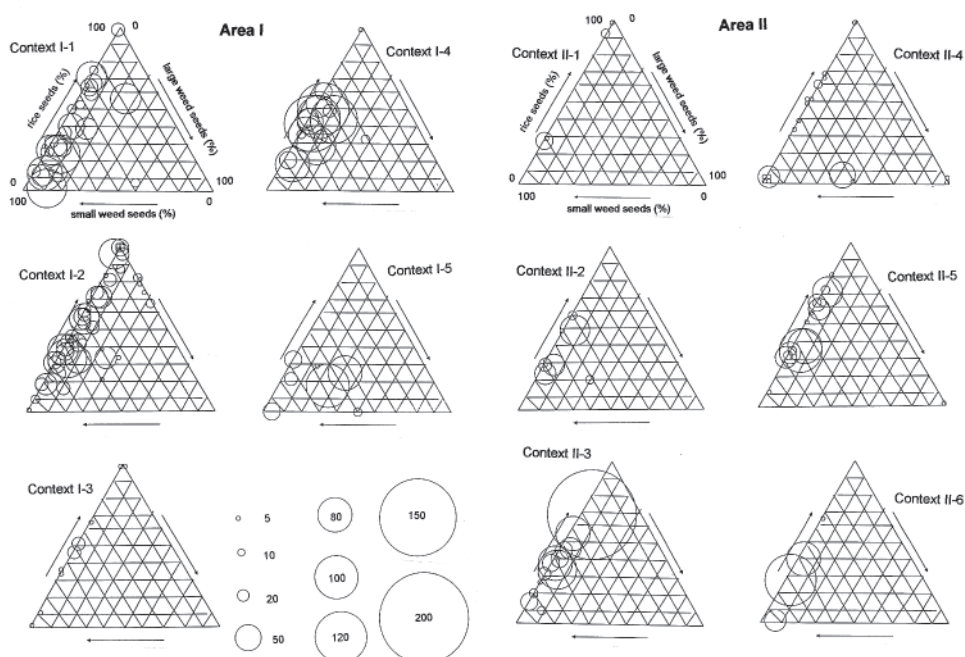


Figure 31 Food Plant Seed/Chaff/Weed Seed Ratio in the Ikegami Sone Central Arena.

the central building, where the proportion of rice grains is comparatively small.

Activities at the Ikegami Sone central arena

Plant-related activities in the central arena, particularly in connection with the central building are discussed based on the comparative analyses of the micro context plant remains above. The concentration of chaff, mainly comprised of rice glume bases, in the micro contexts associated with the central building is likely to indicate that the reconstructed post-storage crop processing activities in the Ikegami Sone central arena, *i.e.* rice dehusking and the ensuing sieving/winnowing were most intensively associated with the central building. Studies show that when plant by-products are transferred from an activity area to other places for secondary use, such as fuel or disposal, the light chaff may become damaged by the movement due to its brittleness and hence be underrepresented at depositions (Fuller 1999). Therefore, the best explanation is that the central building was the place for *in situ* disposal of the by-products from rice dehusking and the subsequent winnowing/sieving. A high concentration of rice glume phytolith in the central building (Toyama 1996) strongly supports this hypothesis.

Furthermore, it was observed that not only Context I-2, the central building pits, but also Context I-1, the plant remains from the central building post holes, show the same tendency of *in situ* rice dehusking – sieving/winnowing by-products, namely high proportions of rice glume bases and small weed seeds. As shown above, the plant remains from the post holes are likely to represent activities that took place prior to the construction of the existing central building. Through archaeology we know that the central building was rebuilt three or four times in the same position, so this archaeobotanical patterning suggests that the dehusking activities were associated with the previous buildings as well as the existing central building. On the other hand, Context I-5's large well shows distinctively different patterning from other Area I micro contexts; there is a lower chaff concentration and fewer less of rice remains and small weed seeds. As already explained, the well context is likely to indicate activities at or after abandonment of the central building. Therefore, the different tendency in plant remains from the Context I-5 probably show that the rice dehusking – sieving/ winnowing activities were distinctly associated with the central building, and not carried out after the abandonment of the building.

The context I-5 plant remains indicate another aspect of activities at the central building. Millet, which is the second most common food plant in the central arena, was recovered in high proportions in Context I-5. Given that this context is likely to indicate activities that took place after the abandonment of the area, millet was found especially among the debris deposited after the abandonment of the central building. One possible explanation for this pattern is that, although millet was not intensively processed in the central arena, it was associated with Area I and carbonised in abandonment of the building. The most likely scenario is that the millet was stored in the central building and the spillage (cf. Hirose 1998a: 75) and/or spoilt grains (cf. Thompson 1996: 140) were swept up and burnt at the end of

each phase of the central building. This indicates that the Ikegami Sone central building, which is supposed to have been in the Kinki style raised-floor granary shape, indeed had the functions of a granary. Considering that the processed rice was probably stored as grains rather than as crops brought directly from the harvest, there is the high possibility that rice ears were also regularly stored in the central building.

In Area II, the patterning of the plant remains is generally not so clear as in Area I, and thus different routes of plant carbonisation need to be considered between these areas. Although Area II generally shares general tendency of by-products from the series of dehusking activities, such as a high proportion of small weed seeds, the amount of plant remains is much lower than Area I and is the lack of the chaff in particular. This may show that Area II plant remains represent the secondary disposal of the crop processing carried out in Area I. Secondary disposal may simply encompass the removal of the by-products from the activity area for cleaning, and/or a purposeful transferring for secondary use, such as fuel. Context II-3, the pits in the south part of Area II, which produced the richest plant assemblage among the Area II contexts, is near what was apparently a metal moulding area (Figure 25), a space which likely experienced the frequent use of fire. Thus, the use of the plant by-products as fuel is a reasonable assumption particularly in this context. If the Area II plant remains, at least in Context II-3, represent plants burnt as a fuel, the underrepresentation of light chaff compared to grains can be explained by the fact that light chaff easily burns to ash, in addition to its expected loss by transferring. This assumption also suggests that the intensive rice processing activities at the central building and the manufacturing activities in Area II had a substantial connection.

4) Interpretation of the social role of the Ikegami Sone central arena

The above archaeobotanical reconstruction of the activities of the Ikegami Sone central arena indicates that the central building served as a part of the agricultural cycle. The patterning in the plant remains from the central arena indicates that dehusking and the subsequent sieving/winnowing were distinctly associated with the central building. While these activities are a regular part of the crop processing routine, the above analyses of Yayoi iconography raises the possibility that the dehusking stage served as a metonymic representation of the agricultural cycle. Thus, the central building may have been involved in the agricultural cycle both practically and symbolically. It was also inferred from the iconography that during Yayoi Phase III–IV the metonymic representation was transferred from the dehusking activity to a raised-floor building. This raised-floor building may have indicated the central building, as already discussed. Accordingly, the present archaeobotanical reconstruction suggests not only a substantial association between the central building with the crop dehusking stage but also that the central building served as a material metaphor for and a dynamic element in the agricultural cycle. The fact that the central building was a metaphor for the dynamic agricultural cycle

probably highlighted the significance of both the raised-floor granary and rice, as primary elements of the middle-late Yayoi storage system, having the practical and symbolic aspects. From this point of view, the dehushing of rice can be inferred to have become imbued with ceremonial significance in tandem with its role within the crop processing activity routine.

Turning to the results of archaeological research at the Ikegami Sone central arena shown above, several types of manufacture-emphasised activities were reconstructed. From the artefactual evidence, the activities identified include stone-knife material circulation, octopus fishing and *dotaku* bronze bell casting. The first two are thought to have served inter-community material exchanges, and the third was used in community rituals. All the activities that are reconstructed here are explained as having a community basis, which supports the working hypothesis that the central building context functioned to emphasise community unity.

Given that the archaeobotanical analyses of this context show that a series of post-storage type crop-processing activities were carried out in the central building, it is suggested that the central building was routinely used in the agricultural sequence. It can indicate that community unity, which is attributed to the central arena, was reinforced through these repetitive activities. At the same time, the influential role of the community leader was also emphasised through those activities as it is likely that the leader organised the community-based activities.

In summary, the central arena appears to have been a demarcated space where the community leader was wholly influential. At the same time, the space represented a place where community members regularly came together as part of their day-to-day lives. On this basis, activities within the central arena most likely formed a coherent field of discourse within which the social code, which emphasised centralised power and communality, was routinely reproduced and reinforced.

DISCUSSION AND CONCLUSION: THE CENTRAL BUILDING AND THE EMERGENCE OF A POWERFUL LEADER

The Ikegami Sone illustrates an example of the association with the central building/arena of the manufacturing of commodities for exchange and metal moulding activities. As Akiyama (1999a) argued, manufacturing activities are likely to have been ‘additional attribution’ within the central arena, i.e. these activities were not exclusively assigned to this space, but were also conducted in other settlement spaces. The character of the central arena is thus shown to encompass the co-existence of these ‘additional’ activities alongside activities that were deemed to this context, i.e. bronze casting. This pattern suggests that what was unique for this space was not the types of activities themselves but the underlying discourse which unified those activities. The fact that the manufacturing of goods for exchange was a part of the central building discourse suggests that the common underlying code was community unity. This Ikegami Sone pattern cannot be simply generalised to other

Kinki cases. Nevertheless, judging by the factors common to the Kinki central building/arena, namely 1) being the Yayoi's first archaeologically defined facility shared by a community and 2) its association with routine types of activities as well as exclusive ones, a similar discourse appears to have been common among the Kinki Yayoi settlements.

On this basis, it is significant that the post-storage crop processing sequence was reconstructed at the Ikegami Sone central arena. This suggests that the central building/arena discourse was situated within the agricultural cycle. Accordingly, over time the discourse likely gained regularity. As people routinely returned to this space and repeated the same sequence of activities of the agricultural cycle, probably the code of the discourse, namely the community unity, was constantly 'brought into being' (Barrett 1988: 7). The central building/arena thus came to represent both a control over time and the permanent assurance of community reproduction. Thomas (1988) discusses this type of discerned space:

Once created, these items (and presumably others lost to archaeology) serve as constant reminders, reproducing ideas by their involvement either in domestic transactions or in structuring the individual's conception of the landscape. (Thomas 1988: 65)

Furthermore, through the agricultural cycle, the central building/arena discourse may have influenced other stages of the cycle.

... the same material components may be shared by a number of fields, and the symbolic components of one field may be stored and transformed into the symbolic components of another. (Barrett 1988: 11)

With the evolution of a central building/arena discourse as a part of the agricultural cycle, a code of community unity may have been transferred onto the production area through the shared component: rice grains. As this kind of transference of code proceeded, eventually the whole process of agricultural production came to be based on the concept of community unity.

The association between the central building/arena and the agricultural cycle is significant for understanding the transformation of the nature of the community leader. Assuming that the central building/arena activities were based on a code of community unity, the code is likely to have been emphasised and influenced by the community's representative, the leader. In the Ikegami Sone case, both the manufacturing of goods for exchange and *dotaku* bronze bell casting likely needed to be organised as a joint effort of the whole community and may have required a representative organiser. As this space was associated with 'regularity' through the agricultural cycle, a leader would routinely influence the community members' daily lives. Indeed, the iconography found on Yayoi artefacts suggests that the symbolism originally attached to the crop processing routine, namely specific 'activities', was

later transferred onto the central building/arena: a specific 'space'. Through the regular use of this space, the symbolism would have been constantly brought into being. The community leader, as attached to the central building/arena space and regularly joining in the activities, would become visibly associated with the symbolism. Over time, this probably resulted in community members' expectations for the leader to continuously materialise the symbolism, eventually in the form of his/her individual attributes.

Moreover, as the code of community unity came to encompass the other stages of the agricultural production, that code would have provided the basis for a single type of authority and social relations which eventually pervaded all those stages. This development would result in a centralised organisation of the entire agricultural cycle, and then further develop to encompass the whole community operation, which was based on the agricultural production. Here, the association between the community leader, ideological and social symbolism and the pervasive central organisation of labour would be established within the central building/arena. This association would then be strengthened in the following late Yayoi – Kofun periods.

Once a monument has been built in a particular space, that space can never again be interpreted in the same way as before. (Thomas 1992: 30)

As Thomas states, an architectural structure can make a qualitative difference in a space. After the construction, the discourse of the space is renewed and reinforced within that new situation. Pred (1985), for example, described an ethnohistorical case in an 18th – 19th century Swedish village in which the day-to-day power relations of the community members were significantly affected by changes to the village plan due to commercialisation and population growth:

... the spatially-transformed village scene must have greatly influenced the sense of place, structure of feeling and other elements of consciousness held by residents by breaking down the grammar of taken-for-granted codes. (Pred 1985: 359)

It is important to note that the 'taken-for-granted' was itself transformed as a result of the transformed structure of the spatial plan. The subsequent social structuration was constructed following this new 'taken-for-granted' code, and the social transformation after the emergence of the central building/arena is explicable on this basis. The centralised power, the symbolism attached to a specific time and space, and certain regular activities were probably bound at the central building/arena as a coherent discourse. The central building served as a reminder and a symbol of this discourse. Reproducing the code through the routine activities in this space likely led to the code being accepted by the community as 'taken-for-granted'. Community members probably began to perceive all the factors in the central building/arena as inseparably bound. Consequently, it would be natural that the community leader would come to be associated with the symbolism and the ruling

position. This means that there was the potential for the leader become established as both having a sacred existence as well as being an absolute ruler.

The subsequent social structuration towards the Kofun period is thought to have been established on the basis of this newly formed 'taken-for-granted' code. The first visible transformation of the central building/arena towards the end of the Yayoi is the spatial seclusion of this building from other parts of the residential area. This transformation likely indicates a change in the 'taken-for-granted' code. As shown above, the central building/arena originally appears as an inseparable part of the residential area, since its characteristic discourse was based on routine-type activities. Therefore, the later seclusion of the central building/arena during the late Yayoi to Kofun periods suggests that this space no longer needed to be physically connected to other parts of the community. As the 'central building/arena' discourse became accepted as 'taken-for-granted', it was no longer necessary to repeat this discourse within community's routine. As this new stage, it was probably equally taken for granted that the central arena space was secluded for its 'inherent' specialty, rather than being a part of the settlement. By this time, the community leader was likely to be a symbolically distinct person, and thus isolated from other community members, in the same way that the central building/arena was secluded from other settlement spaces. Through this process of social structuration, the secluded central building/arena and the community leader are thought to have come to belong to each other. This pattern shows a complete change in the social meaning of the central building/arena, having shifted from a shared facility of the community to an exclusive space belonging to a distinct individual. This transformation appears to be the consequence of a long and sustained process of social structuration.

The second visible transformation of the central building/arena is that it began to be used as a distinct 'ritualistic space', indicating a shift towards the institutionalisation of rituals. After the central arena was secluded from other parts of the residential area, the symbolic aspects of activities in this space were probably formalised by the centralised leadership. Certainly, new developments in the pottery iconography in the end of Yayoi include the replacement of the pictures with symbols, which occurred in tandem with the abandonment of the *dotaku* bronze bells. These elements suggest that a centralised body and standardised ceremonial activities existed at this time. This second transformation seems to have been the basis for a new code for this ex-central building/arena: the centre of political organisation with artificially separated 'ritualistic' and 'non-ritualistic' spheres. While the same type of activities as the central building/arena, such as crop storage and metal moulding, were attached to the king's residence, the underlying code was transformed. It is thus feasible that this code then would be transferred to other parts of the society. By the middle Kofun period, specified 'ritual' areas also appeared within other areas of the settlement and within houses. Such ritual areas are recognised from characteristic signs of seclusion such as fencing and paving (Hamamatsu City Council Education Committee 1977: 88–91; Ishino 1991: 13) and also from specific types of associated artefacts (Hamamatsu City Council Education

Committee 1987: 32; Ishino 1991: 11–13). These new phenomena suggest that institutionalised ceremonies became a common part of the day-to-day life, showing the pervasive influence of centralised organisation. Moreover, the same types of artefacts as those associated with the ‘ritual’ areas have been found in association with Kofun king’s burial mounds (Japan Association for Quaternary Research 1998: 184). This seems to indicate that the ceremonial factors themselves came to represent the attributes of the king’s self even apart from the king’s residential space. Thus, the Kofun kings became absolute rulers associated with sacredness as a product of social structuration mediated by the central building/arena.

ACKNOWLEDGEMENTS

This paper is based on my Ph. D. thesis submitted to the University of Cambridge in 2002, and my special thanks go to: Prof. Martin K. Jones and Prof. Ian Hodder for supervising my thesis as the supervisor and advisor; Mr. Kozo Akiyama and Mr. Shiro Kambayashi for giving a great help for my research at the Osaka Ikegami Sone site; Mr. Yasuhito Nakanishi for providing a flotation machine; Mr. Kazuo Kuninori for providing a space for flotation; Dr. Mikiko Ashikari, Prof. Yuriko Fukazawa, Dr. Dorian Fuller, Dr. Simon Kaner, Prof. Marco Madella, Prof. Koji Mizoguchi and Dr. Chris Stevens for their valuable advice and generous help; Ms. Cathy Taylor and Dr. Michele Wallstonecroft for helping me by correcting my written English.

NOTES

- 1) In this paper, five phases are used for the Yayoi period. Phase I: Early Yayoi, Phases II–IV: Middle Yayoi, and Phase V: Late Yayoi.
- 2) The term for indicating this type of special building varies in Japanese archaeological writings and includes ‘central building’ (*chusu tatemono*), ‘large building’ (*ohgata tatemono*) and ‘shrine’ (*saiden*). In this paper, the term ‘central building’ is used because it can be independent of the actual size of the building which may not be particularly ‘large’, or of an *a priori* ‘ritualistic’ interpretation, but can indicate the typical central position of the building in settlements.
- 3) The ‘*hottate*-pillar’ indicates a pillar which is directly embedded or sunk into the ground, without a base stone. Although typical pit house posts are constructed in this way also, the ‘*hottate*-pillar building’ in Japanese archaeological terms specifically indicates a building with a floor above the ground (Miyamoto 1991: 33). A building with an above-ground floor but which does not use *hottate*-pillars is called a surface building (*heichi-shiki jyukyo*), to make the distinction (*ibid.*). It is generally accepted that in prehistoric Japanese contexts the *hottate*-pillar building represents a building that is in some way ‘prestigious’ (Miyamoto 1996: 172).
- 4) It may be an over simplification to assume that all the Kyushu and Kinki/Chugoku/Shikoku cultural factors just converged into Kofun society, but the transformation sequences need to be reconstructed individually in each context (cf. Shimizu 1995: 77). However, the present discussion limits the scope to the underlying code of the central building; in terms of this code, the central building examples of all the districts are considered to have developed into the Kofun king’s residence in one course.
- 5) The term ‘institution’ used in this paper means something different from that used in some other archaeological writings such as Hudson and Kaner (1992: 115) and Tilley (1984). In

those writings, the term ‘institutional ritual’ is used to indicate public rituals, and is the antonym of the domestic ritual. However, in this paper, ‘institutional ritual’ indicates formalised rituals, without indicating the type of ritual body. The author takes the point of view that all archaeologically recognisable rituals are formalised, and are thus basically ‘institutional’.

- 6) There is also the assumption that the icon can be interpreted as depicting a weaving scene rather than a fishing scene (Ikeda *et al.* 1997: 80).
- 7) The possibility has been raised that an icon on the Kamika 4 bell (AD2C) represents a rice-planting scene, but referring to the depiction styles of other icons, it is more likely that the icon represents animals rather than humans (Sahara and Harunari 1997: 154).
- 8) Sanukite is one common type of lithic tool material in Japanese prehistoric contexts, and is produced along the Nijo Volcano line throughout the Kinki, Shikoku and Kyushu districts (Kikuchi 1979).
- 9) The value is logged to avoid over-representation of small-volume samples against large-volume samples.

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