Revelations in Japanese Archaeology

Paleolithic Come-back, Island Interactions, Classical Writings

Edited by

Barbara Seyock, Gina L. Barnes, and Fumiko Ikawa-Smith

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REVELATIONS IN JAPANESE ARCHAEOLOGY:

PALEOLITHIC COME-BACK, ISLAND INTERACTIONS, CLASSICAL WRITINGS

Preface

Barbara SEYOCK and Gina L. BARNES

Revelations

This volume brings to international attention several developments in Japanese archaeology, the most prominent of which are new dates and evidence for an early Paleolithic that pre-dates the 30,000 BP marker-tephra of Aira-Tanzawa, and the growing recognition of inter-island / island-mainland interactions in socio-economic development.

Part I deals with the Paleolithic problem in Japan, which dates to the year 2000—when an amateur archaeologist, FUJIMURA Hiroshi, was caught on video by the Mainichi Newspaper salting sites with Jōmon artifacts inserted under tephra of increasing ages, dating back to 600,000 BP. It took Japanese archaeology 15 years to recover from this fraud, with new excavations revealing Early Paleolithic site materials untouched by FUJIMURA that indicate the possible reality of early occupation of Japan by hominins that used a non-Mousterian Early Paleolithic stone tool technology. These results are introduced by Fumiko IKAWA-SMITH, who recounts the history of Paleolithic studies in Japan and the efforts to overcome the setback perpetrated by FUJIMURA.

Part II deals with the Protohistoric period which ranges from agricultural beginnings to early state formation. The chapters here are unique in their focus on peripheral and border regions, illustrating especially how islands can be instrumental stepping-stones in cultural transmission and transformation. The technologies and goods that pass through these intermediaries are often of seminal function in socio-political development. At issue particularly are the introduction of wet-rice agriculture into Japan, the introduction of metal technologies, and metal products such as iron goods and bronze mirrors.

Part III looks back to the beginning of Japanese archaeology in the late 19th century, when the Meiji Government of the newly restored imperial regime invited foreign scholars and advisors to share their expertise with Japan. Edward S. MORSE was a zoologist from New England who was invited to teach at Tōkyō Imperial University. Though not the first foreigner to acknowledge the archaeological remains in Japan, he was instrumental in the development of the field there, being the first person to identify cord-marked (*jōmon*) pottery based on his knowledge of northeast American and Danish prehistoric ceramics. MOOS presented two of MORSE's writings with annotations to enhance understanding of their role in the developing specialism of archaeology.

Contributions from the *Bulletin of the Society for East Asian Archaeology* (BSEAA)

The chapters herein are drawn from the BSEAA, an online journal comprised mainly of papers presented at successive Society conferences. The Bulletin was published in three issues: in 2007, 2008, and 2016, and is embedded in the Society for East Asian Archaeology (SEAA) website [seaa-web.org]. BSEAA recruited authors and articles primarily from the major SEAA conferences, but it was still open to contributions from other experts in the field of archaeological research in East Asia and adjacent regions.

The fate of many self-initiated publication projects is that they end up in a holding pattern due lack of time and staff. We are therefore particularly pleased to be able to present a selection of the newly edited, partially revised articles from BSEAA on major topics in East Asian archaeology in a now coherent volume. Those that have not been revised for this volume are understood to be still valid characterizations of their topics. In addition, two contributions from the panel on Paleolithic Archaeology in Japan (SEAA 6 Conference, Ulaanbaatar 2014) that were not originally published in BSEAA are now available in written form. Two smaller contributions to BSEAA, on the other hand—a book review and the summary of a panel—are not included here as they were too outdated to fit into this edition. For all original articles and further photographs, we would like to refer you to the Society's website [https://seaa-web.org/publications/bseaa].

This volume does not follow the original order of publication. We have rearranged the articles according to content and chronological context. We make no claim to comprehensively cover Japanese or even East Asian archaeology in its entirety. Large areas of current research are not reflected in this collection, for example regarding the broad research field of early ceramic cultures of Jōmon period Japan or the archaeology of historical times, which deserve greater attention. Such perspectives are reserved for future efforts in further publication projects of the Society for East Asian Archaeology.

In the bibliography, we provide the references in both the common romanized transcription (Pinyin for Chinese, revised Hepburn for Japanese, and Revised Romanization 2000 for Korean) as well as the original script. These designations are also used in the text to indicate pronunciations in different languages using the same Chinese characters. Both are intended to facilitate access to the literature, be it via online media or local research institutions. Since most of our articles deal with archaeological topics related to Japan, we have chosen American English as our standard here to conform to the publishing style in Japanese research.

This publication involves all three people who originally contributed significantly to the success of the Bulletin: Gina BARNES, who provided the inspiring model for the Bulletin with her "EAANouncements" (1990 to 1998), the newsletter of her East Asian Archaeology Network (EAAN) which in 1996 became the Society for East Asian Archaeology; Barbara SEYOCK, the initiator and editor of the BSEAA, and Fumiko IKAWA-SMITH, to whom we owe the creation of the third BSEAA issue in 2016. The articles for this volume were first under the editorship of Seyock, and the illustrations fell under the remit of SEYOCK and Michael MOOS. IKAWA-SMITH dealt with problems in the Paleolithic section, and we would like particularly to thank for her crucial involvement in communicating with authors of those chapters. BARNES provided the English-language review and proof-reading for all texts, and reformatted the volume, inserting the figures and adjusting them where necessary.

We thank all authors who willingly allowed their work to be published in this volume and who were patient and cooperative through a long two years of editing.

Abbreviations:
• languages are indicated by C. = Chinese, K. = Korean, J. = Japanese
• in the references, N.p. = no publisher; n.d. = no date

• AMS = radiocarbon dating by Accelerator Mass Spectrometry
• BP = before present (with 'present' being 1952 for radiocarbon dating)
• cal. = calibrated radiocarbon dates, uncal. = radiocarbon dates not calibrated
• cm = centimeters
• Ga = billion years ago
• ka = thousand years ago
• m = meters
• Ma = million years ago
• mDNA = mitochondrial DNA, also mtDNA
• MIS = Marine Isotope Stages
• OSL = Optically Stimulated Luminescence dating

Style points:
• American punctuation and spelling is used throughout except for the term 'archaeology'
• when standing alone, capitalized Peninsula refers to the Korean Peninsula

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Contributions from the

Bulletin of the Society for East Asian Archaeology

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2.3 Compiled by author from original project drawings

Part I

THE EARLY PALAEOLITHIC IN JAPAN

CHAPTER 1

STARTING OVER AGAIN: INTRODUCTORY REMARKS

Fumiko IKAWA-SMITH 井川史子

This introduction recounts the problems of assessing whether Japan had an "Early Paleolithic", i.e., prior to ca. 40,000 years ago. Between the 1970s and 2000, dates for Paleolithic sites in Japan had progressively been pushed back to ca. 600,000 years ago. Then the "Paleolithic Hoax" A.K.A the "FUJIMURA Scandal" occurred in November 2000, throwing the field into disarray as amateur archaeologist FUJIMURA Shin'ichi was caught salting sites with Jōmon-period bifacially flaked artifacts inserted under intact volcanic tephra layers dating earlier in the Pleistocene. Since then Paleolithic archaeologists have endeavored to reassess old excavations and carry out new ones to determine how early the archipelago was occupied by humans. The collection here generally argues for possible early dates, but these do not go uncontested by others. These papers form one step in the long process of establishing certainty about the process of the human occupation of the Japanese Islands.

Keywords: Early Paleolithic controversy, lithics, Palaeolithic hoax

Paleolithic Research in Japan: in the Beginning

During the Pleistocene, when the sea level was lowered due to glaciation, the Japanese archipelago was often connected with the Asian continent, and presence of fossil animals suggests that hominins, who were present at least by one million years ago in northeast Asia, could very well have reached the archipelago as well. There always have been enthusiasts searching for indications of such presence, as I noted before (IKAWA-SMITH 1978), but it was not until 1949 when the solid evidence turned up, and the pursuit of Paleolithic remains became the subject of serious academic inquiry.

It began with the recovery of stone artifacts from road-side exposure of Pleistocene formations at Iwajuku (Figure 1.1-4), about 90 km north of Tōkyō, in 1946 by AIZAWA Tadahiro, a young amateur, who was making a living by peddling foodstuff from door to door. After failing to convince a series of professional archaeologists of the authenticity of his finds, he finally found receptive ears with a team of archaeologists of Meiji University, who undertook to investigate. The 1949 excavation of the Iwajuku Site by the Meiji University team recovered lithic assemblages from two levels (SUGIHARA 1956). Once it was established that Pleistocene formations do contain artifacts, Paleolithic sites were discovered and investigated in a rapid succession. Nearly 100 sites were identified within 10 years since the Iwajuku excavation, and now over 74 years later, there are more than 10,500 known Paleolithic sites in the archipelago.

Search for Earlier Paleolithic Remains

Two of the stone tools recovered from the lower layer of the Iwajuku Site were bifacially flaked oval axes. These were first described as "hand-axes", with the implication that they may be comparable to Lower Paleolithic specimens elsewhere. With the progress of the Paleolithic research, Quaternary geology of the archipelago became better understood, and it became quite clear that the Iwajuku "hand-axes" came from a stratum which could not be older than 30,000 BP.

In fact, the overwhelming majority of Paleolithic assemblages recovered so far were contained in Late Pleistocene formations, dating to what is now known as Oxygen Isotope Stage 2 (or MIS2) (29,000 to 14,000 years ago).

Nevertheless, the search for the oldest evidence of human occupation of the archipelago continued through the 1950s and 60s. The small number of assemblages that were thought to represent such evidence could be divided into three groups, and each met with skepticism. One of the groups, such as Gongenyama I assemblage (Figure 1.1: 2), also recovered by AIZAWA in a locality not far from Iwajuku, consisted of hand-axes and flakes detached from prepared cores (MARINGER 1956). There was no question about their artifactual status, but one could not be certain of its "Early Paleolithic" age, as the specimens were collected while the site was being prepared for housing construction. An age before 40,000 years was based on AIZAWA's testimony several years later that he remembered that the artifacts lay below a layer of white pumice, which was subsequently radiocarbon dated to 40,500±3,500 uncal. BP (ARAI 1971).

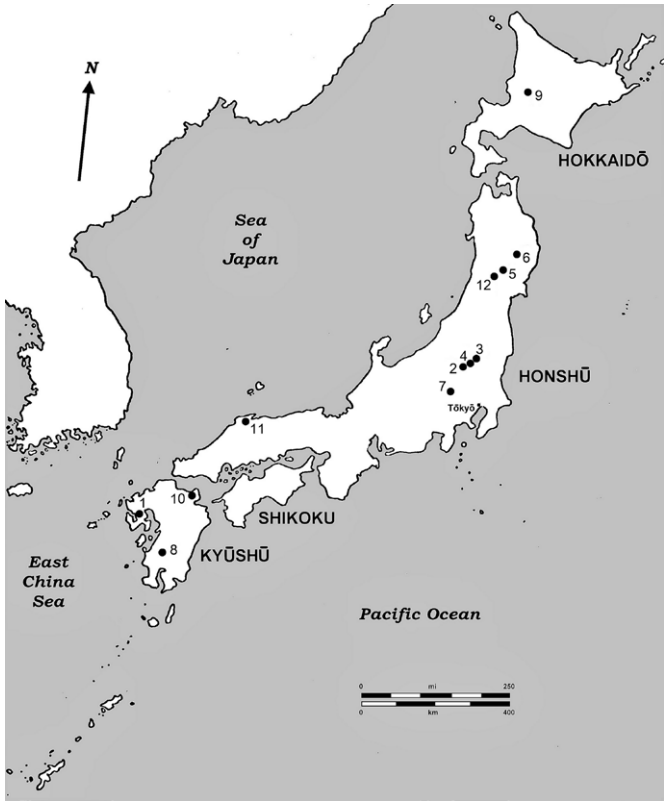

Figure 1.1 Paleolithic sites mentioned in the text

In alphabetical order: 1: Fukui, 2: Gongenyama, 3: Hoshino, 4: Iwajuku, 5: Kamitakamori, 6: Kanedori, 7: Nagaone, 8: Ōno, 9: Sōshin-Fudosaka, 10: Sōzudai, 11: Sunabara, 12: Zazaragi

Another group of assemblages were the results of meticulous excavations—such as at the Sōzudai Site (Figure 1.1: 10) in Kyūshū (SERIZAWA 1965; SERIZAWA and NAKAGAWA 1965) (see Chapter 2 herein) and at the Hoshino Site in northern Kantō (SERIZAWA 1966, 1978)—which recovered numerous lithic specimens in situ. In these cases, there was no question that the specimens came from formations dating to 40,000 to 130,000 years ago, but the specimens themselves failed to meet general acceptance as artifacts. To the third and final group belong a very small number of assemblages, such as the three bifacial pieces and flakes recovered the lowest layer of Fukui Cave (Figure 1.1: 1) in Kyūshū, famous for the very early occurrence of ceramic shards (KAMAKI and SERIZAWA 1967). A sample from the layer yielded a non-finite radiocarbon date of >31,900 uncal. (GaK-952), but the assemblage consists of only 16 pieces of artifacts plus debitage, and it has not been replicated elsewhere.

"Fujimura Scandal" of 2000, and its Aftermath

The situation began to change in the 1970s with the activities of the members of the Stone Age Study Group (Sekki Bunka Danwakai) situated in Sendai City, northern Honshū. A decisive moment came in April 1980, when FUJIMURA Shin'ichi, one of its members and a local amateur archaeologist, recovered ten artifacts—including hand-axes and picks, from a formation, clearly older than 30,000 BP—at

Zazaragi Site (Figure 1.1: 12) in front of professional archaeologists and geoscientists (OKAMURA 2010: 70-74). This sensational discovery was followed by a series of equally remarkable finds at nearby sites.

Unlike the assemblages recovered by SERIZAWA and others in the 1960s, the artifactual nature of these lithic specimens were unquestionable, and they were sometimes unearthed in front of witnesses by FUJIMURA himself, from layers whose ages can be unambiguously determined in relation to well-dated horizon-marker pumice deposits. As FUJIMURA's reputation as "God's hand" to spot the location within a site where Early and Middle Paleolithic artifacts were likely to be buried increased, he was often invited to come and give advice to investigators working at the sites further away from the Sendai area, such as the Soshin-Fudosaka Site (Figure 1.1: 9) in Hokkaidō and the Nagaone Site (Figure 1.1: 7) in Saitama Prefecture, north of Tōkyō.

As the number of Early and Middle Paleolithic sites increased, so did the antiquity of human occupation of the archipelago, the oldest being the bifacial tools recovered from the lowest layer at the Kami-takamori Site (Figure 1.1: 5), dated 0.58~0.60 million years ago. As some archaeologists began talking about the need for a paradigm shift in Japanese Paleolithic studies, uneasiness about his uncanny ability was felt by others, and the Mainichi Newspapers organized a special team to follow FUJIMURA as he visited archaeological sites. He was caught on video in the early morning of 5 November 2000 as he was burying artifacts at Kami-takamori. He has since confessed to having manufactured the evidence by placing genuine, but later, stone tools from his collection into much older geological layers at 42 sites. The series of events and the socio-cultural background leading to the "Fujimura Scandal" of November 2000 have been described in several publications, including HUDSON (2005) and KANER (2002).

Immediately afterwards, in November 2000, the Japanese Archaeological Association established an *ad hoc* Committee for Investigation into the Early and Middle Paleolithic Issues (Zen-chūsekki Mondai Chōsa Iinkai), which set out to examine some 3000 artifacts from about 200 sites where FUJIMURA was, or may have been, involved in excavation. The investigation resulted in the nullification of over 100 assemblages, with profound negative impact on Paleolithic research in particular, and archaeological studies in general. Nevertheless, there are over 14,500 "untainted" archaeological sites dating to the Pleistocene in the archipelago, including about 100 that are thought to predate 40,000 BP (Japanese Archaeological Association 2004; Zen-chūsekki Mondai Chōsa Iinkai 2003).

Early Paleolithic Research Today

Currently, the archaeological community in Japan seems to be divided into two camps: those who believe that hominins did not arrive in the Japanese archipelago until after about 40,000 years ago (e.g., ONO 2011; TSUTSUMI 2012), on the one hand, and those who accept at least some of the putative evidence for early occupation of the archipelago, on the other. As the results of renewed research efforts in recent years, new evidence is being brought forward.

At the 6th Worldwide Conference of the Society for East Asian Archaeology held in Ulaanbaatar in June 2014, SATŌ Hiroyuki and I organized a session, for the purpose of presenting some of the exciting, but possibly controversial, results to the assembled professionals for their own appraisal. We are pleased to be able to include four of the presentations in this volume. Two of them, on the Ōno Site (Figure 1.1: 8) in Kyūshū and the Sunabara Site (Figure 1.1: 11) in western Honshū are the results of investigations that were initiated after the exposure of the "Fujimura Scandal" in 2000 (see Chapters 3 and 5 herein). The Kanedori Site (Figure 1.1: 6) in northern Honshū, on the other hand, has been investigated since 1985, free of involvement with FUJIMORI's activities, despite proximity to Sendai (see Chapter 4 herein). We

are especially pleased to be able to include the report on the current state of the research on the Sōzudai Site, where—way back in 1964—the late SERIZAWA Chōsuke initiated the serious search for the credible evidence for the earlier Paleolithic remains in the Archipelago. The session concluded with SATŌ's Overview which placed these and several other assemblages in a broader context (Chapter 6 herein).

Terminological Debate

In the following papers on the Paleolithic, there are discrepancies in the use of Early, Middle, and Late terms for the Paleolithic. This reflects the variety of schemes used in the literature and is often confusing for the reader. We could have unified them for this volume, but that would obscure the authors' preferred terms and would not have flagged the inherent disagreements in the literature and the diagnostics on which the terms are founded.

Of the two camps of the Japanese Palaeolithic archaeologists today, SATO (Chapter 6) and I are *not* of the group who dismiss out of hand anything claimed to be older than 40k. We are both prepared to look at, and evaluate, those assemblage purported to represent early evidence of human occupation of the archipelago. However, we approach the issue from different perspectives: SATO consider them in terms of the tripartite division of the Lower/Middle/Upper Palaeolithic, familiar in European Paleolithic studies—but he uses them strictly as a chronological framework. I, on the other hand, place the assemblages in the context of the binary division of the Early and Late Palaeolithic technological traditions. We have co-existed peacefully enough, to the extent of organizing a symposium together.

In particular, the definition of the Middle Palaeolithic is problematic. In some parts of Africa and western Eurasia, the Middle Paleolithic refers to the Mousterian assemblages based on a flake-producing technology called the "Levallois technique", in which a cobble core is used to detach one specific flake of a characteristic shape. This technology, however, did not reach eastern Eurasia, beyond what has been called the "Movius Line" (SOLHEIM and MOVIUS 1958, 1960).

The concept of the Movius Line, however, might be getting out-of-date and fading away (NORTON et al. 2009; NORTON and BAE 2009; LYCETT and BAE 2010). The session entitled "Movius Line 70 years later" which I organized at the 2018 IPPA in Vietnam ended with Robin DENNELL declaring, "Movius Line—70 years is enough". Nevertheless, for western Eurasia the "Middle Palaeolithic" still refers to the Mousterian assemblages with the Levallois technology (regardless of the ages), and those assemblages are very rare, if present at all, in eastern part of Eurasia.

Therefore, I continue using the two-part division of "Early" and "Late", which we formulated at the 1973 conference in Montreal (IKAWA-SMITH 1978). The Early/Late division is a *typological* nomenclature, NOT a *chronological* one, even though the Late Paleolithic, characterized by the presence of blade technology, appears in many parts of East and Southeast Asia about 30~40,000 BP, making the typological and chronological synonymous in this case. However, Early Palaeolithic flake-based *technology* continues in many regions past that date. Thus, I call it "the Early Paleolithic "***Tradition***", not "***Period***".

Sometime along the line, China-based scholars started using the west Eurasian tripartite terminology of Lower/ Middle/ Upper, but strictly as chronological divisions. This is what SATO is using here in Chapter 6, as he explicitly gives the Lower/Middle borderline as "the beginning of the Late Pleistocene dated 120 ka" and speaks of the "transition from Middle to Upper Palaeolithic dated from 50 ka to 40 ka." In Chapter 4, KURODA and his co-authors also use the term "Middle Paleolithic" as a chronological

unit, except that they use the term "Late Paleolithic" as well as "Upper Paleolithic". UEMINE and MATSUFUJI in Chapter 5 note that the Middle Palaeolithic with the Levallois technology did not reach the Japanese Archipelago. Thus, they discuss the assemblages in terms of "Upper Paleolithic" and the "pre-Upper Paleolithic" remains.

The issue addressed by the following papers, however, is not which category the sites fit into—whether typological or chronological—but how old they are. These are the first valid dates that exceed the general boundary of 30~40,000 BP usually accepted for the appearance of blade technology, and they are the first valid dates that have been produced after the "Paleolithic Hoax" for which earlier dates for more than 100 sites have been dismissed. OSL is becoming a method increasingly used in archaeology, though it does have attendant problems as discussed by UEMINE and FUJIMORI in Chapter 5—which reflect back on WADA's paper in Chapter 3. Although the dates presented here are few and need further substantiation, these papers vindicate the existence of bipolar, handaxe, and flake technologies existing in the Japanese Islands prior to the marker-tephra Aira-Tanzawa (AT or A-Tn in the literature) at ca. 30,000 BP.

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CHAPTER 2

THE EARLY PALEOLITHIC INDUSTRY DISCOVERED AT THE SŌZUDAI SITE, ŌITA PREFECTURE

YANAGIDA Toshio 柳田俊雄

The Sōzudai Site was first excavated by the late Serizawa Chōsuke in 1964. Lithic artifacts were evaluated as belonging to the Early Paleolithic of Japan through comparison with continental industries such as Zhoukoudian. Tōhoku University Museum and Department of Archaeology continued investigation of the site and re-excavated it in 2001 (6th season) and 2002 (7th and 8th seasons). The assemblage, mainly made of quartz rhyolite and quartz vein, consists of choppers, chopping tools, bifaces, pointed tools, notches, burins, and scrapers, etc. Small tools including fan-shaped scrapers and 'proto-burins' are noteworthy. Many tools were made by peripheral secondary retouch. Heavy duty tools account for less than 10%. Bipolar technique and alternate flaking are common features. Stratigraphy, assemblage composition, and technological characteristics all testify to the authenticity of Serizawa's original results, as well as bringing new insights into the period dated approximately to 80,000 to 70,000 BP, based on tephrochronology.

Keywords: Japanese archaeology, Early Paleolithic, excavation, lithics, Kyūshū, Ōita, tephrochronology

Introduction

Location of the Sōzudai Site and history of investigations

The Sōzudai Site, near the southwestern tip of the Kunisaki Peninsula in northeastern Kyūshū, is situated on a coastal terrace at about 35 m above sea level overlooking Beppu Bay (Figure 2.1). The site is in Sōzui, Ōaza-Kawasaki, Hiji-machi, Hayami County, Ōita Prefecture (N33°35′29″, E131°54′86″). Around 1949, TANOKUCHI Hidetomi discovered Jōmon-era pottery shards and stone tools there during cultivation. This led to excavations by the Ōita Prefectural Board of Education in July and November 1963, which unearthed the remains of a pit dwelling from the early Jōmon Period and many other materials, revealing the site to be a large-scale site in western Japan. These are referred to as the 1st and 2nd seasons. Subsequently, in February 1964, the 3rd season of excavation was carried out again. SERIZAWA Chōsuke of Tōhoku University, who participated in this excavation, discovered previously unknown artifacts made of vein quartz (former quartz trachyte) within andesite gravels beneath the Jōmon layer. Considering the importance of the discovery, he organized a new excavation in the spring of the same year. This excavation is named the 5th season, in view of the fact that TSUNODA Bun'ei of the Kodaigaku Kyōkai had conducted what may be called the 4th excavation of the site in March of that year (SERIZAWA 1965: 2).

During the excavation at locality P, 425 stone tools and gravels were recovered from a 3 x 4 m trench, and the following results were obtained. The lithic artifacts are mainly made on coarse-grained rhyolite and vein quartz, with tuffaceous andesite, agate, crystal, and chert. The lithic industry identified by SERIZAWA consists of proto-handaxes, proto-obates, picks, rhomboids, discs, choppers, chopping-tools, points, and burins. Flake tools, pebble tools and core tools occupy nearly 60% of the total lithic assemblage. Among flake manufacturing procedures, SERIZAWA pointed out the existence of so-called proto-Levallois technique to produce one targeted flake from a peripherally prepared core; and as a

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shaping method, he recognized alternate flaking on pebble tools. He estimated the age of the industry to be about 100,000 years BP, far older than the Gongenyama and Fujiyama sites in Gunma Prefecture so far discovered at that time, as well as the Upper Paleolithic assemblages from the Tachikawa Loam layer. Then comparing the stone tool assemblages in question with those in East Asia, he proposed the existence of an Early Paleolithic Period in the Japanese archipelago that retained the lithic reducing tradition of the Lower Paleolithic site at Zhoukoudian in China (SERIZAWA 1965).

In February and September 2001, the Tōhoku University Museum and the Department of Archaeology of Tōhoku University, launched new excavations in 37 years after the 1965 season. These two excavations are referred to as the 6th and 7th seasons (YANAGIDA, AKOSHIMA and ONO 2007). The following year, in September 2002, Serizawa led excavation team in cooperation with Tōhoku University Museum and Laboratory of Archaeology. This excavation is referred to as the 8th season at the Sōzudai Site (YANAGIDA and AKOSHIMA 2011). In describing the Lower Lithic Artifact industry at Sōzudai, I will reconfirm the stratigraphic relationships clarified in the 5th season and discuss the new findings and opinions obtained during the resumed excavation since 2001 (Figure 2.1: a) in the 6th and 8th seasons.

Stratigraphic sequence and chronology

Sōzudai is located on a coastal terrace formed during the Shimosueyoshi transgression in the initial stage of the Late Pleistocene (MIS 5, 130,000~191,000 BP). The basic stratigraphy of the site is shown in Figure 2.1: b. The reddish-brown Layer 7 was deposited after the terrace formation, followed by the bright yellowish-brown upper layers of Layer 6 and the Layer 5, which contains a large amount of redeposited andesite gravels. The upper layers are the dull yellowish-brown Layer 4 and the "black band" Layer 3. The Aira-Tanzawa tephra (AT, ca. 30,000 BP), which originates from the Aira Caldera, Kagoshima Prefecture, lies at the top of the third layer. In the second research trench, blades, blade cores, and backed knives characteristic of the Late Paleolithic were found from the upper part of the third layer. This group is referred to as the "Sōzudai Upper Lithic industry". Stone tools made on vein quartz excavated from the andesite gravel layer (Layer 5) and the light reddish yellowish-brown soil layer (Layer 6) is called "Sozudai Lower Industry".

The large number of stone tools excavated from the andesite gravel layer in Layer 5 is likely a secondary deposition, while the layer containing the original quartz stone tools is Layer 6, a light yellowish-brown soil layer with a light reddish tint. Based on the similarities in the lithic composition, secondary processing techniques, and exfoliation production techniques of the quartz tools found in these two layers, it is assumed that the primary layer of the lower lithic tool assemblage at Sōzudai was the light yellowish-brown Layer 6 immediately below the andesite gravel layer (Layer 5). Based on the results of tephra analysis, the Kujū No. 1 Pumice (Kjp-1, ca. 55,000 BP), was lying directly on the upper andesite breccia. Note that the reddened Layer 7 does not contain quartz stone tools.

In sum, two cultural layers were stratigraphically distinguished: an "upper lithic assemblage" with Late Paleolithic traditions from a "black band" (fossilized weathered soil, Layer 3) below AT (30,000 BP), and the "Early Paleolithic industry" on rhyolite (former quartz trachyte) from a bright yellowish-brown Layer 6 below Kjp-1.

The "Upper Industry" within the "black band (dark weathered soil)" (Layer 3), situated just below the AT (Aira-Tanzawa) Tephra (MACHIDA and ARAI 2003), corresponds to the Late Paleolithic stage of the Japanese paleolithic chronology. On the other hand, "the Lower Industry", contained in Layers 5 and 6 is situated below the Kujū No. 1 Pumice (Kjp-1) (MACHIDA and ARAI 2003). The soil of Layer 6 that contains

the lower lithic assemblages is yellowish brown in color, with a reddish tinge; it is situated above Aso-4 tephra (90,000 BP, MACHIDA and ARAI 2003). However, the reddish tinge is not as pronounced as the soils known to have deposited elsewhere during MIS5e, suggesting that the layers 5 and 6 are not so heavily weathered as those deposited during the MIS 5e stage. The author therefore estimated that the Lower Lithic Assemblages of Sōzudai date to a period between 70,000 and 80,000 years ago.

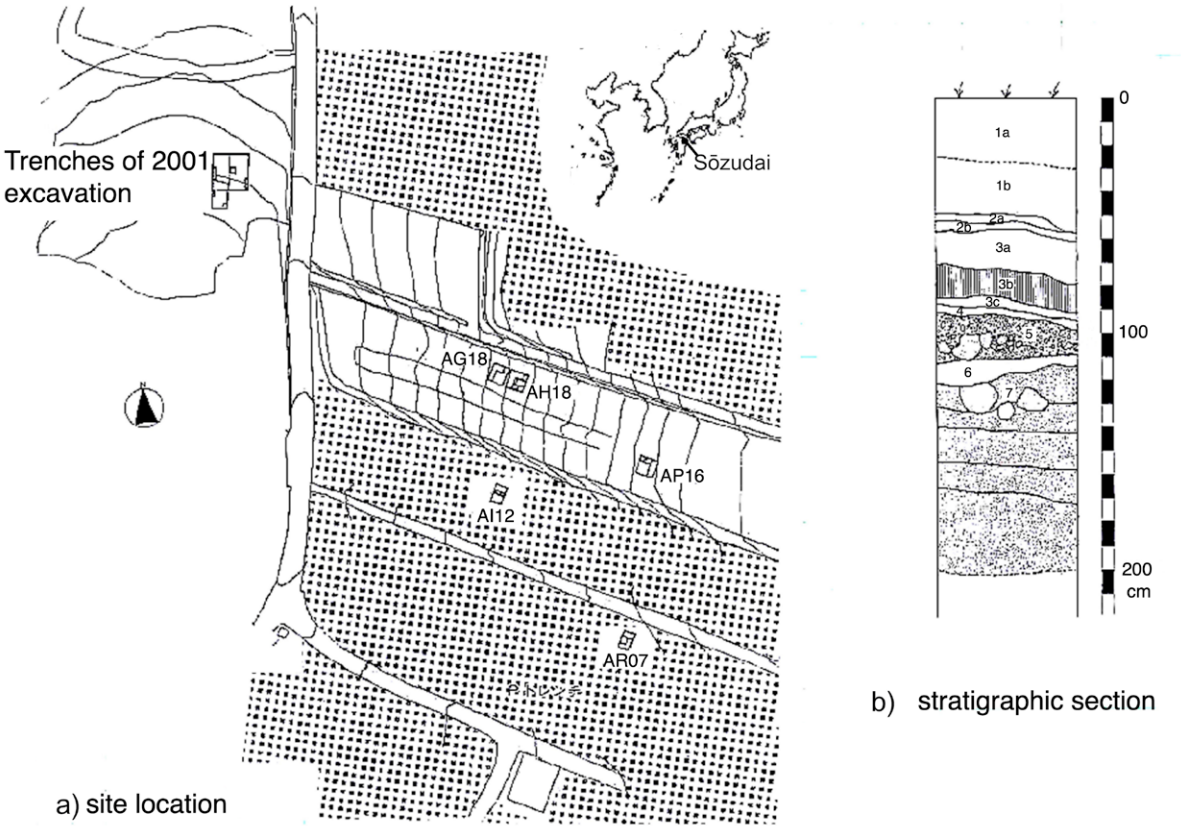

Figure 2.1 Sōzudai Site and stratigraphy

Lithic Artifacts

According to the published reports (SERIZAWA 1965; SERIZAWA (ed.) 2003), 847 stone tools of the lower industry were typologically identified (225 from 5th season; 622 from 6th to 8th seasons as listed in Table 2.1). Of the 271 lithic materials identified, 190 were vein quartz (69%), 60 in coarse-grained quartz (22%), 11 in agate (4%), 4 in rhyolite and quartz (1%), and 2 in shale (1%). The use of amphibole flakes was also observed in the 8th excavation. Most of the samples are quartz-based; a small number of agate and rhyolite were used as well. Obsidian from Himejima Island (glassy andesite, previously called hornblende andesite) was also found in the 5th season.

N.B. In the following illustrations, a triangle indicates a percussion point on a platform, while the circle shows a counter force from an anvil.

Characteristics and Chronology of the Lower Sōzudai Lithic Industry

Assemblage of lower level

The lithics consists of choppers, chopping tools, bifaces, pointed tools, proto-burins, burins, awls, notches, scrapers, pièces esquillées, and hammer-stones. The stone tools are divided into three groups in length: 2.0–4.0 cm (small), 4.0–8.0 cm (medium), and over 8.0 cm (large). Small-sized scrapers on flakes occupy a predominant part of the lithic assemblage (Figures 2.2, 2.3). The secondary shaped flakes (Figure 2.4) include pointed (Figures 2.3: 19, 20), fan-shaped (Figures 2.3: 21, 22), straight-edged (Figures 2.3: 25, 28), horseshoe-shaped (Figure 2.3: 26), and round-edged ones (Figure 2.3: 29). Tools less dominant in number are den-ticulates (Figure 2.3: 28) or nose-shaped tools (Figure 2.3: 27). A certain number of small and medium-sized pointed-tools (Figures 2.2: 7~10), burins (Figures 2.3: 14, 15), awls (Figure 2.3: 16), and notched tools (Figures 2.3: 17, 18) have been found. Large-sized chopping tools (Figure 2.2: 1) and medium-sized bifaces account for less than 10% of the total. However, there are a few ovates (Figure 2.2: 6) and bifaces with wide cortex at the base. They have round tips and convex bases with maximum width in the lower half of tools (Figures 2.2: 4, 5). Many proto-burins were recovered during the 6th to 8th excavations; these may represent one of the characteristics of the stone tool assemblage excavated from the lower stratum of Sōzudai (Figure 2.3: 11~13).

Table 2.1 Type and number of specimens at Sōzudai

Type of specimen	6th, 7th excavation	8th excavation		Total 622
From	Stratum 5	S.5	S.6	
chopper	10	1	1	12
Chopping tool	8	5	1	14
Biface	1	1	2	4
Pointed tool	6	1	2	9
Proto-Burin	6	11	9	26
Burin	6	10	2	18
Awl	6	1	1	8
Notch	11	9	9	29
Scraper	53	53	52	158
Piés-esquillées	16	5	2	23
Flakes	138	54	25	217
Core	70	18	16	104

Shaping techniques

Shaping of lithic artifacts made on flakes is not invasive but is limited to the periphery of the piece. Some bifaces are flat on one surface, with another one retaining the original natural cortex on the base. Alternate flaking is employed for shaping bifaces as well as drills or scrapers.

Flake producing techniques

We classify cores into four classes, from A to D, based on the knapping procedures as indicated by the position of the striking platform relative to the removed surface:

A: Removed surface is limited to one side; striking platform surrounds a periphery of the side (Figure 2.3: 31).
B: Orthogonally placed striking platform and removed surface frequently switched, with the striking point moving backward in one direction (Figure 2.3: 33).
C: Polyhedral cores showing constant dislocation of striking platforms and removed planes (Figure 2.3: 32).
D: Cores to reduce obtain silicified part of the raw material.

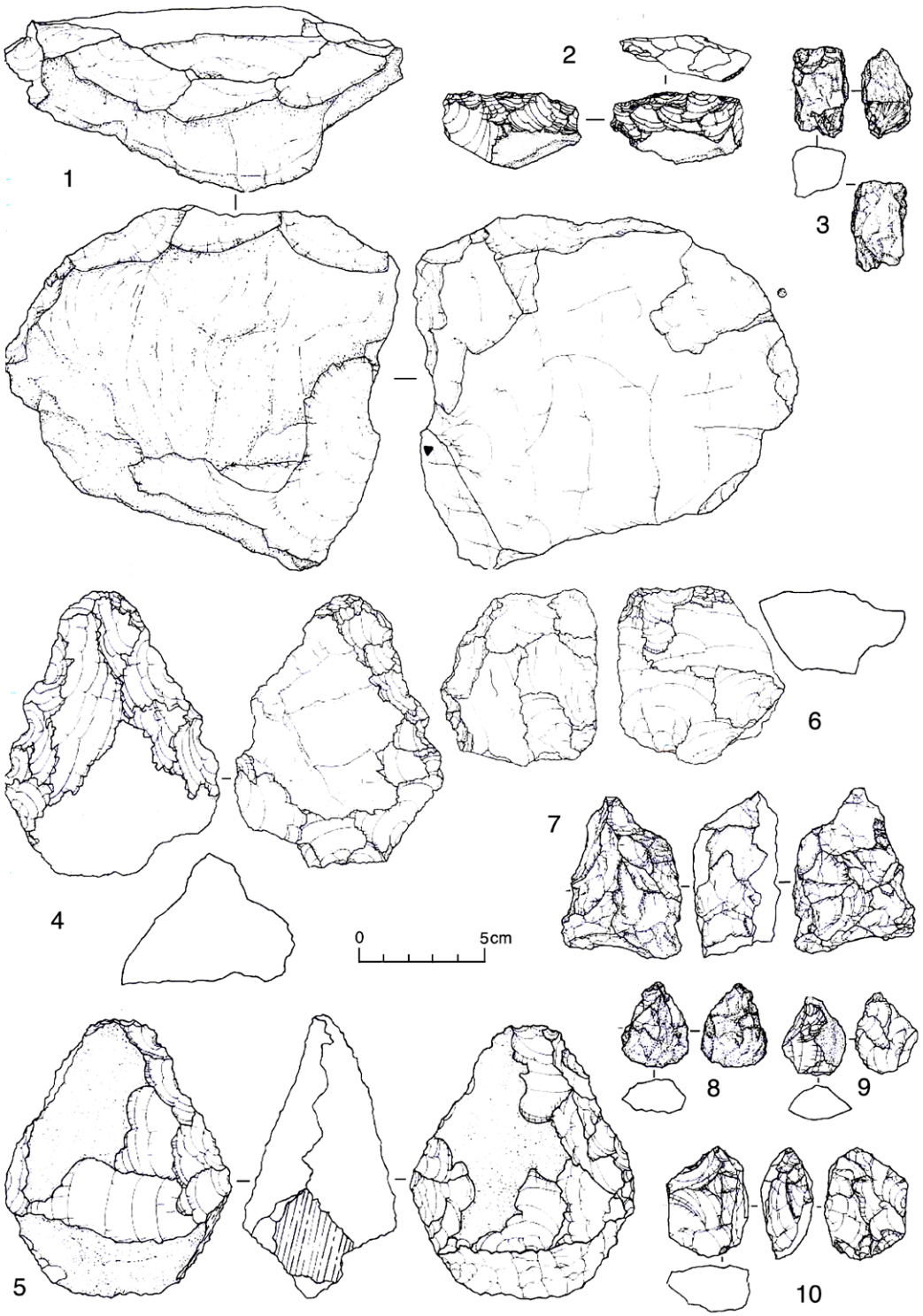

Figure 2.2 Lithic artifacts excavated from Layers 5 and 6 (artifacts 1~10)

1, 2 chopping tools; 3 bipolar flake; 4~6 bifaces; 7~10 pointed tools

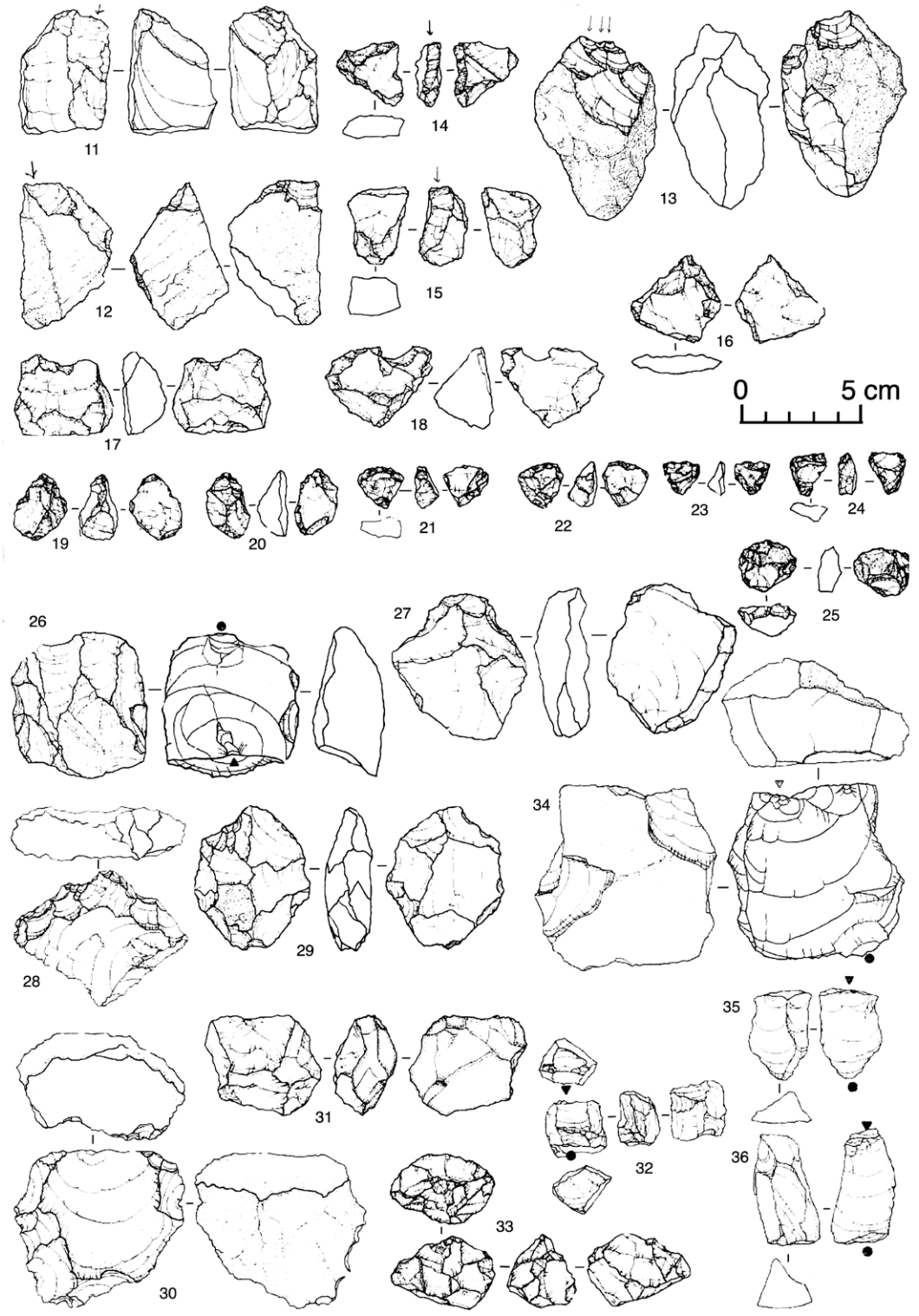

Figure 2.3 Lithic artifacts excavated from Layers 5 and 6 (artifacts 11~36)
11~13 proto-burins; 14, 15 burins; 16 awl; 17, 18 notches; 19~29 scrapers; 30 proto-Levallois core; 31~33 cores; 34~36 flakes

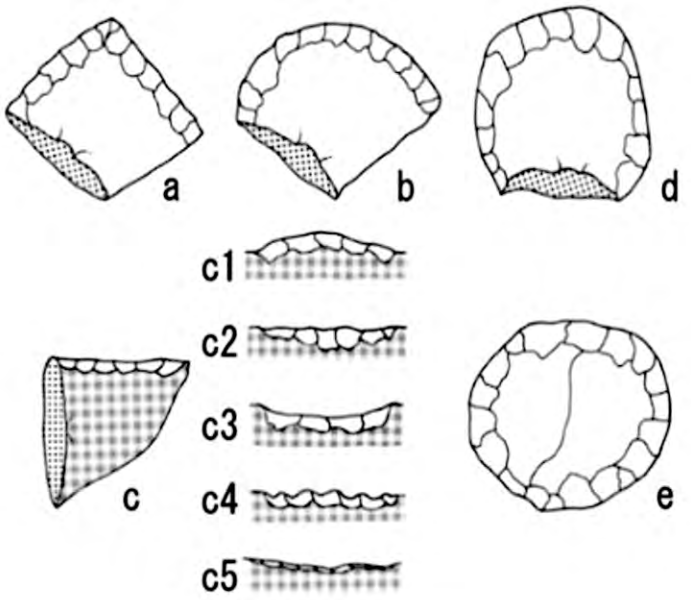

Figure 2.4 Secondary processing of edges by shape
a) pointed (as in Figures 2.3: 19, 20)
b) fan (Figures 2.3: 21, 22)
c) straight (Figures 2.3: 25, 28)
d) horseshoe (Figure 2.3: 26)
e) circle (Figure 2.3: 29)

Other than "Proto-Levallois" (Fig. 2.3: 30) technology noted by SERIZAWA in the 5th season, three types of flake production were identified. The first one is the type in which the striking platform and flaking surfaces are fixed during reduction progress. The second is the one with a continuously retreating reduction of the platform and flaking surfaces, and the third one is the type which produces flakes from the core periphery, i.e., centripetal flaking. In the last case, the flaking procedure was carried out without fixing the striking platform.

In addition, we recognized several cores leaving only one flaking surface or with randomly placed striking platform and knapped scars. A few coarse looking stones were selected and knapped to observe quality. During the 6th through 6th seasons, so-called proto-Levallois cores, identified by SERIZAWA, could not be confirmed.

New Perspectives: Observation of Bipolar Reduction

When raw material is placed on anvil and directly struck with a hammer, various simultaneously cracked traces can be observed on both sides of flakes, frequently showing damage running from a striking platform to the opposite end on the anvil. This technique was originally identified among the stone tools by *Homo erectus* in the Zhoukoudian Cave Loc. 1, and the traces were considered as a definite

feature for bipolarly reduced "artifacts" (TEILHARD de CHARDIN and PEI 1932). In Japan, in 1965, SERIZAWA first pointed out in the report of the 5th season that "several cases of flakes with what appear to be bipolar bulbs have been detected at Sozudai" (SERIZAWA 1965: 70). In 1973, KOBAYASHI Hiroaki conducted experiments on rhyolite rocks from the Hirose River basin around Sendai City and presented useful observations about the bipolar reduction method (KOBAYASHI 1973). Later, ABE Asaei followed up on this work and reported that the bipolar technique was used in some parts of this lithic assemblage (ABE 1983). In 2009, LI Chaorong from the Institute of Vertebrate Paleontology and Paleoanthropology (IVPP), Chinese Academy of Sciences, was invited by the Tōhoku University Museum to analyze the lithic assemblages; he concluded that there were strong similarities in the manufacturing technique of stone tools, such as a bipolar reduction technique (LI 2010).

In the collection of the 6th and 7th seasons at the Sōzudai Site, except for "free hand flaking", we noticed approximately 35% (47/138) of the flakes and 70% of the cores were produced by "bipolar reduction on anvil" (Figure 2.5). Among lithic splinters, as KOBAYASHI and other researchers have already mentioned, many flakes have vertical ridges in the center of the ventral surface, which is one of the typical attributes of bipolar reduction. In addition, KOBAYASHI's experiments revealed that bipolar flaking on anvil produced flakes with characteristic features. They include flakes without evidence of Hertzian initiation, flakes with crushed platforms, wide flakes with a similar length-to-width ratio, flakes with flat or slightly swollen ventral surfaces, flakes with striking angles concentrated around 90 degrees, and pieces showing stepped or hinged termination, and so on. The flakes with these features accounted for about half of the flakes of the assemblage, suggesting a high frequency use of bipolar reduction for flake production. The flake-producing technique of the "Lower Sōzudai industry" is characterized by bipolar reduction on anvil technique. The lithic assemblage is mainly comprised of small scrapers with marginal retouch and a small number of "bifaces".

Recently, YANAGIDA and KAJIWARA Hiroshi (2018) stated that the presence of bipolar reduction is not limited to the lithic assemblage from the Lower Sōzudai but is widely identified among many other Early Paleolithic industries. They further proposed that the recognition and pursuit of this observation would be an indispensable base for the future Paleolithic studies in the Japanese archipelago.

Conclusion

As of now, two Paleolithic levels were identified at Sōzudai. The "Upper Assemblage" was found in the "dark weathered deposits" (Layer 3) below the AT (30,000 BP). This lithic assemblage mainly consists of backed knives and corresponds to the Late Paleolithic industry with a series of highly standardized blades.

On the other hand, the "Lower Industry" consists mainly of small and marginally retouched scrapers on flakes and several bifaces. It belongs to the Early Paleolithic stage (older than Kanuma pumice, ca. 40,000 BP) of the Japanese Islands (YANAGIDA 2018). The frequent use of the bipolar reduction on anvil is the trait which the assemblage shares with lithic industries at Kaseizawa (KOMURA 1968), Nishizaka Site (Tajimi City Board of Education 1977), Hoshino Site (SERIZAWA (ed.) 1970), Tsurugaya Higashi Site (YANAGIDA and AKOSHIMA 2015) and Kabasawayama Site (KAJIWARA 2022). In addition, the group shares widely spreading characteristics of Paleolithic artifacts in Northeast Asia before the proliferation of blade technology. Based on tephrochronology, the Sōzudai Lower lithic industry should date sometime between 70,000 and 80,000 BP, as it is situated *below* "Kujū No.1 Pumice (Kj-P1)", dated to ca. 55,000 BP.

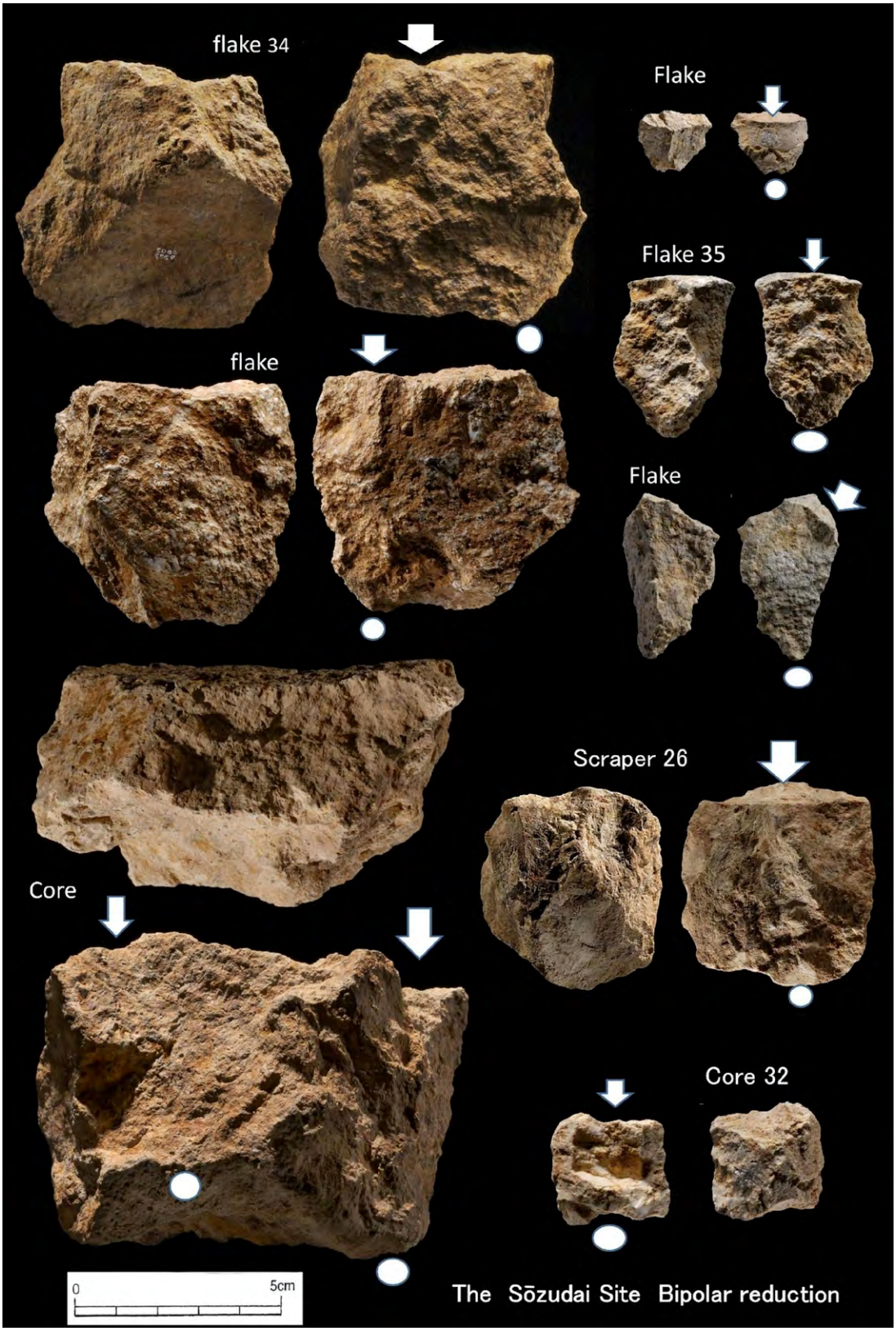

Figure 2.5 Bipolar lithic artifacts from the lower assemblage

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CHAPTER 3

LITHIC ASSEMBLAGES FROM THE LOWEST LAYERS OF THE ŌNO SITE, HITOYOSHI, SOUTHERN KYŪSHŪ

WADA Yoshifumi 和田好史

This chapter highlights the investigation by the archaeologists of the Hitoyoshi City Board of Education, conducted during the road construction in 2001, at the Ōno-C, Ōno-D, and Ōno-E Sites in the Ōno Site group. The excavation revealed that the lowest stratum (XIV) of all three sites, consisting of reddish-brown clay, contained a large number of lithic artifacts. That stratum has been dated by the OSL method to 69,300±13,900 BP. The Ōno-C Site assemblage includes wedge-shaped artifacts, burins, choppers, small scrapers, anvil, in addition to a cluster of cobbles, while denticulates, drills, notched pieces, and handaxes, were excavated at the Ōno-D Site, and small notched scrapers and axe-like tools at the Ōno-E Site. The assemblages are composed predominantly of small tools, with some large tools with marginal retouch. They share general characteristics with the Stratum V assemblage of the Sōzudai Site, which appear to date to about the same age.

Keywords: Japanese archaeology, Early Paleolithic, excavation, lithic artifacts, Kyūshū, Ōno Site group

Introduction

In 2001, archaeologists of the Hitoyoshi City Board of Education in Kumamoto Prefecture conducted research during road construction at the Ōno-C, Ōno-D, and Ōno-E Sites in the Ōno Site group. This revealed that the lowest stratum of all the three sites, consisting of reddish-brown clay, contained a large number of lithic artifacts. That stratum has been dated by the OSL method to 69,300±13,900 BP. The Ōno-C Site assemblage includes wedge-shaped artifacts, burins, choppers, small scrapers, anvil, in addition to a cluster of cobbles, while denticulates, drills, notched pieces, and hand axes are present at Ōno-D Site, and small notched scrapers and axe-like tools at Ōno-E Site. The assemblages are composed predominantly of small tools, with some large tools having marginal retouch. They share general characteristics with the Stratum V assemblage of the Sōzudai Site (see Chapter 2), which appears to date to about the same age.

As the 2001 excavation took place shortly after the "Fujimura scandal" was exposed in the fall of 2000 (see Chapter 1), the results of the excavation were presented only as "relevant information" at the time (WADA and NAGAI 2002). Subsequently, MIYATA Eiji and I examined all lithic remains recovered from the Ōno Sites, and we identified those which could be considered artifacts (WADA 2010b).

An international symposium, entitled 'East Asian Palaeolithic Cultures and the Sōzudai Site', was held at Beppu University on February 13, 2011. The symposium coordinator, SHIMIZU Muneaki, emphasized the importance of the Sōzudai Site as a representative cultural property of Ōita Prefecture. AKOSHIMA Kaoru (Tōhoku University), WADA Yoshifumi (Hitoyoshi City), and KIM Gilyeo (Hanyang University) discussed the characteristics of the lithic industries of the Sōzudai and Ōno sites in relation to the Middle Paleolithic sites in Korea. At the symposium, I pointed out that the lithic assemblages of the Sōzudai and Ōno sites share certain common features (WADA 2010a, 2011). In this paper, I report on the lithic assemblage from the lowest layer of Ōno Site.

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2001 Excavation of the Ōno Sites

The Ōno Site group is located in the south of Hitoyoshi City in southern Kyūshū (Figure 3.1). It is composed of five sites and is located 8 km from the city area, at an average elevation of 360 m above sea level (Figure 3.2). The investigation by WADA Yoshifumi and NAGAI Takahiro, the archaeologists of the Hitoyoshi City Board of Education, was conducted during road construction in 2001, at the Ōno-C, D, and E Sites in the Ōno Site group (Figure 3.3). The areas investigated were about 600 m^2, 2,400 m^2, and 2,000 m^2, respectively. The Ōno-C Site was investigated from June to July in 2000; the Ōno-D Site from August 2000 to January 2001, and the Ōno-E Site from January to March 2001.

We applied the OSL age determination method at Ōno-E Site (Figure 3.4):

Stratum X 19,900±4,500 BP
Stratum XII to 29,800±3,700 BP
Stratum XIII to 31,400±7,400 BP
Stratum XIV to 69,300±13,900 BP

Figure 3.1 General location of the Ōno Site group

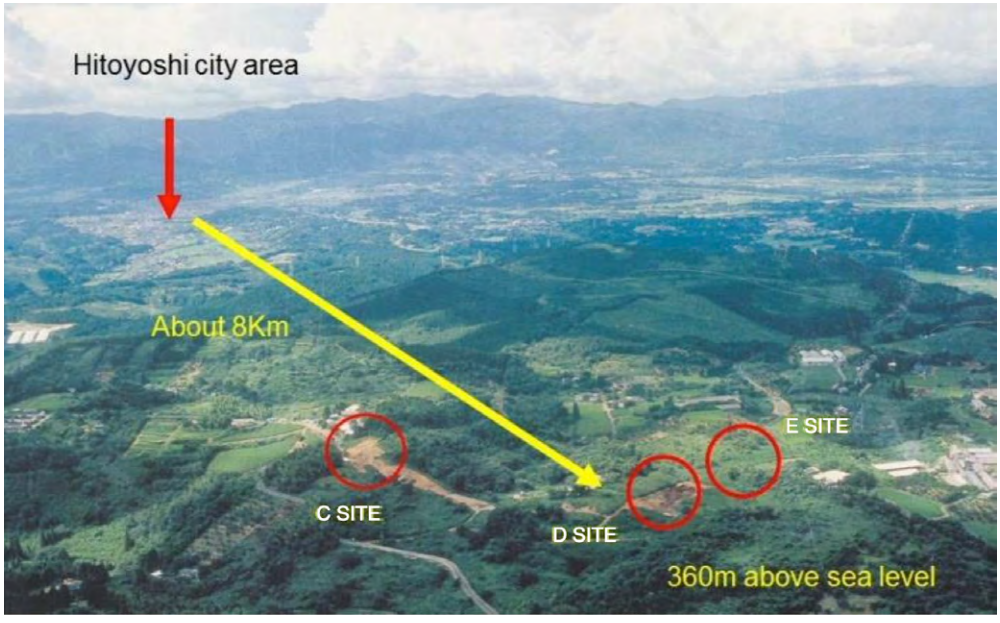


Figure 3.2 Positions of the C, D, and E Sites of the Ōno Site group

Stratum XIV is the lowest stratum consisting of reddish-brown clay that contained a large number of lithic artifacts (WADA 2011). As seen in Figure 3.4, the lowest stratum (dated by the OSL method to 69,300±13,900 BP) exists in all the three sites.

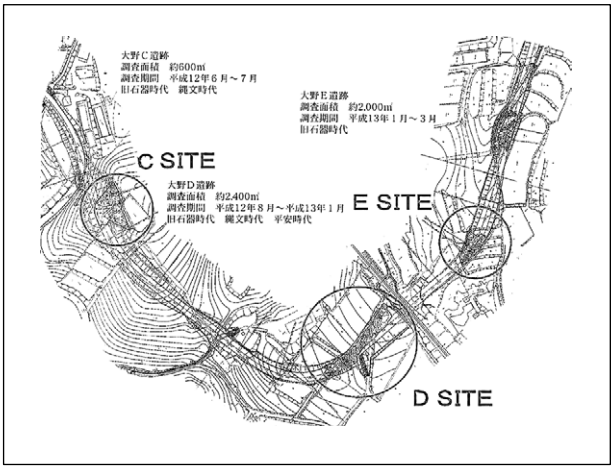


Figure 3.3 Positions of Ōno-C, D, and E sites on road construction in Ōno Town

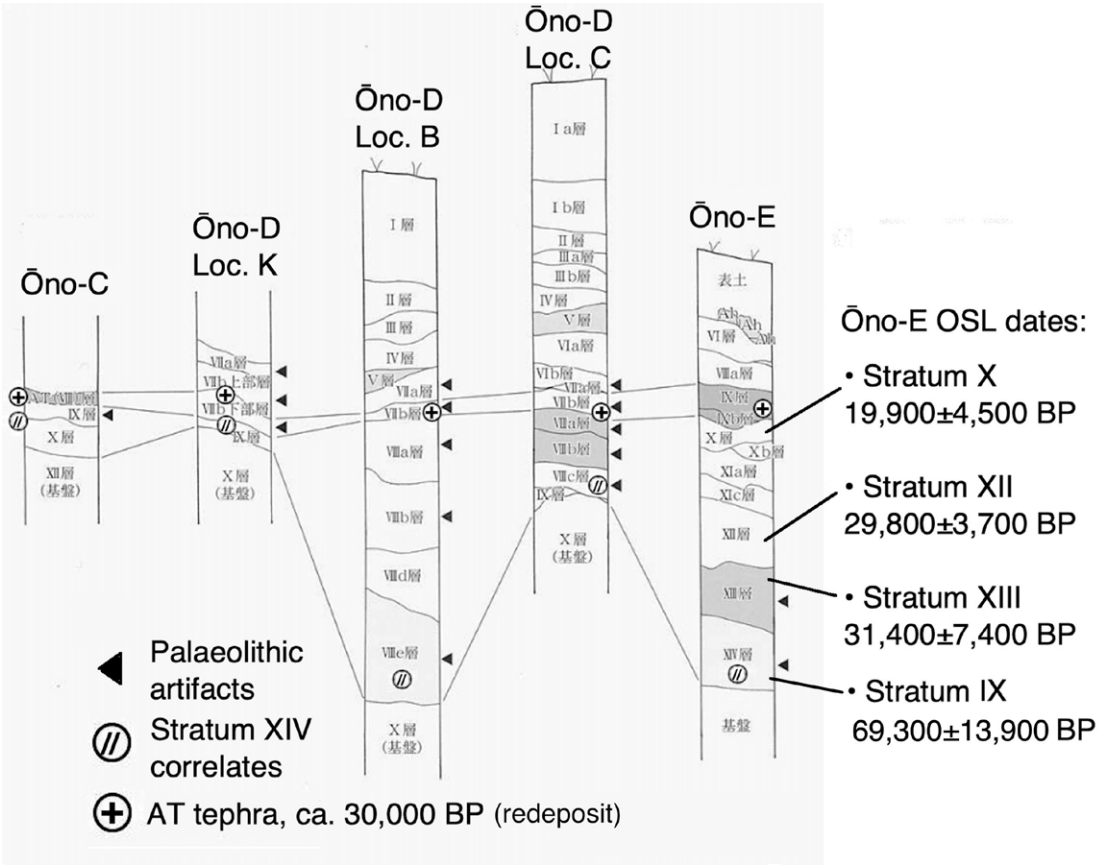


Figure 3.4 Stratigraphy of the Ōno-C, D, and E sites

Results of the 2021 Excavation of Ōno-C Site

About 600 m^2 area of the Ōno-C Site was investigated in June and July of 2000. Located on a gentle slope, it faces southwest at an average elevation of 360 m above sea level. The investigation confirmed the presence of 6 layers. Stratum IX (Figure 3.4) contained 250 lithic artifacts in addition to a cluster of cobbles and two blocks of lithic artifacts (Figures 3.5, 3.6, and lower right Cover Photo). The Ōno-C Site assemblage includes wedge-shaped artifacts, burins, choppers, small scrapers, and anvil stones.

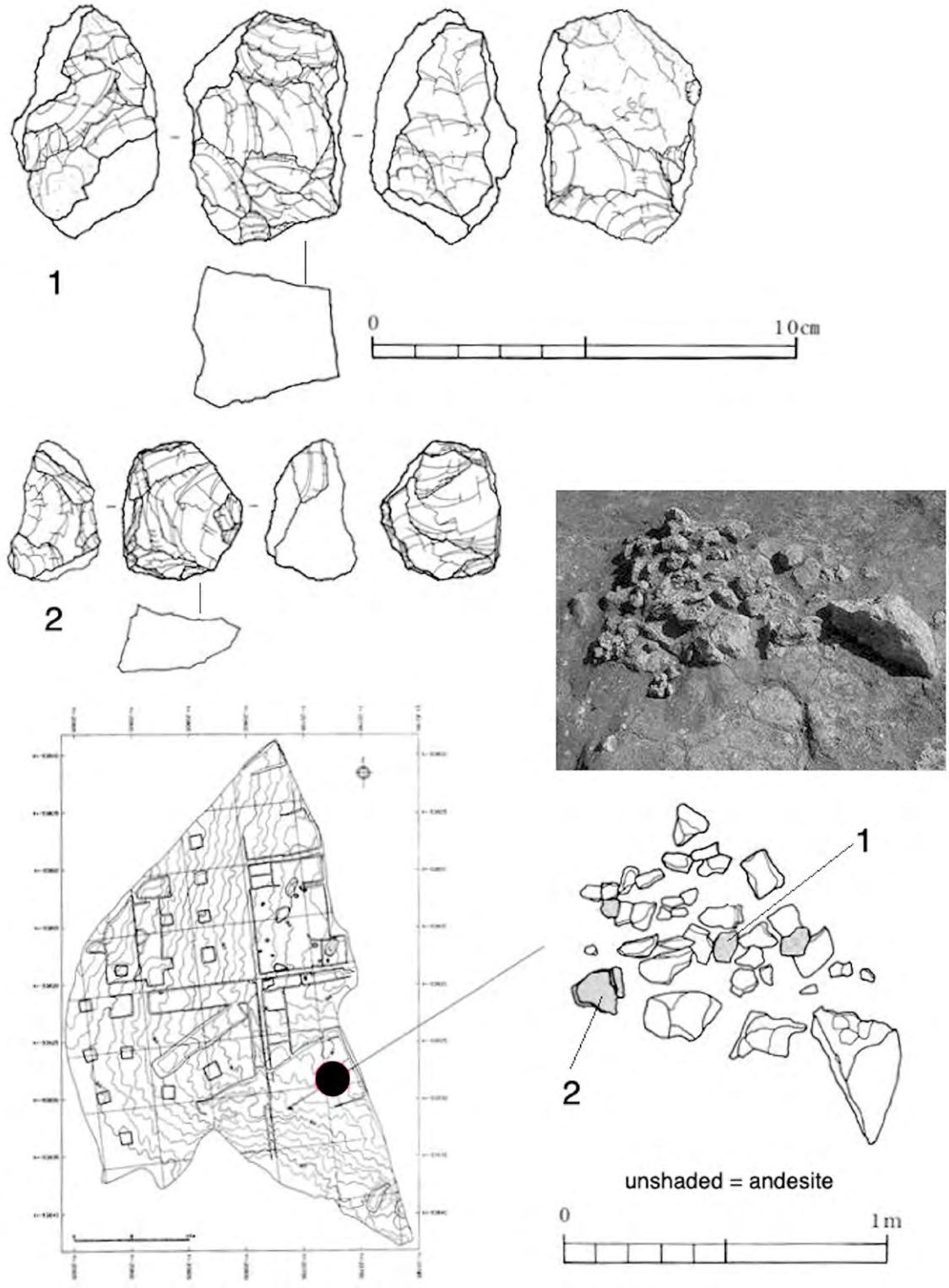


Figure 3.5 Cluster of cobbles at the Ōno-C Site

Lithics 1 and 2 in cluster are illustrated

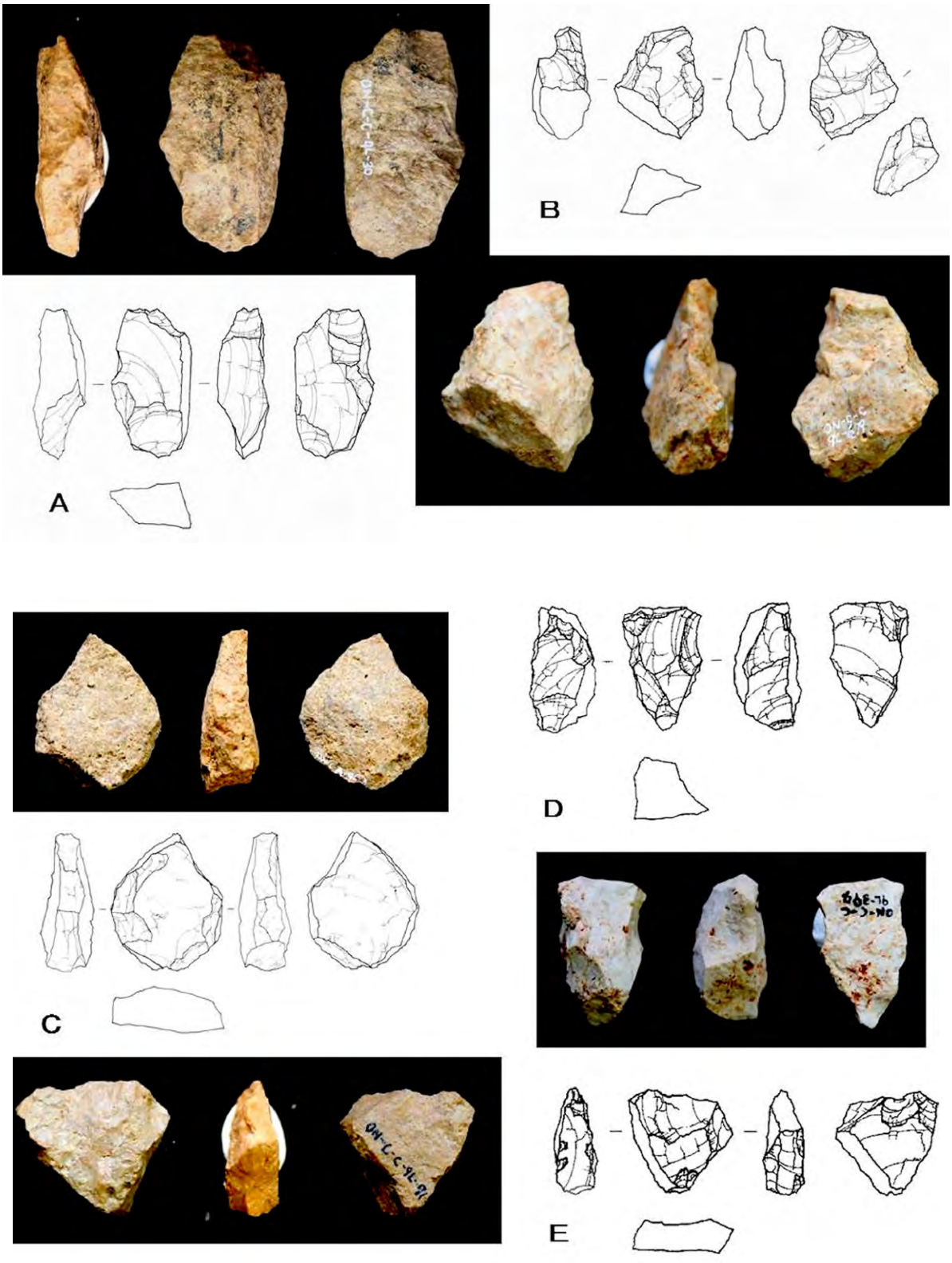


Figure 3.6 (1) Ōno-C Site lithics A~E from stratum IX

Descriptions below

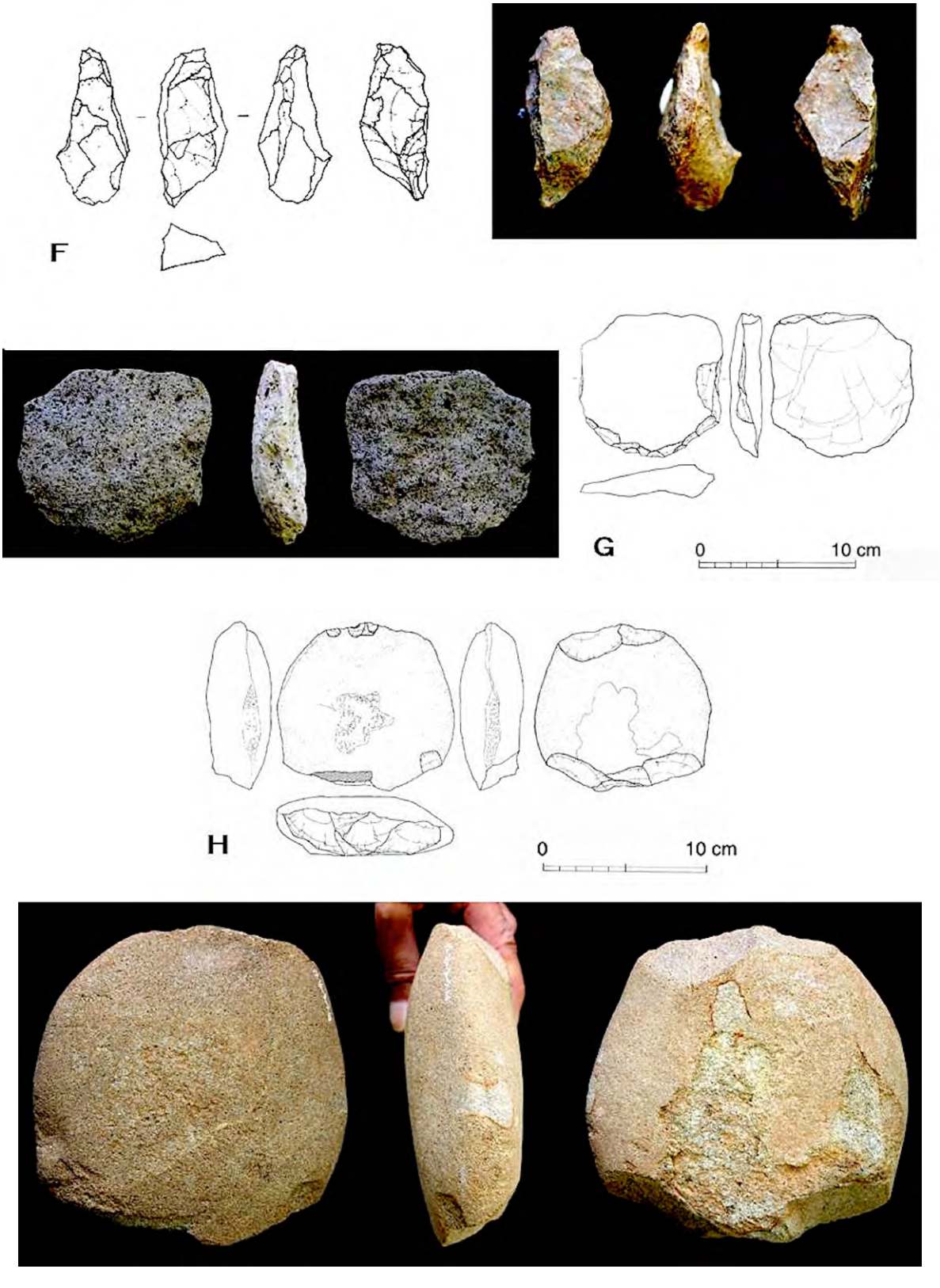


Figure 3.6 (2) Ōno-C Site lithics F~H from stratum IX

Descriptions below

Descriptions of Ōno-C Site lithics A~H from Stratum IX

A) Wedge-shaped artifact in rhyolite, shaped by bipolar percussion; L: 3.1 cm, W: 2.0 cm, H: 0.9 cm, Wt: 5.2 g

B) Burin in rhyolite, showing evidence of bipolar flaking, with the burin facet at the sharp end; L: 2.5 cm, W: 2.0 cm, H: 1.3 cm, Wt; 4.5 g

C) Proto-burin made of a broad flake of rhyolite that has been marginally retouched, with a burin facet at the sharp end; L: 4.5 cm, W: 3.7 cm, H: 1.7 cm, Wt: 24.3 g

D) Small scraper in rhyolite, feather-edged at the sharp end by the strong flaking, with secondary flaking on the lateral face; L: 2.2 cm, W: 1.4 cm, H: 1.2 cm, Wt: 3.6 g

E) Small scraper or a knife, made by cutting a rhyolite flake to form one of the lateral faces, which joins the other lateral face to create a three-sided polygon at the base; L: 1.7 cm, W: 1.7 cm, H: 0.7 cm, Wt: 1.9 g

F) Wedge-shaped artifact, in rhyolite, with secondary flaking on the lateral face; L: 2.7 cm, W: 1.2 cm, H: 1.2 cm, Wt: 2.9 g

G) Chopper in andesite, with marginal retouches; L: 12.2 cm, W: 2.8 cm, H: 2.0 cm, Wt: 350 g

H) Chopper, made from a large sandstone pebble, exhibiting bipolar flaking scars but also showing scars that may have resulted from later use as an anvil stone; L: 14.4 cm, W: 14.2 cm, H: 5.1 cm, Wt: 1440 g

Results of the the Ōno-D Site Investigation in 2001

At the Ōno-D Site, an area of about 2,400 m^2 was investigated during the period from August, 2000 to January, 2001. The investigation area was divided into four locations: A, B, and C, from south to north (Figure 3.7), and Loc. D is located on a gentle slope, facing northeast, at an average elevation of 350 m above sea level. The investigation confirmed the presence of 15 strata (Figure 3.8). Strata VIIa and VIIb contained a trapeze each, while strata VIIIa, VIIIb, VIIIc and VIIIe contained 2,612 lithic artifacts. The Loc. D assemblage included denticulates, drills, notched pieces, hand-axes, and chopping tools. The lithic artifacts recovered from Loc. C Stratum VIIIb included denticulates, scrapers, hand-axes, picks, and chopping tools (Figure 3.9). Among the lithic artifacts recovered from the Loc. C Stratum VIIIc were handaxes and scrapers (Figure 3.10).

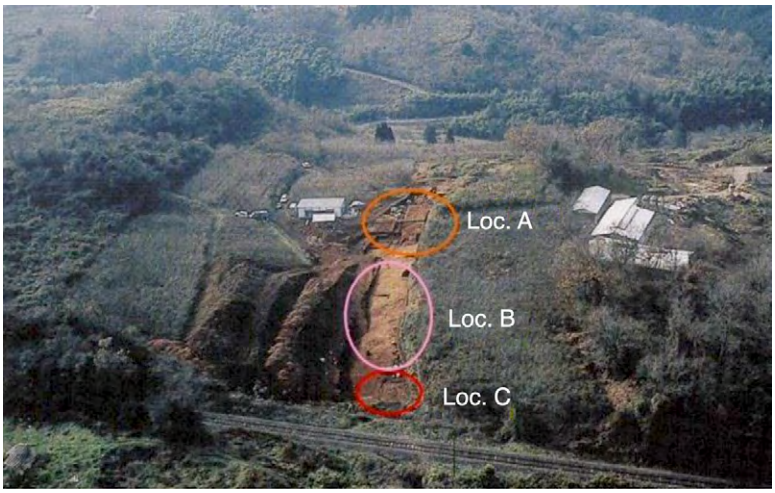


Figure 3.7 Ōno-D Site localities

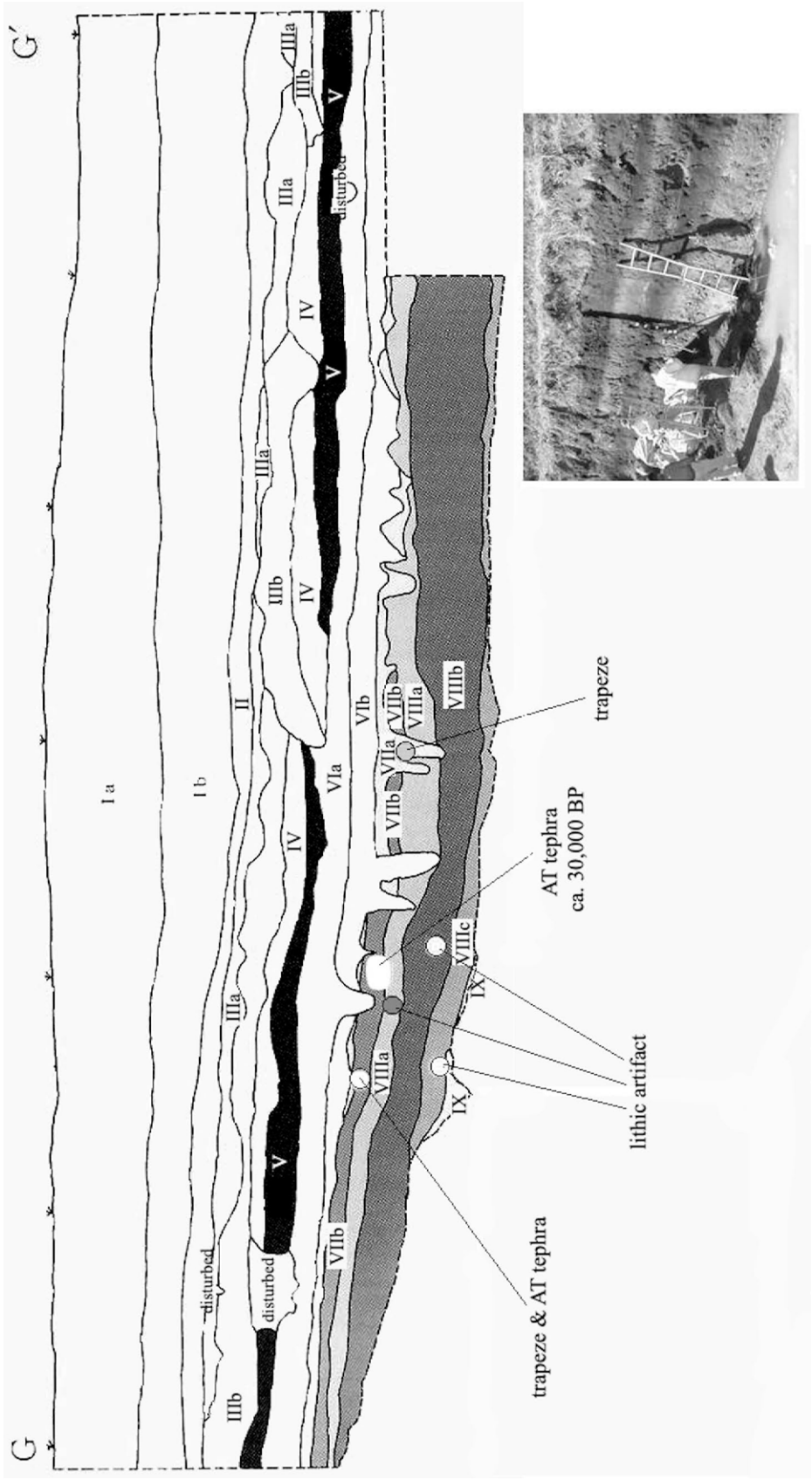


Figure 3.8 Stratigraphic profile of the Ōno-D Site

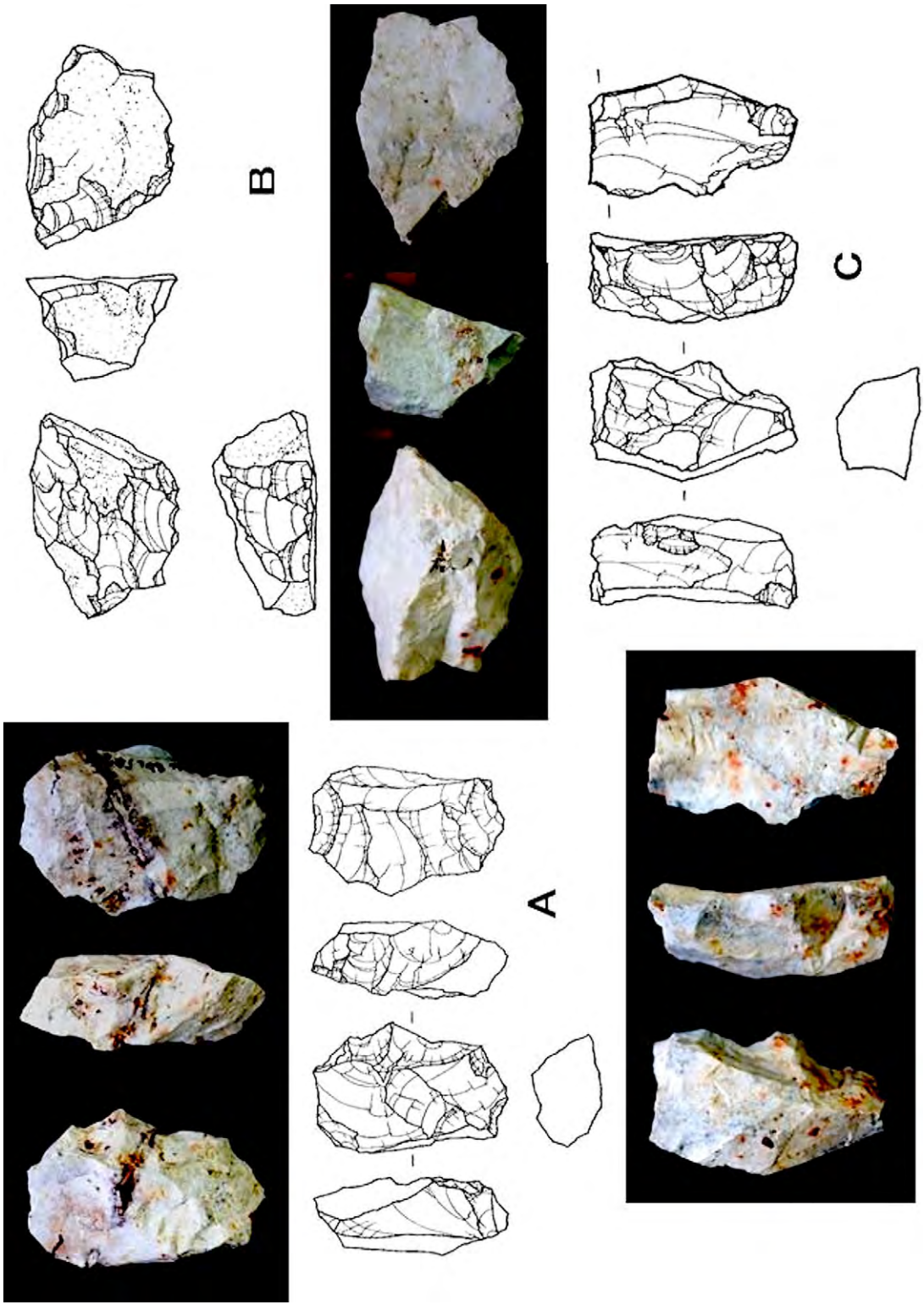


Figure 3.9 (1) Ōno-D Site lithics A~C from Stratum VIIIb, Loc. C *Descriptions below*

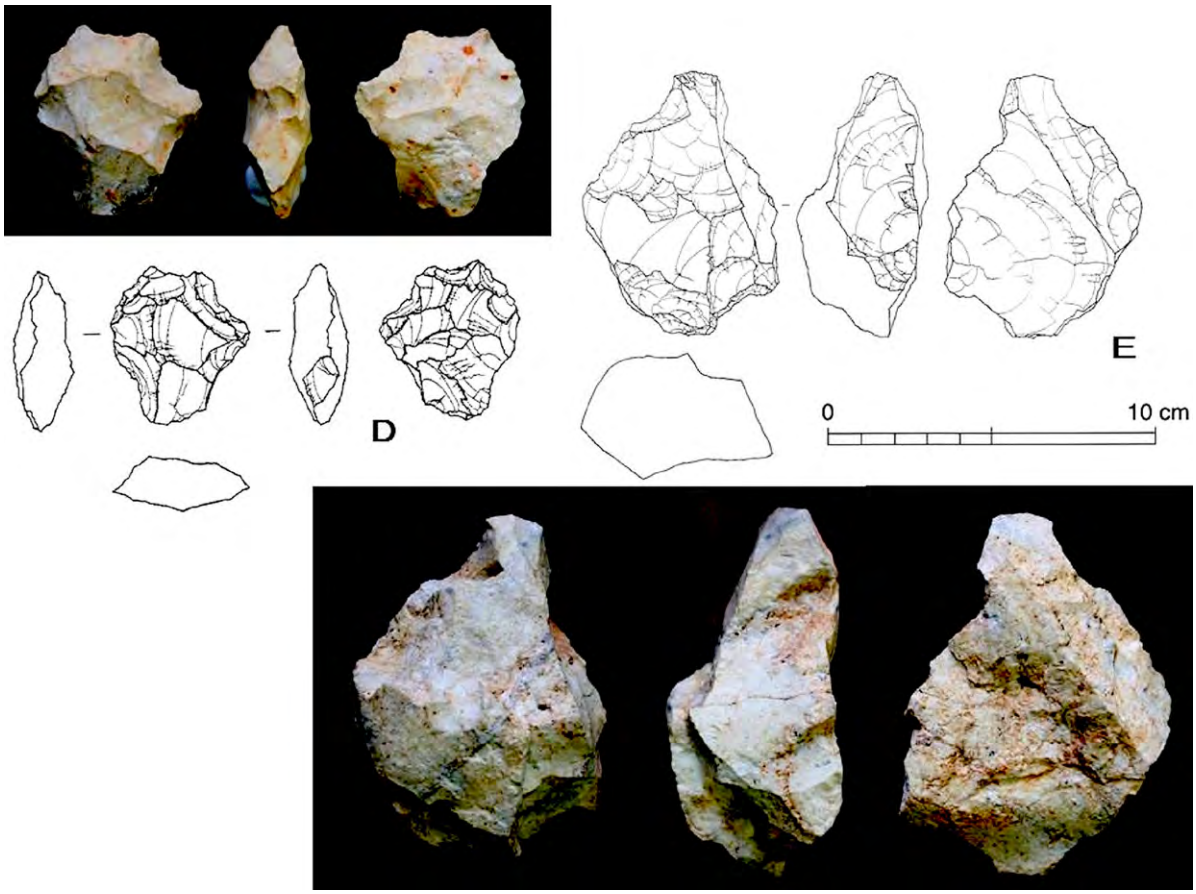


Figure 3.9 (2) Ōno-D Site lithics D~E from Stratum VIIIb, Loc. C

Descriptions for lithics A~E from Ōno-D Site Stratum VIIIb, Loc. C

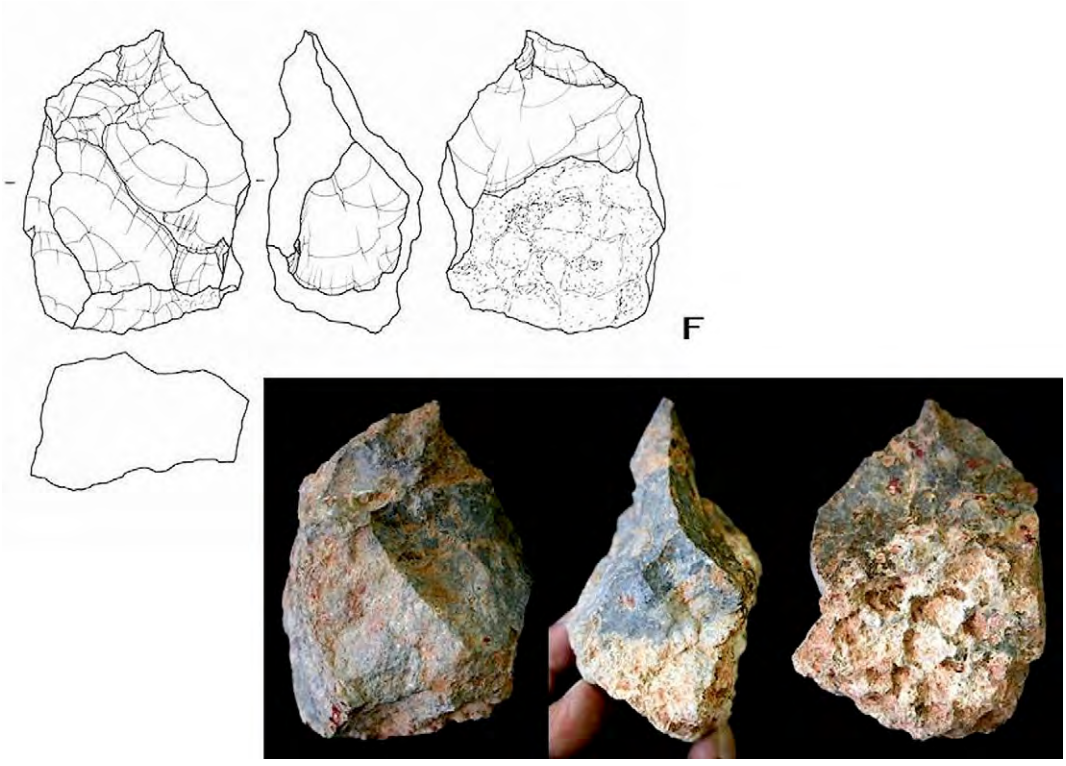
A) Denticulate made from a thick flake of rhyolite, with a zigzag edge on the right side, created by two secondary flaking; L: 4.1 cm, W: 2.8 cm, H: 1.6 cm, Wt: 16.7 g

B) Small scraper also of rhyolite, made from an amorphous flake, with intensive secondary flaking along parts of the edge; L: 2.3 cm, W: 3.2 cm, H: 1.6 cm, Wt: 10.7 g

C) Small scraper or drill made from an amorphous flake of rhyolite, marginally retouched, with a projection portion created by secondary flaking; L: 2.6 cm, W: 2.3 cm, H: 1.0 cm, Wt; 4.5 g

D) Denticulate, made from a thick flake of rhyolite, with saw-edges created by removing several secondary flakes; L: 3.2 cm, W: 1.9 cm, H: 1.4 cm, Wt: 8.0 g

E) Hand-axe, made from a chunky pebble of rhyolite, shaped with marginal retouches all around, with additional flaking on one end; L: 7.9 cm, W: 6.0 cm, H: 3.9 cm, Wt: 140 g



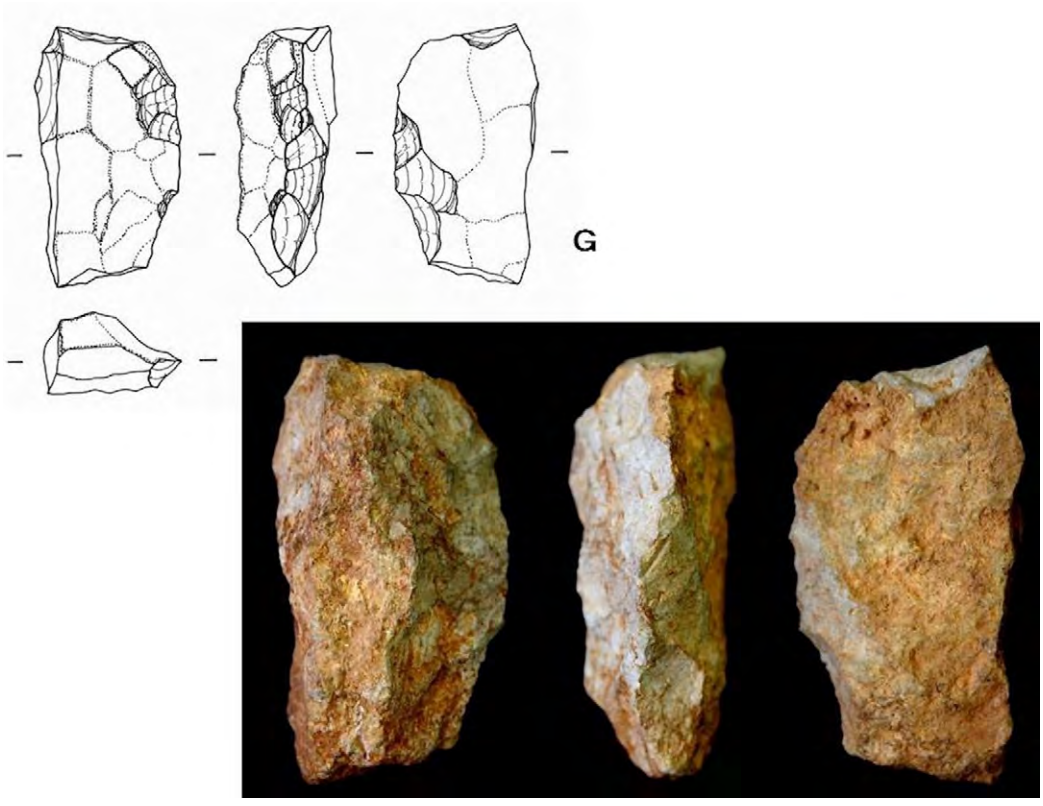


Figure 3.9 (3) Ōno-D Site lithics F~G from Stratum VIIIb, Loc. C

Descriptions below

Descriptions for lithics F~G from Ōno-D Site Stratum VIIIb, Loc. C

F) Pick, made from a pebble of rhyolite, shaped by marginal retouch all around, with some cortex left on the back. The apical end is created by alternate flaking; L: 10 cm, W: 7.4 cm, H: 5.1 cm, Wt: 340 g

G) Chopping tool, made from a thick pebble. It is alternately flaked along right side, and has cortex left on the left side and on both front and back surfaces; L: 7.4 cm, W: 3.6 cm, H: 3.7 cm, Wt: 84.4 g

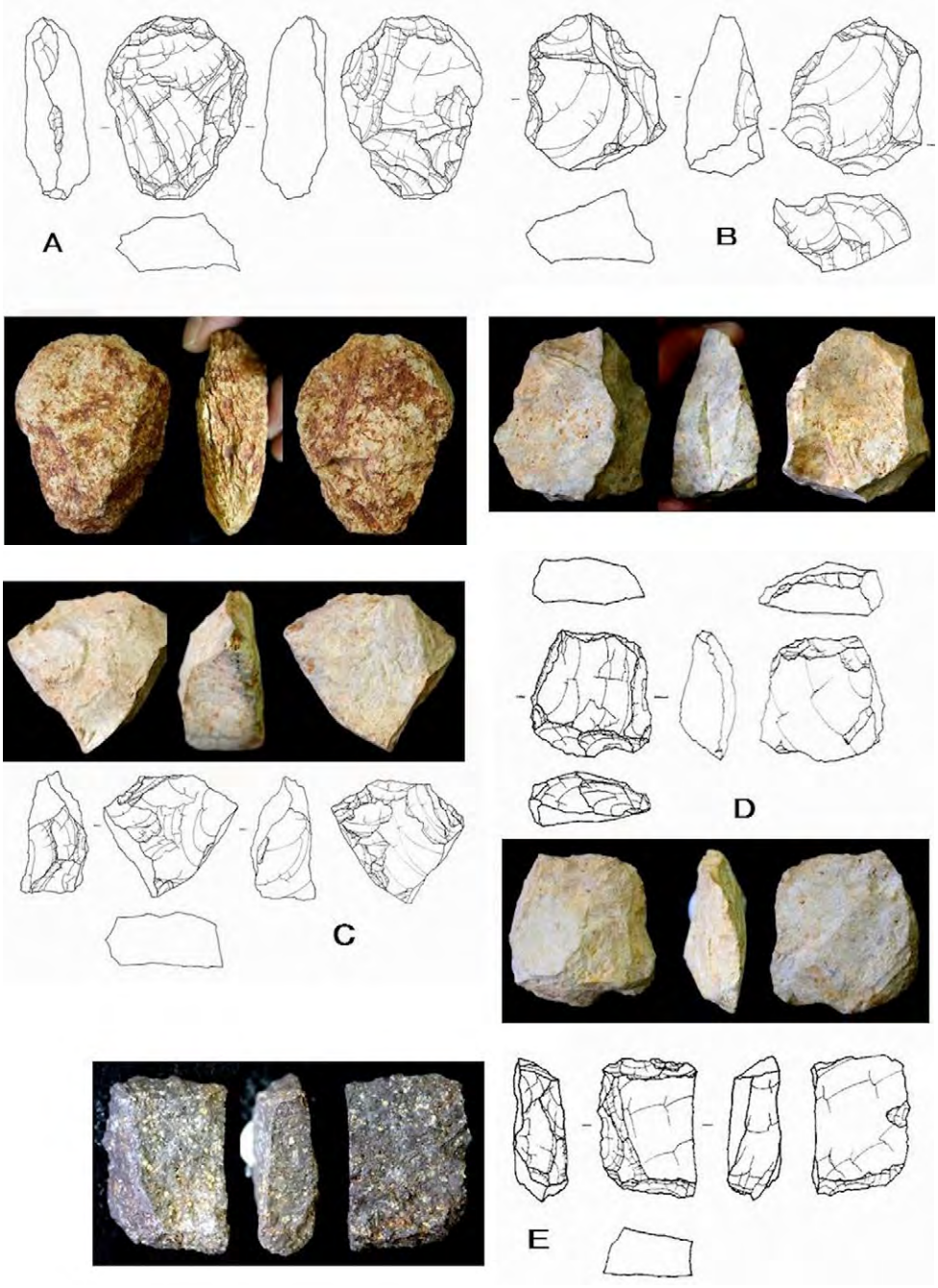


Figure 3.10 Ōno-D Site lithics A~E from Stratum VIIIc, Loc. C

Descriptions below

Description of Lithics A~E from Ōno-E Site Stratum VIIIc, Loc. C

A) Hand-axe, made from a thick rhyolite pebble with marginal retouch; L: 6.7 cm, W: 5.3 cm, H: 2.4 cm, Wt: 99.8 g

B) Scraper, made from a broad-based flake, in rhyolite, with secondary flaking along the left margin; L: 4.7 cm, W: 4.2 cm, H: 2.3 cm, Wt: 38.6 g

C) Scraper, made from a rhyolite flake cut into a fan-shape, with the working edge retouched with secondary flaking; L: 4.3 cm, W: 4.6 cm, H: 2.3 cm, Wt; 40.4 g

D) Small scraper or a notched piece, made from an amorphous flake of rhyolite, with intensive secondary flaking along parts of the perimeter; L: 2.6 cm, W: 2.4 cm, H: 1.1 cm, Wt: 6.7 g

E) Small scraper or a notched piece, made on an oblong piece of rhyolite; L: 2.5 cm, W: 1.7, cm, H: 1.0 cm, Wt: 5.4 g

Results of the Ōno-E Site Excavation in 2001

At the Ōno-E Site, about 2,000 m^2 were investigated from January to March, 2001. The Ōno-E Site is located on a slope, facing north-east, at an average elevation of 350 m above sea level (Figure 3.11). The investigation confirmed the presence of 17 layers. Stratum IX contained particles characteristic of the Aira-Tanzawa tephra or AT, a well-known horizon marker-tephra dated to about 30,000 cal. BP. Some 284 lithic artifacts were recovered from strata XIII and XIV (Figure 3.12). The Ōno-E site assemblage includes small notched scrapers and axe-like tools (Figure 3.13)

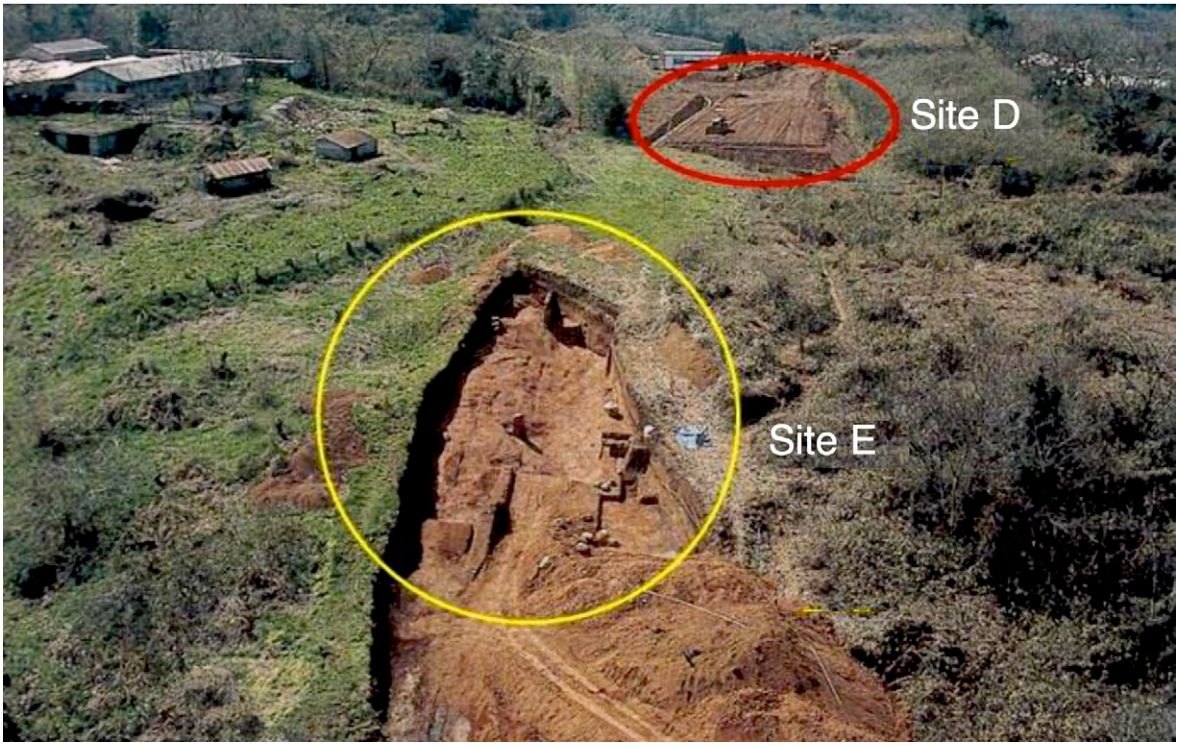


Figure 3.11 Ōno-E Site overview

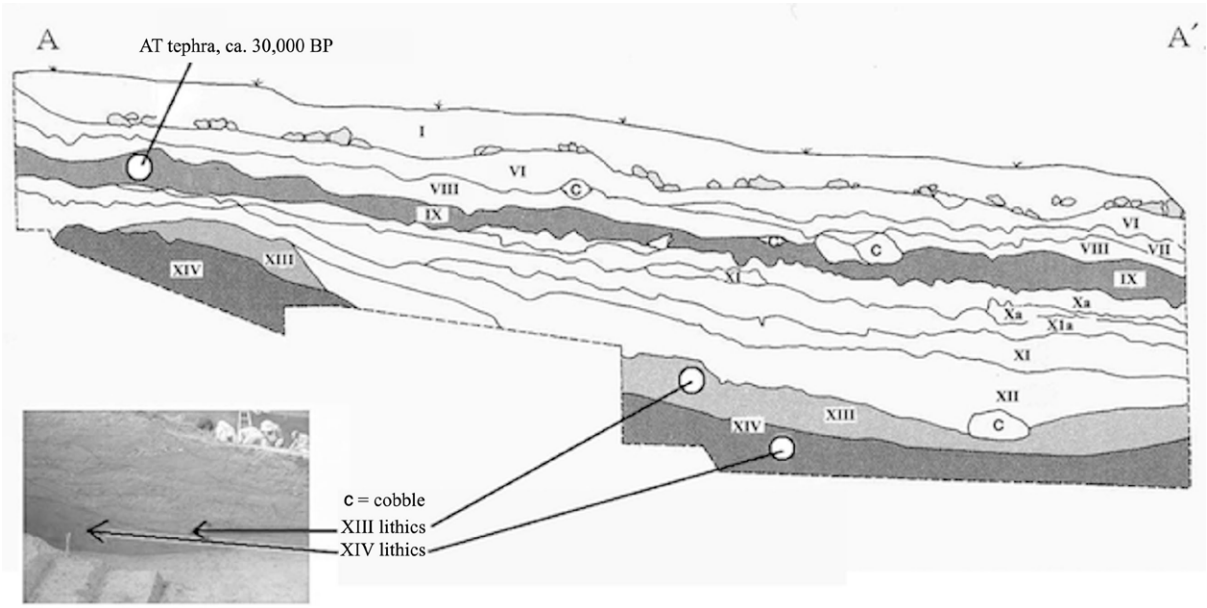


Figure 3.12 Stratigraphy of the Ōno-E Site

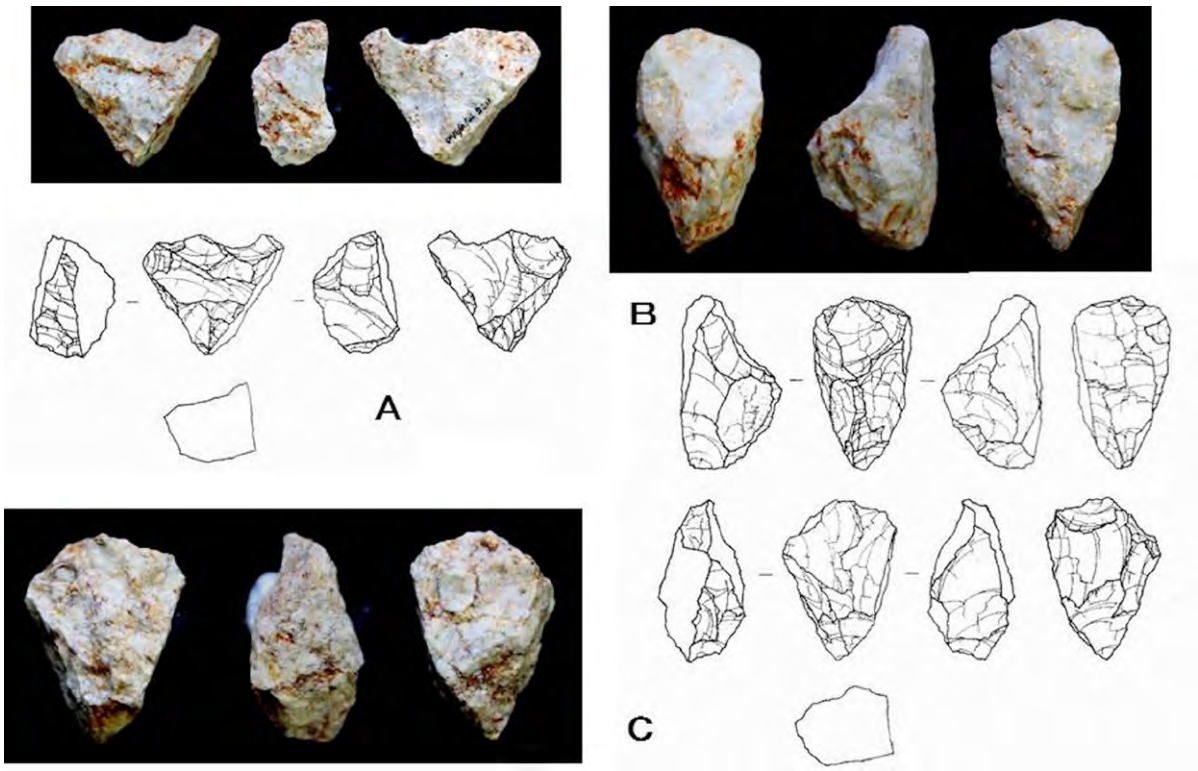


Figure 3.13 (1) Ōno-E Site lithics A~C from Stratum XIV

Descriptions below

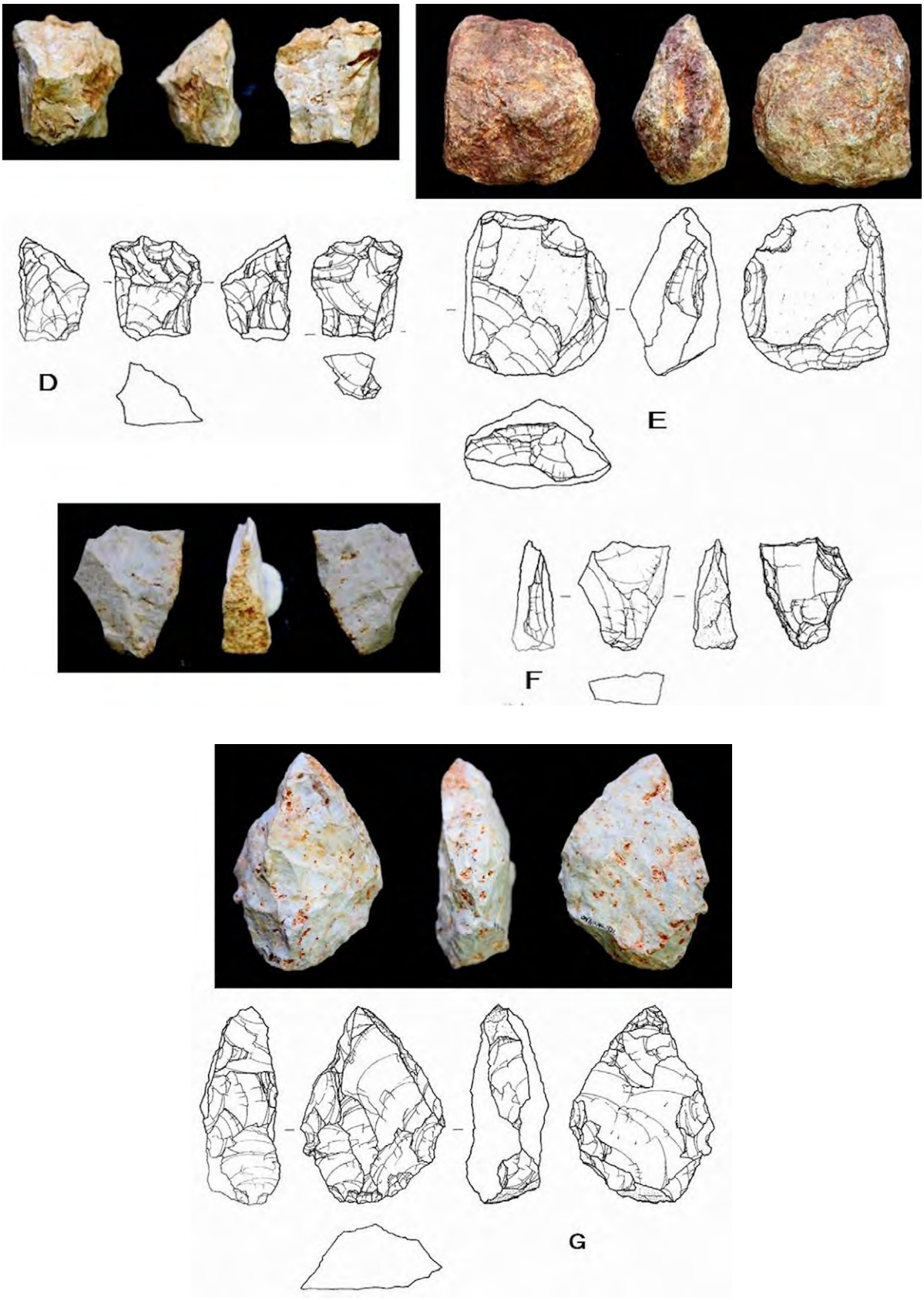


Figure 3.13 (2) Ōno-E Site lithics D~G from Stratum XIV

Descriptions of lithics A~G from Ōno-E Site Stratum XIV

A) Notched small scraper in rhyolite, made from a flake shaped by bipolar percussion, with a deep notch created by final flaking to the apical end; L: 2.3 cm, W: 2.7 cm, H: 1.7 cm, Wt: 6.5 g

B) Small scraper made from a thick flake of rhyolite, exhibiting traces of several bipolar percussions. The basal portion is pointed, with gently curved cutting edge; L: 3.0 cm, W: 1.7 cm, H: 1.7 cm, Wt: 7.0 g

C) A small scraper, made of rhyolite. It is also formed by bipolar percussion and has a pointed base and a sharp cutting edge; L: 2.8 cm, W: 2.0 cm, H: 1.5 cm; Wt: 6.6 g

D) Backed small scraper in rhyolite, roughly square in shape, with the cutting edge created by a series of secondary flaking, and the side surfaces formed by the blows from two directions; L: 2.7 cm, W: 2.3 cm, H: 1.8 cm, Wt: 9.3 g

E) Small scraper or axe-like tool, made from a flat pebble of rhyolite, marginally retouched; L: 7.4 cm, W: 7.3 cm, H: 4.6 cm, Wt: 250 g

F) Small scraper or a small knife, made from a flat flake of rhyolite, with the cutting edge created by a single flaking and the back surface also made by a single flaking. Its over-all shape is trapezoid; L: 2.4 cm, W: 2.0 cm, H: 1.0 cm, Wt: 3.4 g

G) Pointed tool or burin, made from an amorphous flake or rhyolite, marginally retouched, with the continuous flaking at the apical end, and a flake taken from the upper end on the left side; L: 5.0 cm, W: 3.7 cm, H: 2.1 cm, Wt: 30.5 cm (after Wada 2014: 111-124)

Conclusion: the Lithic Assemblages from the Lowest Layers of Ōno Site

The Ōno-C Site lowest assemblages include wedge-shaped artifacts, burins, choppers, small scrapers, and anvils, in addition to a cluster of cobbles; while denticulates, drills, notched pieces, handaxes, small notched scrapers, and axe-like tools are also present. The assemblages are composed predominantly of small tools, with some large tools with marginal retouch, and the bipolar percussion is recognized in large number of specimens. A frequently used lithic material is rhyolite.

The assemblages of the Ōno sites are similar to the Lower lithic industry of the Sōzudai Site, Ōita Prefecture (Figure 3.14) (YANAGIDA 2011; YANAGIDA and ONO 2007). The assemblage of Layers 5 and 6 at the Sōzudai Site is composed of wedge-shaped artifacts, choppers, chopping-tools, small scrapers, burins, and it is characterized, as with the Ōno assemblages, by the presence of small tools, small scrapers, the frequent use of bipolar percussion technique, and flakes with twin-bulbs. It should also be noted that with the OSL date of 60,300±13,900 BP for the lowest stratum of Ōno Site, the lithics appear to be about the same age as the Sōzudai Lower lithic industry, estimated to between 60–80,000 BP (See YANIGIDA, Chapter 2, this volume).

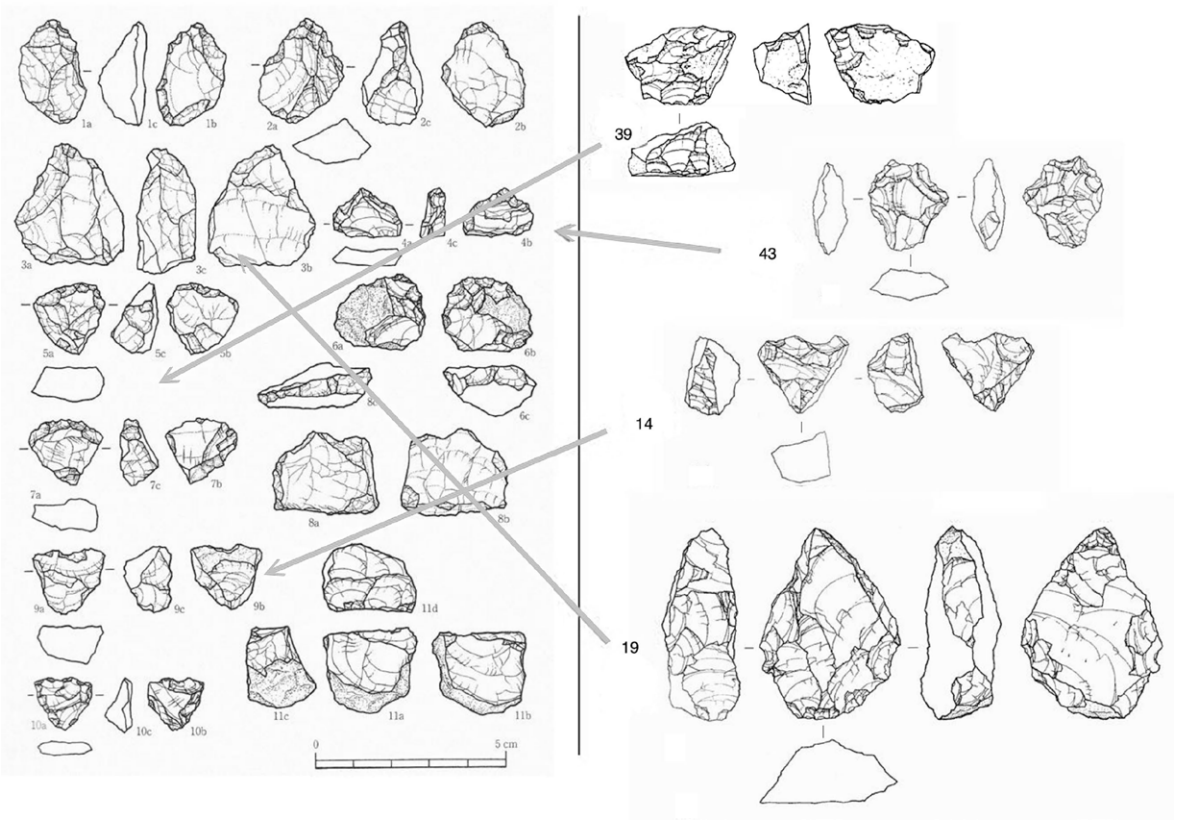


Figure 3.14 Artifacts of the lower Sōzudai (left) and the Ōno (right) sites

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CHAPTER 4

Investigation of the Kanedori Site in Iwate Prefecture, Northern Honshū

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This article presents the excavation results of the Kanedori site, located in Tōno City, Iwate Prefecture in northern Honshū. The site was discovered by TAKEDA Yoshio in 1984. The excavation in 1985 revealed that it contained cultural remains dating back to the Middle Paleolithic. The 2nd and 3rd excavations were conducted in 2003 and 2004. Three cultural layers have been identified at Kanedori. Cultural layer II, dated to 23,580±450 14C uncal. BP, (Gak-13090), contains stone tools of the Incipient Jōmon or the Late Paleolithic. Cultural layer III, with a 14C date of 46,480±710 uncal. BP (IAAA-81798), yielded a bifacially modified pebble tool, a large discoidal core, a chopper, and some small tools. Cultural layer IV is assumed to date to early Middle Paleolithic times as it contains—along with a biface, a chopping-tool, choppers, scrapers, and a few other small tools—particles of several horizon-marker tephra, including those of the Aso-4 Tephra attributed to an eruption of about 85,000 to 90,000 years ago.

Keywords: Japanese archaeology, Early Paleolithic, excavation, lithics, north Honshū

Introduction

When did the humans arrive in the Japanese archipelago? This simple question is a large and difficult study subject in Japanese archaeology (MATSUFUJI 2004, 2011). In 1946, AIZAWA Tadahiro found the Iwajuku Site and proved the existence of the Late Paleolithic in Japan. SERIZAWA Chōsuke of Tōhoku University tried to obtain evidence for the Early Paleolithic in the Japanese archipelago. It seemed that a few disciples of SERIZAWA proved the existence of Early Paleolithic remains by recovering lithic tools from a 40,000-year-old layer of the Zazaragi Site during the third excavation in 1981. However, it was disclosed in 2000 that the so-called evidence had been forged, and the study in the Early Paleolithic age had to start all over again.

The Kanedori Site was discovered by TAKEDA Yoshio in 1984, and the first excavation took place in 1985. In those days, Kanedori attracted attention as the northernmost "Early" Paleolithic site in Japan. After the 2000 FUJIMURA Scandal and with the rejection of forged Early Paleolithic sites (see Part I Introduction), the Kanedori site came into the spotlight again as the oldest in Japan (Figure 4.1).

Therefore, the second and third excavations were conducted in 2003 and 2004. In these excavations, different methods of age determination were employed, which revealed that the site contained materials dating to the Middle Paleolithic Period, prior to 35,000 years ago. This paper presents a summary of the results of all the excavations and subsequent research conducted at the Kanedori site (KIKUCHI 1986, 1996, KIKUCHI and NAKAMURA 2004, KURODA 2005, YAGI 2005).

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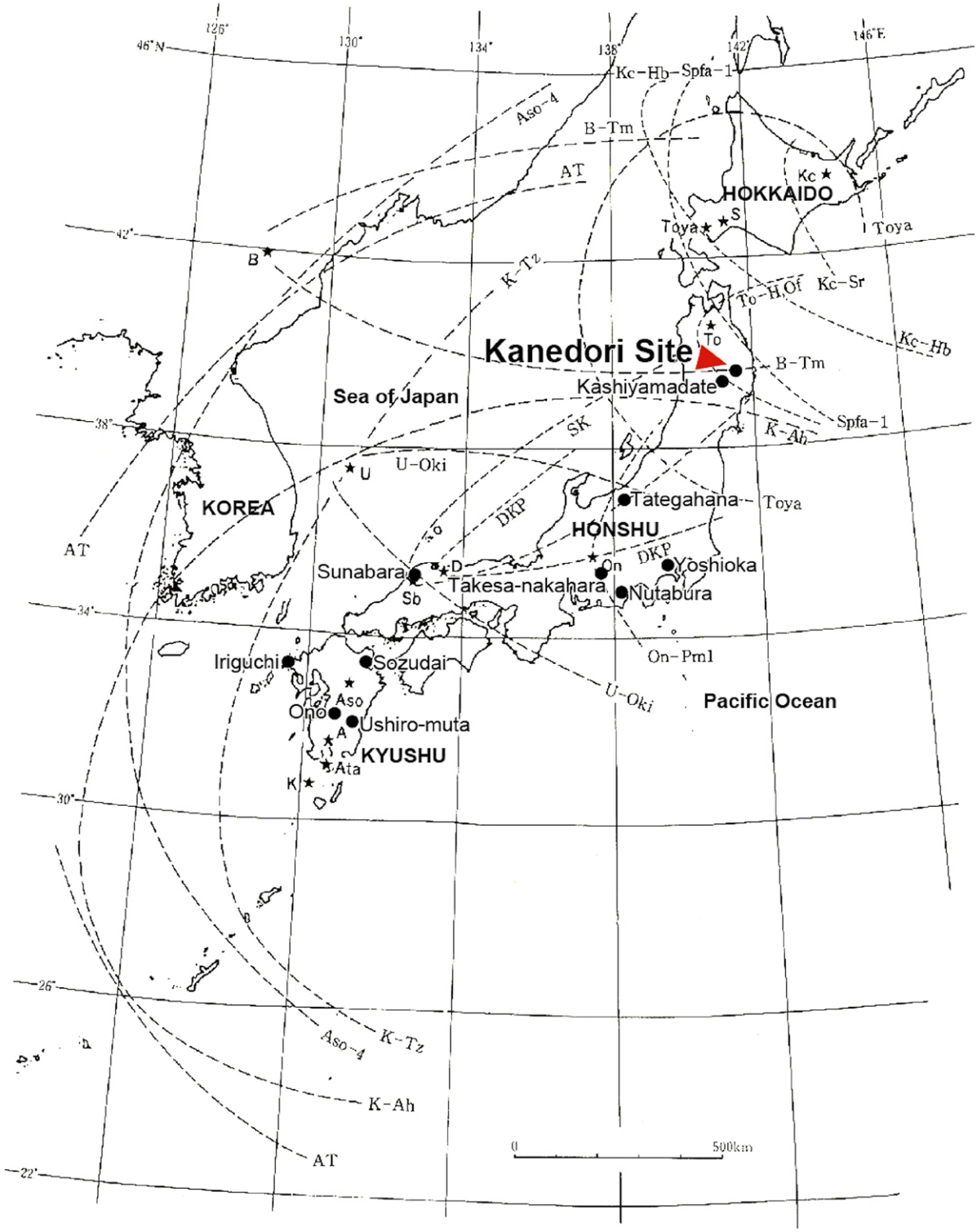

Figure 4.1 Earlier Paleolithic sites and late Quaternary widespread marker-tephra in the Japanese archipelago

* = volcanoes

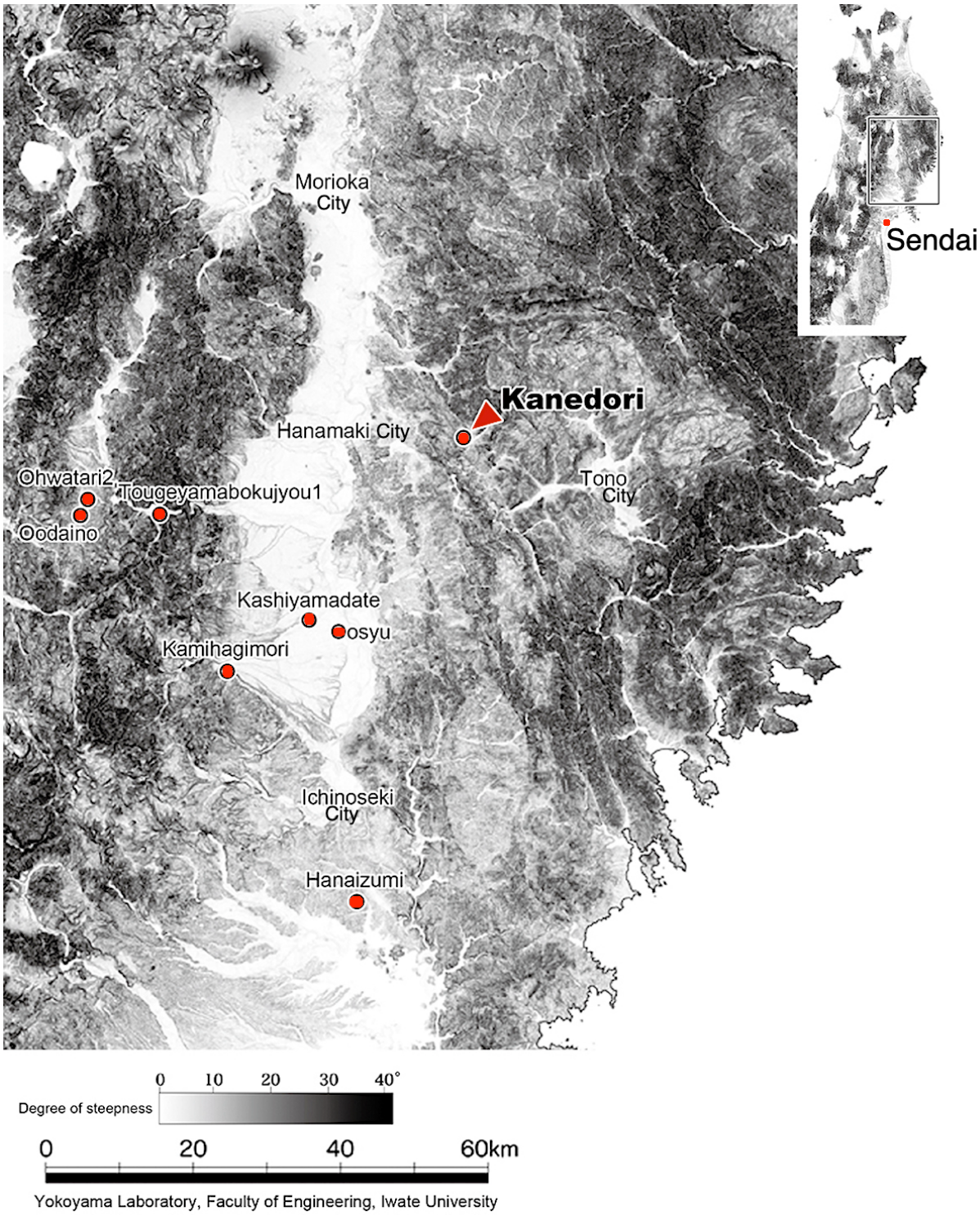

Figure 4.2 Paleolithic sites in Iwate referred to in the text

Location

The Kanedori site is located in Tōno City, in Iwate Prefecture, in northern Honshū (Figure 4.2). The site is in the middle part of the Kitakami Highlands, to the west of the Kitakami River. There are many Paleolithic sites in the area (KIKUCHI 1996). To the east of the Kitakami River is the Ōu Mountain Range, which forms the backbone of northern Honshū. There are several volcanos in the Ōu Mountains that erupted numerous tephra falls during the Pleistocene (Figure 4.3). The tephra deposits are most useful for age estimation of the Paleolithic assemblages (SODA 2005; MACHIDA and ARAI 2003; WATANABE, DANHARA and FUJIWARA 2005).

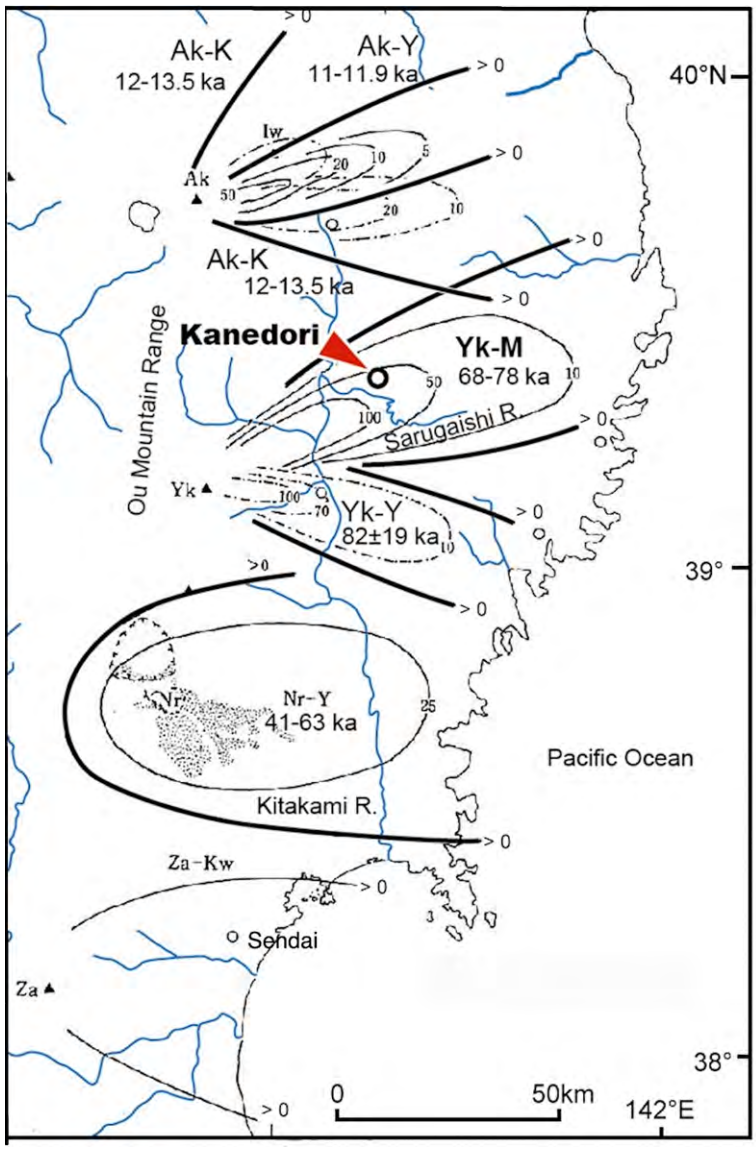

Figure 4.3 Isopach map of tephra Yk-M distribution

The site is located on a remnant of the middle terrace of the Yuya River, in the southwestern part of the Kitakami Highlands. The high, middle, and low terraces along the Yuya River and Tassobe River can all be correlated with riverine terraces of the Saruga'ishi River and Kitakami River, in terms of the relative heights from the riverbeds and from the sea level (Figure 4.4). It should be noted that the middle terrace of the Yuya River, on which the site is located, can clearly be correlated with the Murasakino・Isawa Terrace of the Kitakami River, with reference to the horizon marker tephra, the Yake'ishi-Murasakino Pumice, or "Yk-M". The site is on the tongue-shaped terrace which extends from Mt. Hiryū (Hiryū-san) on the west bank of the Yuya River. It is at 242 m above sea level, and at about 20 m from the riverbed. The terrace remnant hill on which the site is located is separated from Mt. Hiryū by National Highway 396 (Figure 4.5). The highway runs through a shallow valley which marks the boundary between different kinds of bedrock: serpentine on the west side of the Highway, and argillite on the east side.

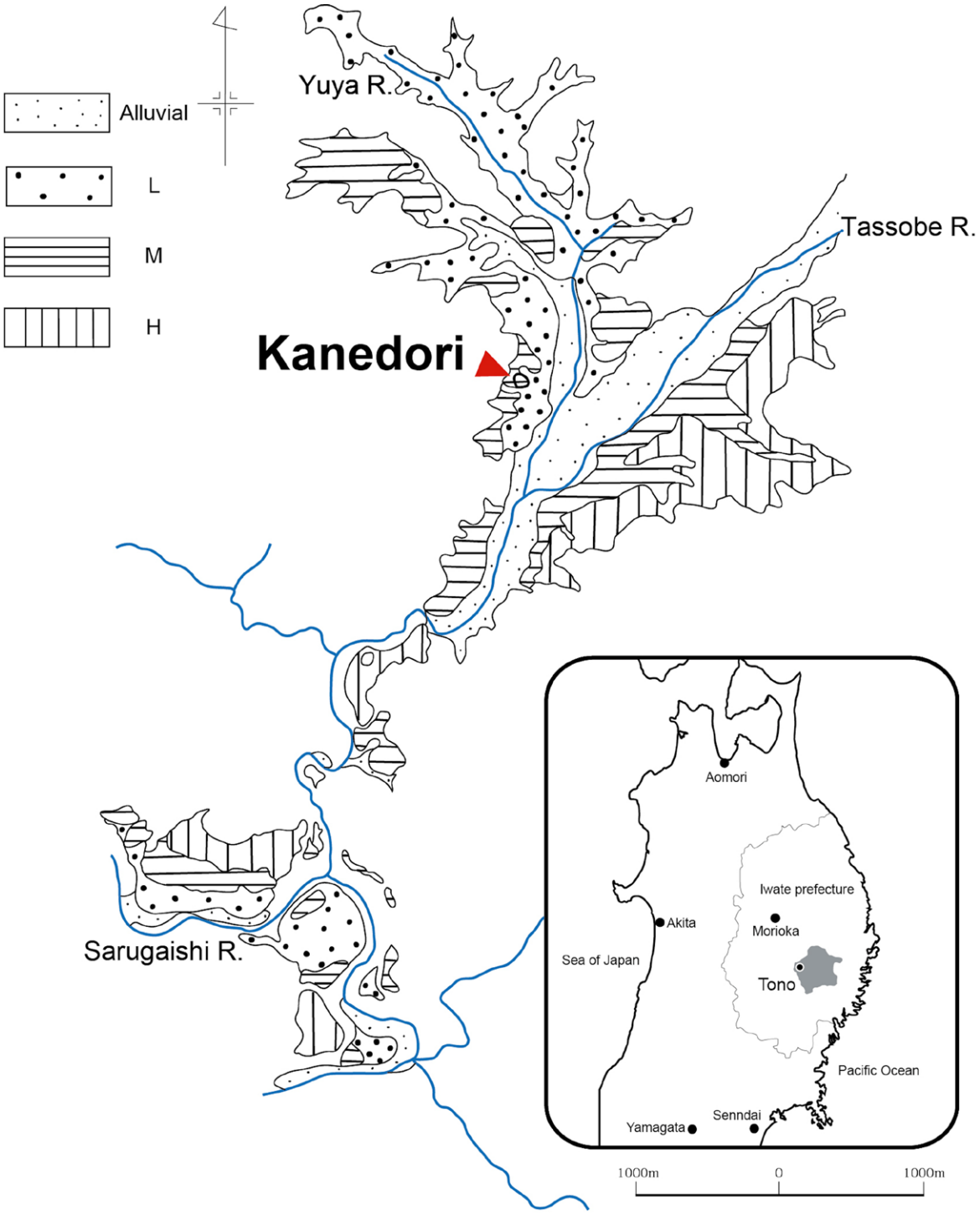

Figure 4.4 Geomorphological map of the Kanedori area

L = lower terrace, M = middle terrace, H = high terrace

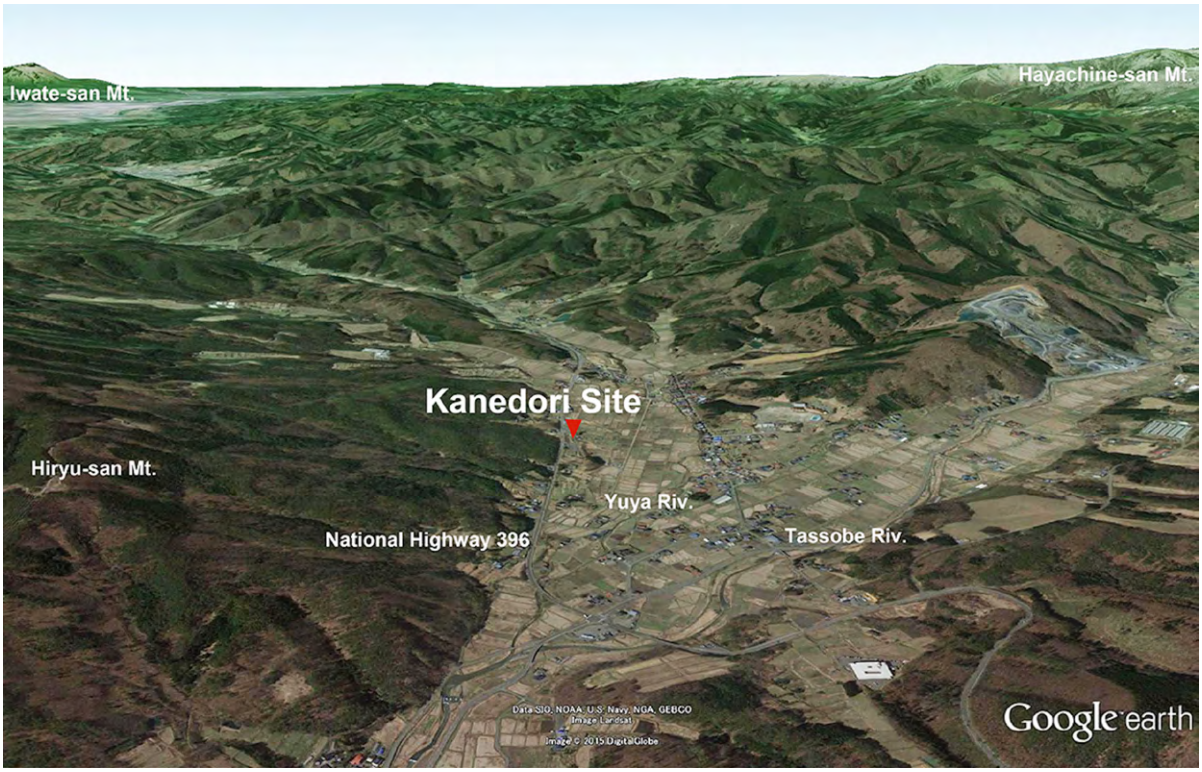

Figure 4.5 Overview of Kanedori Site location

Figure 4.6 Detailed plan of Kanedori excavation area

Research History

After TAKEDA's discovery of the site, it was investigated by the Kanedori Excavation Group, led by KIKUCHI Kyōichi. The first investigation, which took place from 26 July 1985 to 31 March 1986, covered some 300 square meters of the site (Figure 4.6). It revealed that the site contained materials dating to the Middle Paleolithic Period. Because of the FUJIMURA Scandal of 2000, the municipal Board of Education conducted the second and the third investigations, for one month each, in 2003 and 2004. The investigations confirmed the Middle Paleolithic status of the site prior to 35,000 years ago.

The investigation was conducted by horizontal excavation of lamina units in each layer (Figure 4.7). Artifacts were recorded 3-dimensionally, and fabric measurement was conducted. Of the scientific methods of investigation, the analyses of physico-chemical properties of tephra, with the view to identifying its source and the eruption date, were applied. Also, we took radiocarbon and OSL dating, phytolith analyses, geological research, and lithological analyses of the lithic artifacts.

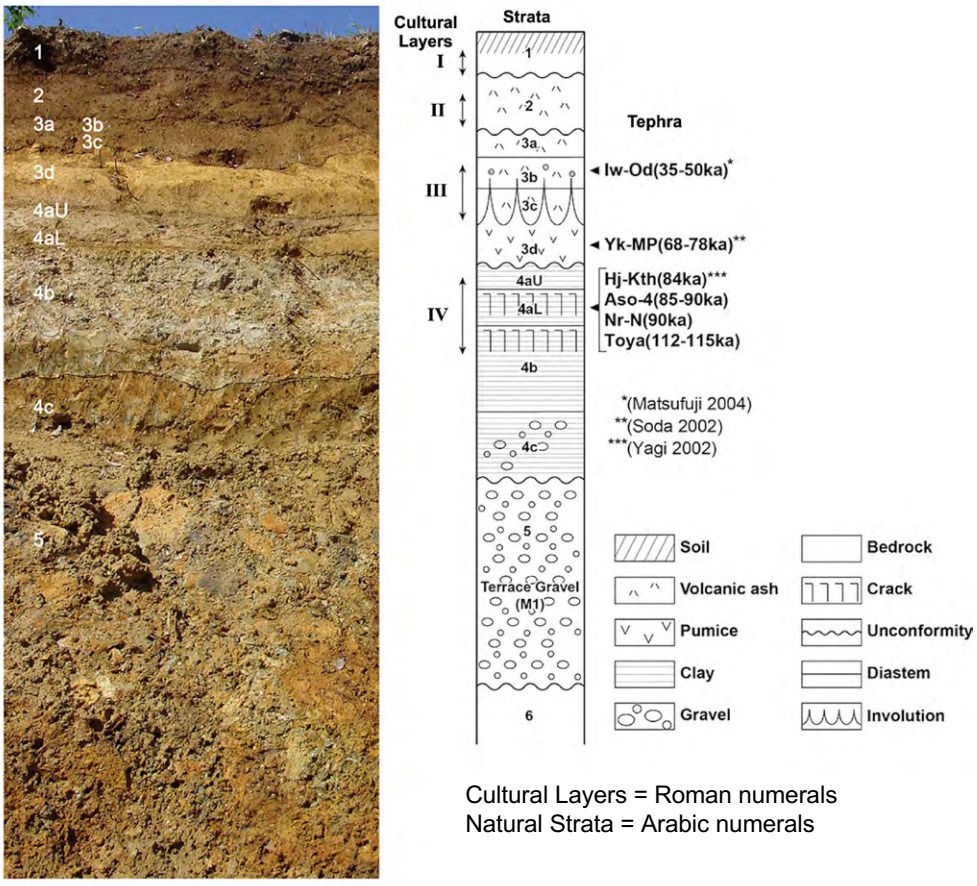

Figure 4.7 Kanedori Site stratigraphy

Stratigraphy

The site stratigraphy is as follows: Stratum 1 is the present and old surface soils; Strata 2, 3a, 3b, and 3c are soft loam of volcanic origin; Stratum 3d is pumice; Strata 4a, 4b, and 4c are clay; and Stratum 5 is terrace gravel (Figure 4.7). Of these, cultural remains were found in the following strata: the lower part of Stratum 1 contained Final Jōmon to Late Yayoi remains, and the upper part of Stratum 2 contained

Early Jōmon materials. Middle Paleolithic materials were found in Strata 3b, 3c, which we call Cultural Layer III, and Strata 4a and 4b, called Cultural Layer IV. The Strata are separated by unconformities, while slight unconformities (diastem) exist between sub-strata. Cracks are present in the lower part of Stratum 4a and the upper part of 4b. The following tephra have been identified (Figures 4.7): the tephra named Iw-Od dated 35,000 to 50,000 years ago in Stratum 3b; Yk-M (68,000 to 78,000 years ago) in Stratum 3d, and from the lower part of Stratum 4a were extracted Hj-Kth (84,000 years ago), Aso-4 (85,000 to 90,000 years ago), Nr-N (90,000 years ago), and Toya (112,000 to 115,000 years ago). These finds can be compared with other Paleolithic sites in the area (Figure 4.8).

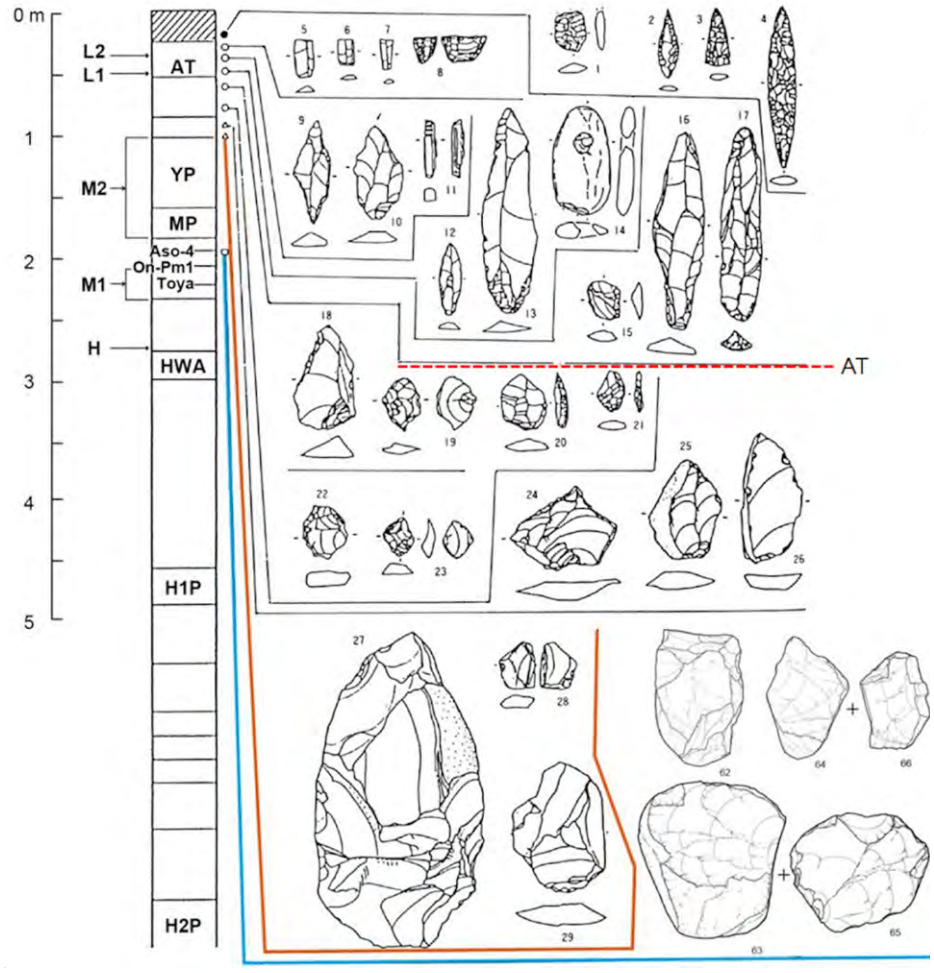

Figure 4.8 Tephra and stratification of Paleolithic sites around the Kitakami River

Select tephra codes and ages:
AT 29,400 (^{14}C)
YP 82,000±19,000 (FT)
Aso-4 85,000~90,000 (TI, FT, K/Ar, U)
On-Pm1 100,000 (FT)
Toya 112~115,000 (OIS, FT, TL)
H2P 180~220 (TL)

Artifacts from:

Kanedori
(27~29, between AT [red dashed line] and YP [solid red line])
(62~66 between YP and Aso-4 [blue line] cf. Figure 4.15)

Kashiyamadate
(1, 5~7, 9~11, 18, 19, 22~26

Ohwatari II
(15~17)

Artifacts

Cultural Layer III

We noted an area of artifact concentration, named Unit A (Figure 4.9), where we found large tools made of hornfels and smaller tools made of siliceous shale, as well as many carbonized remains. There is also a more loosely defined cluster of smaller artifacts in the southwest. We recovered 40 items from Cultural Layer III, among which were one axe-shaped tool (No. 41) (Figure 4.10), one discoidal core (No. 42); the axe-shaped tool was what led to the site discovery by TAKEDA, and the core was collected by the

landowner while its imprint on the ground was subsequently confirmed. Also recovered were a chopper (No. 43) (Figure 4.10), scrapers (Nos. 44, 45, 46, 49, and 50), a wedge-shaped tool (No. 47), flakes (Nos. 48, 51-59) Figures 4.11 and 4.12) and 24 chips.

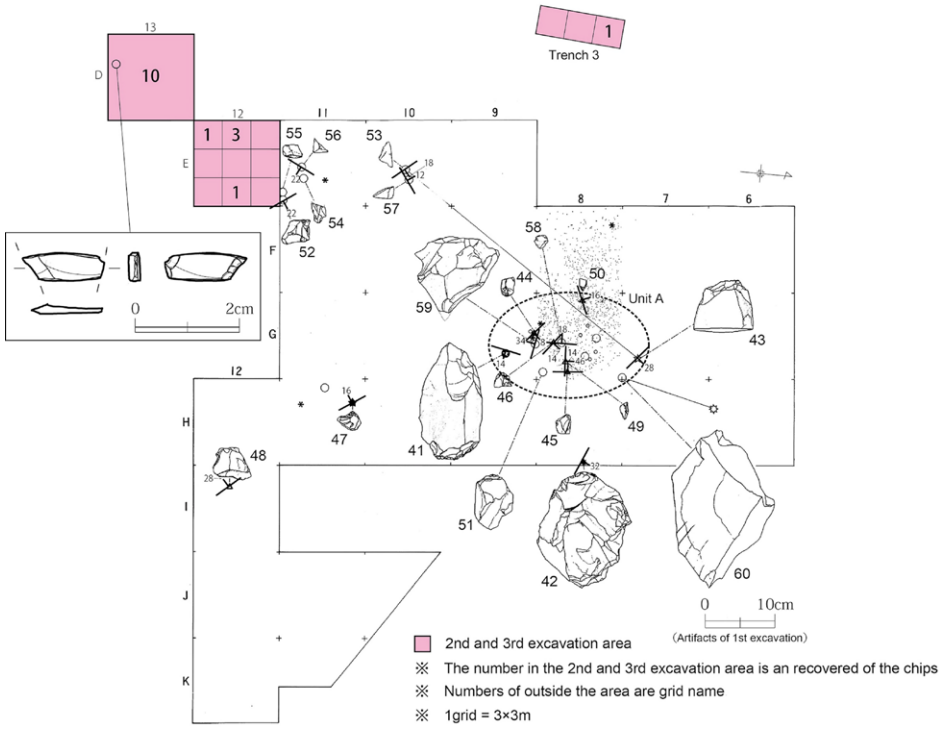

Figure 4.9 Distribution map of artifacts in Cultural Layer III

Figure 4.10 Large stone tools from Kanedori Cultural Layer III

No. 41 Axe-shaped tool

No. 42 Discoidal core, with refitted fragment

No. 43 Chopper

No. 53 Fragment

Nos 43+53 refitted

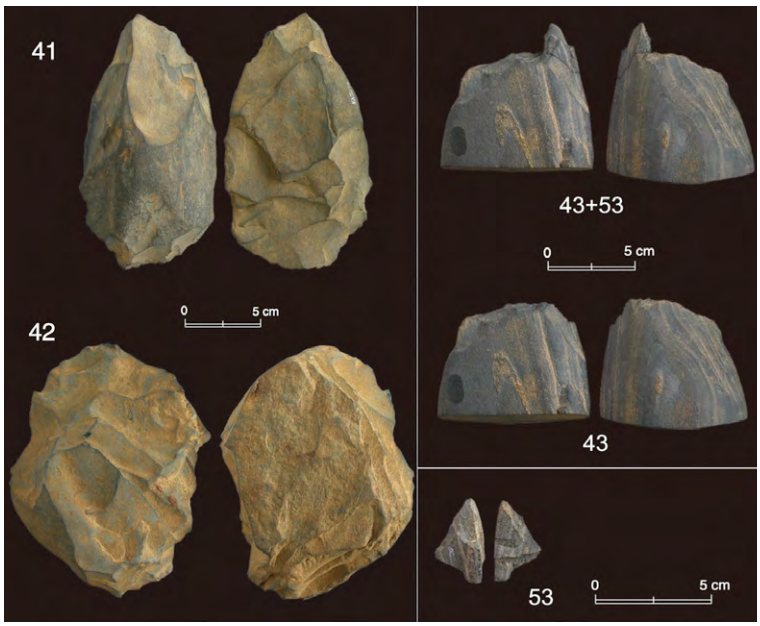

Figure 4.11 (1) Flake tools from Kanedori Cultural Layer III

See text for descriptions

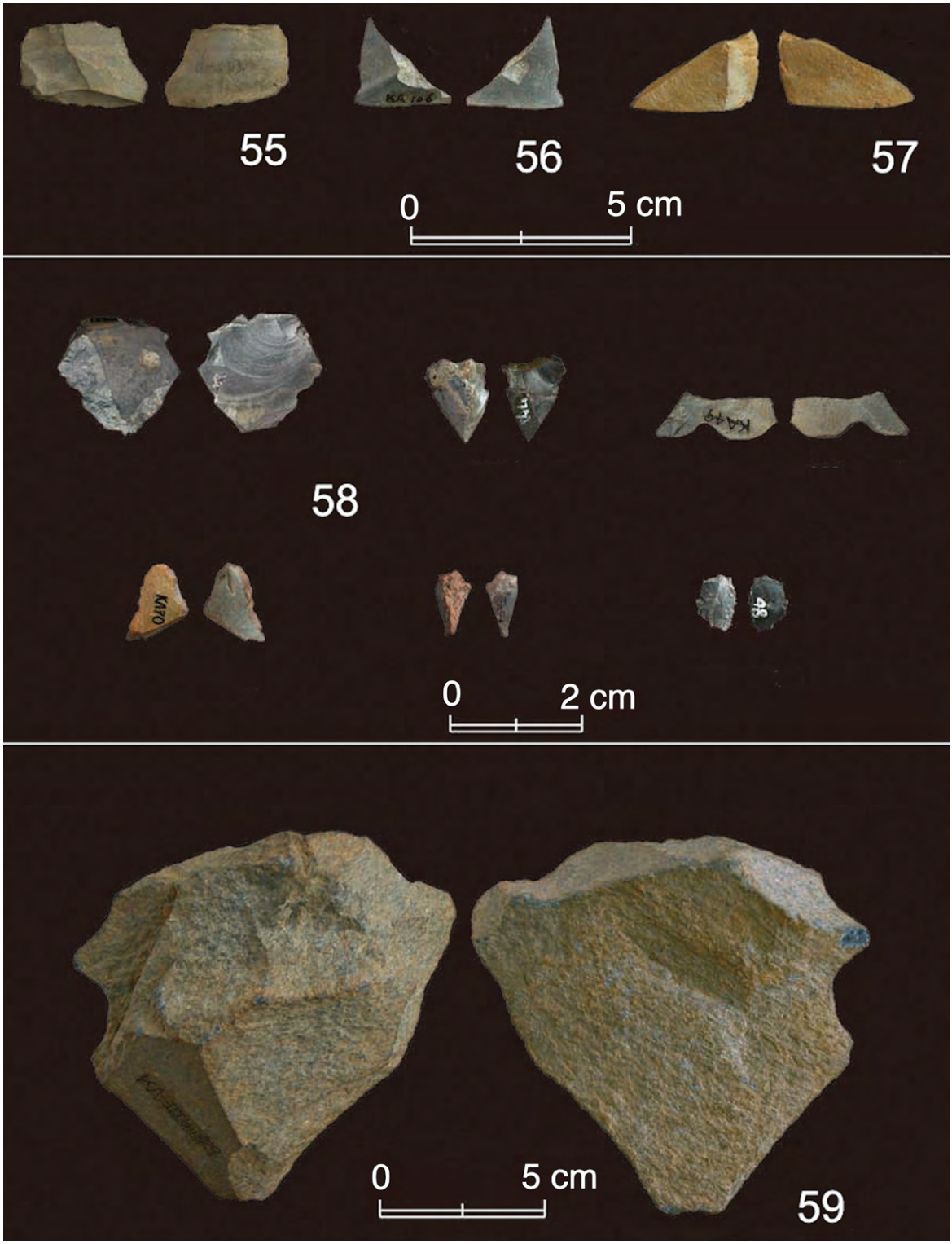

Figure 4.11 (2) Flake tools from Kanedori Cultural Layer III

See text for descriptions

Cultural Layer IV

In this cultural layer, the artifacts were not concentrated but scattered (Figure 4.12, 4.13) and included charcoal (Figure 4.14). The assemblage consists of an oval artifact (No. 61), choppers (Nos. 62 and 64), a chopping tool (No. 63), scrapers (Nos. 67 and 71), and flakes (Nos. 65 and 66)—for a total of eight pieces (Figure 4.14). Nos. 64-66 and 63-65 are able to be refitted. They are made of a kind of hornfels that contains andalusite and garnet. This kind of hornfels is not included in the Terrace Gravel, but it can be gathered in the riverbed of the Tassobe River.

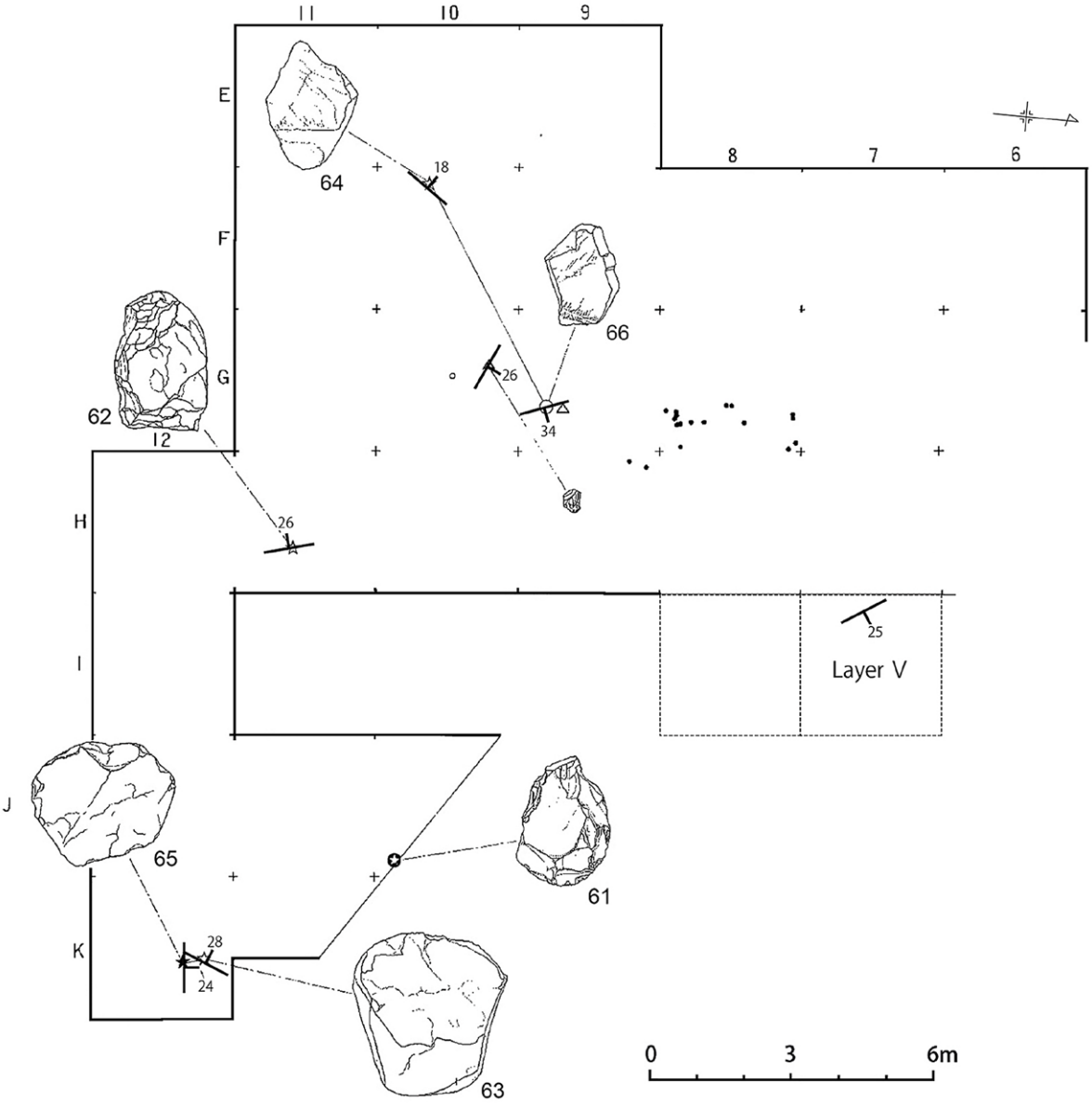

Figure 4.12 Distribution map of artifacts in Kanedori Cultural Layer IV

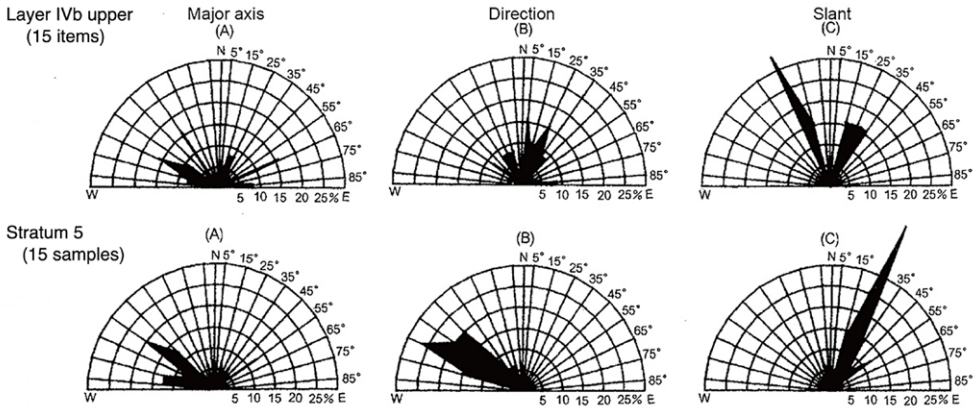

Figure 4.13 Rose diagram of Cultural Layer IV and, for contrast, underlying Natural Stratum 5

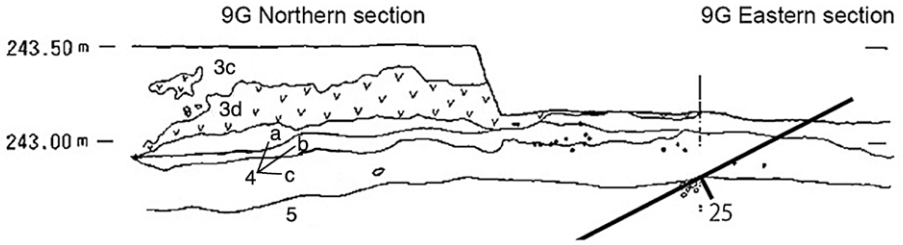

Figure 4.14 Vertical distribution of charcoal (dots) in Stratum 4

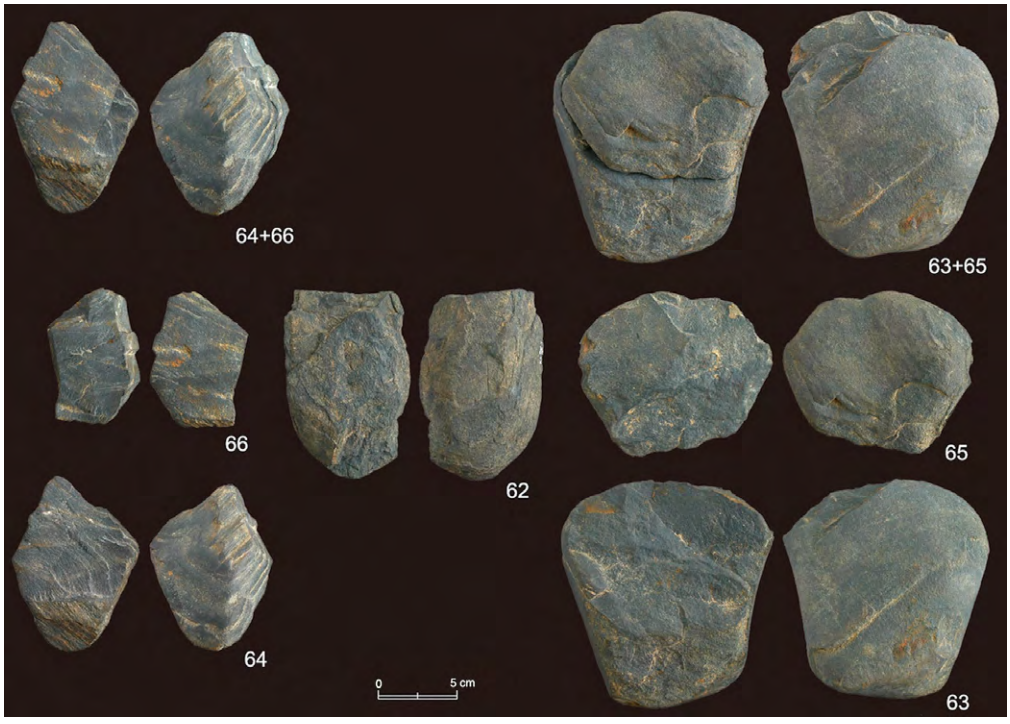

Figure 4.15 Lithics from Kanedori Site Cultural Layer IV

Dating

Volcanic glass of Iw-Od tephra, dated 35,000 to 50,000 years ago, was found in the upper part of Cultural Layer III (Figure 4.16), and the Yk-M tephra, dated 68,000 to 78,000 years ago, is deposited in the lower part of Cultural Layer III. Thus, the age of Culture Layer III would be between 35,000 and 68,000 years ago. This is consistent with the radiocarbon date of 46,480±710 uncal. BP obtained on a sample from the lower part of Culture Layer III.

The age of Culture Layer IV is estimated to be between 68,000 years ago and 85,000 years ago because of the presence of the Yk-M tephra deposits just above the Culture Layer IV, and because volcanic glass from Aso-4, dated 85,000 years ago, and other tephra have been found in the Culture Layer itself. Figure 4.7 implies that this layer could be 115,000 years old, but there are currently no dates that support this.

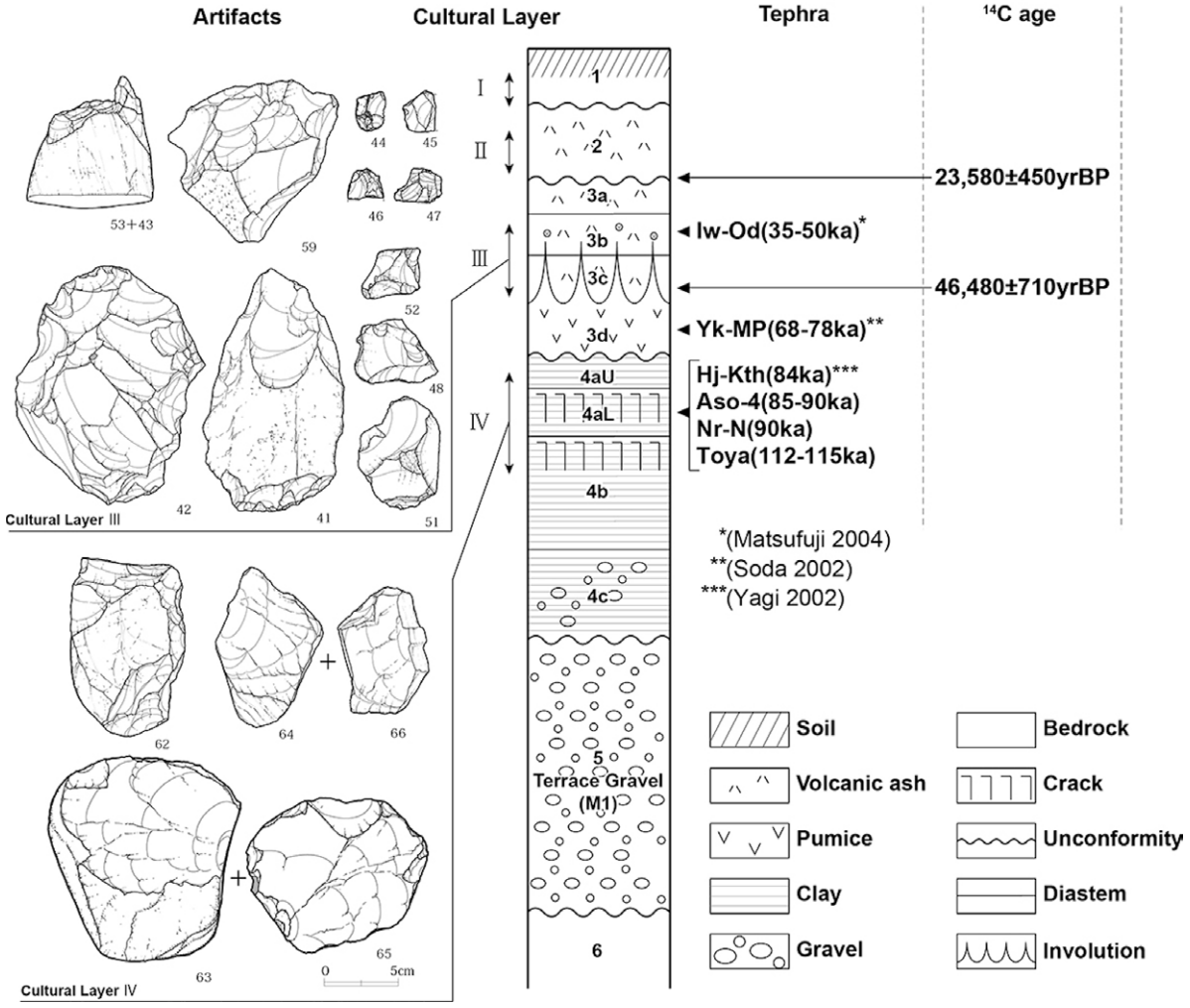

Figure 4.16 Cultural Layers, tephra and ^{14}C age of Kanedori Site

Conclusions

Culture Layer III is estimated to date between 35,000 and 68,000 years ago, on the basis of tephrochronology and the radiocarbon method. Forty artifacts and numerous carbonized materials were recovered from this layer. The Culture Layer III assemblage consists of large tools made of hornfels and small artifacts in siliceous shale. Absence of the hand-axe and the pick, which are often found in early assemblages of China and the Korean Peninsula, seems to suggest a unique composition of Paleolithic assemblages in the Japanese archipelago.

The age of Culture Layer IV is estimated to be between 68,000 and 84,000 years ago, on the basis of the tephra analyses. Eight artifacts and carbonized materials were recovered from this Layer.

The Kanedori site, which can be firmly dated by means of tephrochronology and geochronology, is a rare example of a Middle Paleolithic site in Japan.

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CHAPTER 5

RESEARCH PROGRESS AND METHODOLOGICAL CONTRIBUTION OF SUNABARA SITE: FROM SEDIMENTOLOGICAL EXCAVATION TO QUARTZ PHENOCRYST MICROSCOPIC OBSERVATION METHOD

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In this article we use a method to study excavated materials in archaeological site sedimentology comprehensively, rather than viewing some excavated materials isolated and without context. A total of 37 stone objects, including pebbles from two cultural layers, were unearthed from the Sunabara Site, and based on the topography and tephrochronology, they can be dated to around 110–120,000 years ago (MIS 5d-5e). These artifacts can be classified as scrapers, chopping tools, becks, flakes, chips, hammerstones, cores, and chunks. We identified three ancient ground surfaces in the fluvial sediments, yielding sun-cracks, trace fossils, and a carbonized leaf. Most of the artifacts and pebbles occur within older strata and exhibit a different distribution in each layer. Furthermore, their random overlapping structures, trace fossils, and limonite pipes prove that the excavated materials are in situ. These sedimentological data cannot be explained by the assumption that these materials were produced by natural processes.

Keywords: Japanese archaeology, Paleolithic, excavation, artifacts, geofacts

Introduction

Current status of pre-Upper Paleolithic research in the Japanese archipelago

When did humans begin to live in the Japanese archipelago? Since genetic studies proved the African origin of anatomically modern humans (AMH), there has been a growing interest in the process of spread and settlement of AMH throughout Eurasia. The existence of archaic human groups and the understanding of their cultural linage have become inevitable issues in regional historical studies of each region. The question of Pre-Upper Paleolithic (prior to ca. 50~40,000 BP) culture in the Japanese archipelago is not only related to the identity of people living there today, but it is also an issue in the history of human evolution, as we seek to understand the adaptation of extinct humans at the furthest distance from Africa and the replacement of those extinct humans by AMH.

Although MUNRO (1908) and BORDES (1958) also predicted the existence of Pre-Upper Paleolithic sites in the Japanese archipelago (ANBIRU 1975; MORIKAWA 2001), the first serious exploration was the discovery of the eolith in the Kanagi area of Goshogawara City, Aomori Prefecture (SUGIHARA 1954; UEMINE and KIKUCHI et al. 2016). In the 1960s and 70s, some possible Pre-Upper Paleolithic sites were reported in various regions, including the Nyū Site (KANASEKI et al. 1962), the Sōzudai Site (SERIZAWA 1965), and some sites where chert-paleoliths have been excavated in the northern Kantō Plain (SERIZAWA 1970). In the controversy surrounding these evaluations, it was recognized that the existence of the Pre-Upper Paleolithic culture in the Japanese archipelago could not be reliable to determine the age of the site and the authenticity of the excavated sample (WATANABE and KAIZUKA 1977). In 1980s and 90s, while there were sincere research efforts, the hoax perpetrated on archaeological sites by FUJIMURA (see Part I Introduction) disturbed the debate and forced research in this area to regress. For about 20 years after

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the hoax was revealed, research was restarted in the midst of confusion, disappointment, and reflection. Some symposia were held, and in addition, papers and research monographs were published on the subject. It can no longer be said that this research has stagnated.

The following conditions presented by SUWAMA (2010) have been supported as sufficient conditions for a lithic assemblage of the Pre-Upper Paleolithic age:

(1) lithic sample with clear artifactual working marks,

(2) stable site location,

(3) stratigraphic provenance of lithic artifacts, and

(4) multiple discoveries of lithic artifacts.

(1) and (2) are related to the recognition or authenticity check of lithic artifacts, (3) to dating, and (4) to both. In order to make use of these four conditions, it is essential to make each condition concrete. The problem is how to recognize the places where there are no obvious human work marks or where a geofact is not generated.

Methodological challenges

It is sometimes difficult to distinguish a stone sample as artifact or geofact, and it is even more difficult to provide a convincing basis for the identification to others. For example, the 2001–2002 excavation of the Sōzudai Site (Hiji Town, Ōita Prefecture) yielded a large number of stone samples with flake scars, mainly of quartz coarse-grained rocks (YANAGIDA and ONO 2007; YANAGIDA 2011). The excavated materials have been positively evaluated as artifacts (OKAMURA 2008), but it was difficult to read the fracture markings due to the rough nature of the rocks, and no common observational findings have been obtained for each material. The viewpoint of the excavators is based on the assumption of the fracture direction based on the identification of the bulb and the careful reading of the surface composition; there are many aspects that can be agreed if the actual materials are discussed in front of them. The same problem lies in the interpretation of agate and chalcedony materials at the Torigasaki Site, Tamayu Town, Shimane Prefecture (MATSUZAWA 1992; MATSUOKA 2021).

Regarding the evaluation of the artifactuality of stone materials, one effective approach is to inspect the excavation site to see if it meets the sufficient conditions for an archaeological site. The sedimentological excavation method designed at the Kanedori Site in Tōno City, Iwate Prefecture, is an example of such an approach (see Chapter 4 herein). Orientation and inclination of the excavated artifacts were measured with a clinometer in the field (KIKUCHI et al. 1986). The results of these measurements guarantee the 'in situ' nature of the lithic distribution at the site and the artifactuality of the lithics. This is the forerunner of fabric analysis at Paleolithic sites in Japan.

The most notable aspects in the method of the Kanedori Site research project, in addition to the adoption of fabric analysis, are the thorough careful observation of the sediments and morphostratigraphic studies. The stratigraphic recognition based on lithologic classification, identification of old ground surface based on sun-cracks, and periglacial involution allow precise identification of the sediments to which artifacts and samples for dating are attributed, reinforcing the dating of the cultural layers at the Kanedori Site (UEMINE 2020). In addition, the stratigraphy in the excavation area is understood in relation to the morphostratigraphic survey where the site is located

and within the same water drainage system; thus, the sediments of the site are dated within the topographic history of the area. This is an exemplary study of the morphostratigraphic study of the site, and it is in line with the proposal by SATŌ (2006) that emphasized the importance of topographic studies of Pre-Upper Paleolithic sites.

Confusion in pre-37 ka cal. BP sites

Except for some controversial cases, the phylogenetic divergence date of mDNA suggests that the spread of modern human to Southeast and East Asia by about 50,000 years ago. In the Japanese archipelago, the trapezoid assemblages in the upper Ashitaka Loam BBVII Formation, the Tachikawa Loam Xb Formation, and some of the denticulate assemblages in Kyūshū Island, are regard as the oldest sites by many researchers at about 37 ka cal. BP (KUNITAKE et al. 2022). Modern human behavior is also known to have gradually emerged around the same time, so that the upper limit of the Upper Paleolithic age is before ca. 37,000 years ago.

In this research field, it is expected that the limits of radiocarbon dating, one of the general-purpose and reliable methods, will be exceeded, making it difficult to conduct studies based on absolute dates. In recent years, Optically Stimulated Luminescence (OSL) dating has advanced dramatically as a powerful tool for dating objects between 50,000 and 100,000 years ago, and know-how has been accumulated to evaluate the reliability of the dating results. On the other hand, there is a wide variety of error factors in dating, including incomplete exposure, feldspar contamination, thermal transfer OSL, and instability of the OSL component in the measurement of accumulated doses. In the measurement of annual doses, in addition to errors in radiometric measurements and elemental concentrations, error factors include water content, thickness variation of overlying layers, strata heterogeneity and elemental migration (TAMURA 2021). In evaluating OSL dating, it is necessary to compare the results with stratigraphic consistency, other dating results, and tephrochronology.

A simple example of the confusion in OSL dating at possible Pre-Upper Paleolithic sites in the Japanese archipelago is provided below. At the Ōno sites in Hitoyoshi City, Kumamoto Prefecture, more than 13,000 materials made of rhyolite have been excavated, but their artifactuality is disputed (WADA and NAGAI 2002). The age of each layer can be roughly estimated by contrasting it with climatic change (loess-paleosol chronology). The detection levels of tephras (such as AT and Aso-4), AMS ^{14}C ages, and pollen analysis are also consistent with sediment coloration. Based on this correspondence, the cultural strata (Layers XIII to XIV) at the Ōno-E Site is presumed to be MIS 5 (130,000–71,000 BP), but OSL dating for the Layer XIV ranges from 65.3±12.4 to 73.2±24.8 ka, and for the upper Layer XIII from 27.8±10.9 to 35.7±8.6 ka. The OSL age for the Layer XII, which is probably MIS 4 (71,000–60,000 BP), ranges from 28.8±8.3 to 31.0±5.7 ka, indicating a large discrepancy between the OSL dating result and MIS. The lower the layer, the older the OSL dating, so a systematic error factor is possible.

Tephrochronology is a very effective method to date the site beyond the limit of radiocarbon dating. However, without the understanding the deposit of the topographic surface, we will misjudge the significance of the age. The Takesa-Nakahara Site in Iida City, Nagano Prefecture, has been positively regarded as a pre-37 ka site, but the significant disturbance of the cultural layers and the thinness of the sediments are obstacles to the dating of the site (TSURUTA and ŌTAKE 2010). Judging from the published photographs, although the imprints of the lithic artifacts are clear, the longitudinal orientations of the artifacts at locality A and C are well aligned, and the possibility that the distribution have been affected by natural water current cannot be denied. Artifacts that have been noted to be similar to Neolithic artifacts from the nearby Ishikobara Site tend to be excavated from the upper part

of the Layer 4 (KAKUBARI 2011). It is regrettable that the Layers 4 and the upper and lower layers were divided by coloration rather than by facies. Turning to the morphostratigraphy, we notice that at least four terrace surfaces are recognized around the site. The results of tephra analysis and the existence of the bright reddish-brown layer (Layer 7) suggest that the third plane of the terrace with locality C was dissected in MIS 6 (190,000–130,000 BP). However, the stratigraphies of the different terrace planes are not significantly different, and the terrace deposit of each terrace cannot be identified. The stratigraphy is extremely difficult to understand, and the fact that the cultural layer is not positioned in the geological events around the site is judged to be the fundamental problem.

Our perspective

Looking back on the two decades of the research that have passed since the revelation of the hoax, we are concerned that there has been little constructive discussion about the existence or non-existence of Pre-Upper Paleolithic culture in the Japanese archipelago. In spite of many negative stares, some researchers with relevant materials have argued their own opinions. The difference in temperature between the two groups is due to the lack of discussion on common ground and methods, which differs from the situation prior to the 1970s. Researchers, including one of the authors, who began studying archaeology after uncovering the hoax, cannot understand the emotionalism that is said to be behind the research regarding the Pre-Upper Paleolithic culture in the Japanese archipelago. According to the author's research in a certain private university, only about 20% of students majoring in Japanese archaeology and history in 2016 knew about the "hoax by FUJIMURA", and in the near future, this issue should be subject to vigorous scientific debate. In preparation for that time, what needs to be done now that scepticism and cautiousness prevail is to develop a verifiable methodology, the results of which will greatly contribute to thickening the foundation of world archaeology.

The purpose of this paper is to summarize the methods and results of the research that the authors have conducted since 2009 at the Sunabara Site in Izumo City, Shimane Prefecture, Japan. The design of excavation methods based on the sedimentological perspective for the evaluation of the artifactuality of stone material, the dating by linking morphostratigraphy and tephrochronology, and the development and practice of a reproducible observation method for heterogeneous stone materials will be described. The site received a great deal of harsh criticism immediately after excavation in 2009, which contributed to clarifying the issues and stimulating discussion in its study. The authors believe that the role of this site in subsequent research is not limited to the evaluation of the site, but that the research methods developed and practiced throughout the research project regarding the site may be employed elsewhere.

Material and Method

Sunabara Site and research history

The Sunabara Site is located in Taki Town, Izumo City, Shimane Prefecture (35.2895N, 132.6320E), on a marine terrace about 21 m above sea level facing the Japan Sea (Figure 5.1). The terrace surface has been severely cut by the widening of National Highway 9 on the north side and by earth removal on the west side. On 8 August 2009, NARUSE Toshiro, who is known for his research on Quaternary eolian dust, collected a cross-section of a piece of chalcedony. A preliminary survey by the authors with Dr NARUSE was conducted 23–25 August 2009. During this survey, five additional artifacts were unearthed near the outcrop where NARUSE collected the chalcedony flake. Based on the results, an academic excavation was

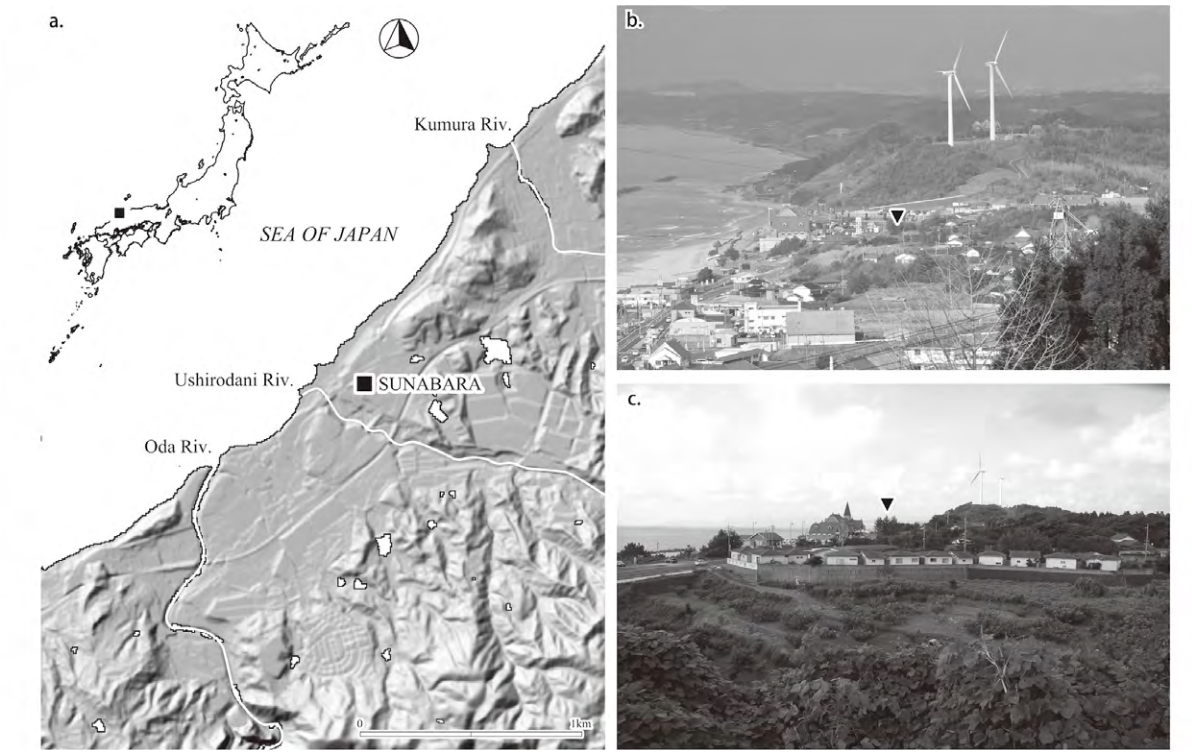

Figure 5.1 Geographical information for the Sunabara Site
a. Location of the site on the shaded relief map; b. Distant view of the site from the west
c. Close view of the site; inverted triangle marks = location of the site

conducted from 16–29 September 2009 in order to reveal the whole picture of the site, the expansion of the cultural layers, and the depositional context. After the excavation, one of the authors actively published the findings of the excavation and the interim results of the laboratory work, and often organized public displays of excavated materials (MATSUFUJI 2010a, 2010b). In June 2012, the preliminary report of a sedimentological study by one of the authors was published (UEMINE 2012), and the final report of the excavation was published in March 2013 (MATSUFUJI and UEMINE 2013).

As mentioned earlier, the dating of archaeological sites and the evaluation of the artifactuality of stone materials are inevitable issues in the study of Pre-Upper Paleolithic culture in the Japanese archipelago. The authors placed particular emphasis on the well-preserved deposition of tephras in the excavation area from the Sanbe volcano from 17 km south of the site. The study of the Sunabara Site triggered an update of the tephrochronology of the Izumo Plain and of the tephra identification results found at the Sunabara Site. In other words, the chronological understanding of the site also needed to be updated in the research process. This process was subjected to severe criticism (INADA 2009, 2011). His criticism extended to the formation process of the site and how to deal with the mass media during excavation; it became a guideline for the authors' research after 2012. On the other hand, it was regrettable that interest in the Sunabara Site waned, perhaps due to the effects of his criticism.

With regard to artifactuality of materials, the authors initially focused on sedimentological data. In this study, most of the researchers' attention was focused on the problem of "artifacts or geofacts" and we felt threatened by the situation in which only the observational evaluation of stone materials was

discussed without taking advantage of the experience of the hoax by FUJIMURA. INADA (2009), who first expressed own views on the Sunabara Site in a publication, was quick to note the distribution of the materials, the relationship between the stone materials and the natural pebbles deposited in the lower part of the cultural layer, and the abrasion of the stone materials.

On the other hand, at the annual symposium of JPRA held in June 2010—which was the first opportunity for many researchers to observe the materials from the Sunabara Site—the sedimentary environment was not considered in the evaluation of the site, despite the fact that the results of sedimentological analysis were displayed at the venue, along with an exhibition of stone materials and natural pebbles. This reaction was echoed at the conference of the SEAA in Ulaanbaatar in June 2014 (UEMINE and SHIBATA 2015). An American researcher pointed out, "If you pick something up that you think may be an artifact, you will immediately know if it was by the hand of humanity or by the hand of nature." We could not help but feel the difference in academic backgrounds between the two countries, as we did not agree.

The authors had opportunities to exchange opinions on the Sunabara Site with many foreign researchers outside the SEAA session through poster presentations and English brochures, but most of them were interested in the chronology and technical characteristics of the stone materials, and none of them questioned the research method, sedimentological findings, or the basis for the judgment of the artifactuality of the materials. We were reminded once again that the experience of the hoax in Paleolithic excavations has given us a cautious and multifaceted perspective.

By investigating the sedimentological conditions of the stone materials under debate, Pre-Upper Paleolithic research can be brought out of its cul-de-sac. However, in order to determine the authenticity of the Pre-Upper Paleolithic site, the observation and evaluation of stone materials cannot be left unchecked (cf. Yamada and Shimura 1989). The reason why it is difficult to determine whether the materials from the Sunabara Site are artifacts or geofacts is that they are made of heterogeneous rocks, coarse silicified rhyolite (Figure 5.2). Compared to homogeneous stone materials such as obsidian or flint (except for any inclusions as noted below), they are more difficult to observe, and it is difficult to build a common understanding among researchers even in the observation and evaluation of a single material or a single flake scar. Few researchers have publicly stated their observations of coarse silicified rhyolite materials from the Sunabara Site. But after the JPRA symposium 2010, comments such as, "Some of the surfaces of the materials that were supposedly flaked are rough and difficult to observe, so there is room for further investigation" and "Some of the materials were difficult to distinguish from natural pebbles in the same layer for the shape and fracture, so I could not understand them to be artifacts" were voiced. This is the root of not only the evaluation of the Sunabara Site but also the "Controversy regarding Pre-Upper Paleolithic site in Japan". If researchers can develop a method that allows them to "read" lithic material that is difficult to observe, using principles that anyone can understand, then this controversy should be resolved in an appropriate manner.

Subsequently, one of the authors proposed that even heterogeneous stone materials can present objective observation by examining the phenocrysts that appear on each face of the stone material (UEMINE 2014). Although phenocrysts are impurities in the rock, they themselves are homogeneous and nearly vitreous, and various traces of them, such as those found in obsidian, can be identified. By applying the usual lithic observation methods to phenocrysts, we attempted to establish the most basic method for lithic researchers to observe heterogeneous lithic materials. Although several reviews of the methodological effectiveness of this method were published (NAGASAKI 2015; YAMADA 2017), there

has been no significant response from the academic community, with a reviewer stating that the method "has not led to an interactive discussion" (KATO 2020).

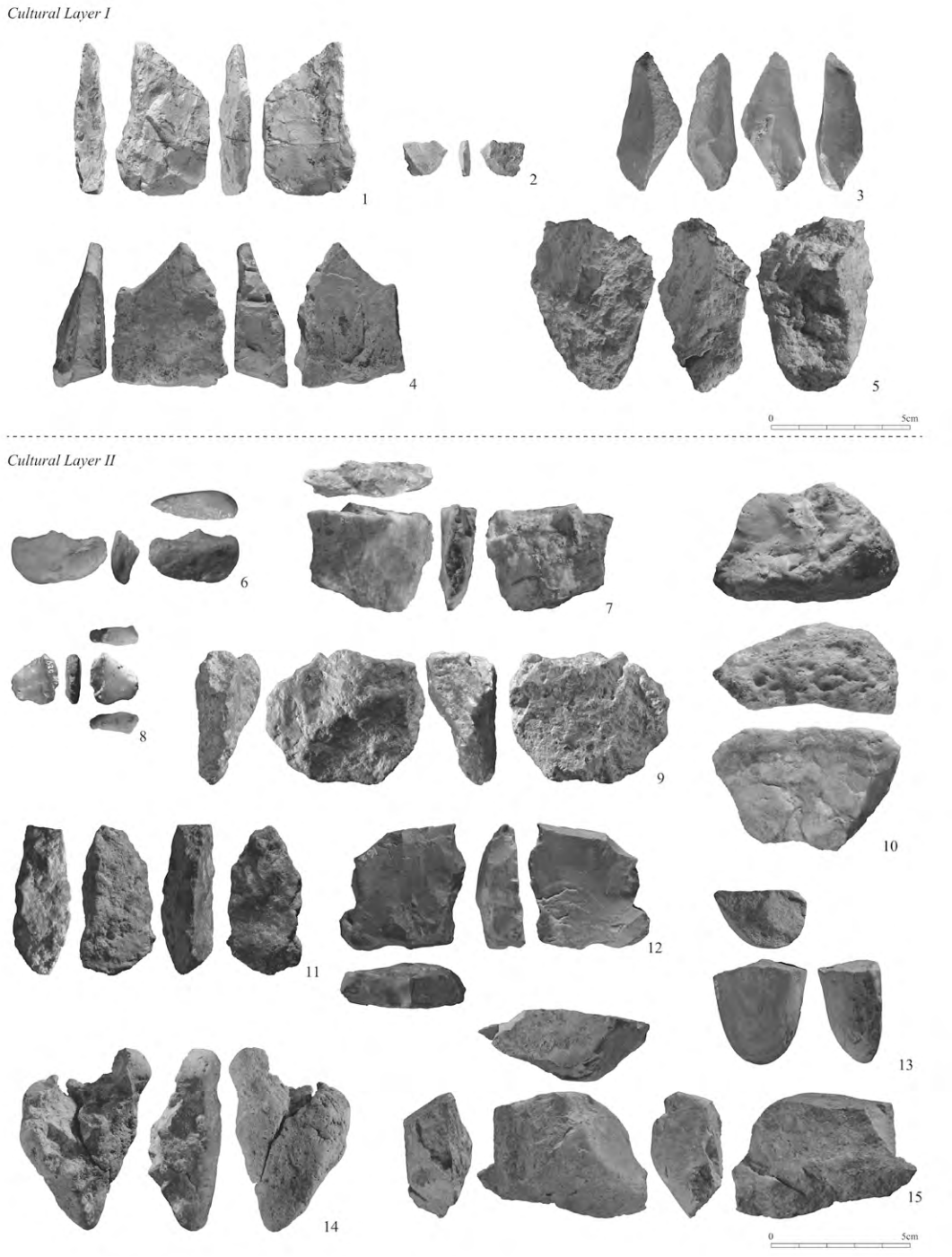

Figure 5.2 Representative artifacts from the Sunabara Site

Dating by morphostratigraphy and tephrochronology

The Sunabara Site is located on a terrace facing the Sea of Japan, and several tephra layers were found in the excavation area. In order to determine the age of the cultural layers, terrace surface chronology

and tephrochronology were used. The formation age of marine terraces can be determined in relation to the sea-level change associated with climatic change. The formation age of a terrace surface is the upper limit age of the layer deposited on the terrace surface, and the formation age of the lower terrace is the lower limit age if the layer contemporaneous with it is not deposited on the lower terrace.

The topography around the Sunabara Site was classified based on decipherment of aerial photographs and observation of outcrops in the field. The continuity of terrace landforms, the extent of their distribution, their elevation, and the degree of dissection were adopted as the basis for the classification. In other words, a series of continuous topographic surfaces was considered to have been formed within a specific time range, and landforms separated by inclined conversion lines were determined to have different formation ages. In the case of marine terrace surfaces in a single area, the older the terrace is, the higher it is when compared orthogonally to the shoreline; and the older it is, the more dissected terrain it has of the same type and size under the same environmental conditions.

Volcanic ash in the sediments covering the terraces also provided an important clue regarding the emerged age of terrace. The topographic surface covered by a certain tephra is considered to be older than the surface not covered by the tephra. In places where surface deposits are being renewed by erosion due to water currents, the unconsolidated tephra is carried downstream and does not remain in place.

In order to consider the topographic surface and the deposit that makes up that surface from a morphostratigraphical perspective, the layers identified in the excavation area were lithostratigraphically observed and classified with emphasis on grain size, composition, and degree of sorting. The age and cause of formation of each layer were interpreted by comparing them with the deposits observed in outcrops around the site and by taking into account the sedimentary structure of each layer.

Recognition of old ground surfaces

Based on the methodological reflection on the hoax by FUJIMURA, we have endeavored to understand the Sunabara Site from a sedimentological perspective during the excavation (UEMINE and MATSUFUJI et al. 2016). Particular attention was paid to elucidate the relationship between the old living surface and the excavated artifacts. In general, a cultural horizon is identified based on the stratigraphic level of artifacts thought to belong to the same period. However, since this is only a conceptual classification, it does not necessarily correspond to the classification of natural sediments. On the contrary, in some cases, horizontal concentrations of artifacts are identified at different depths within the same cultural layer, forcing us to assume differences in time (KOBAYASHI 1998). In order to read and correctly evaluate the time compressed in the archaeological site, strict identification of the old living surface is indispensable.

An old living surface corresponds to an old ground surface where human activity took place at some moments in the past. Tools used and by-products in the past were left on the living surface and eventually buried there. Theoretically, therefore, the artifacts should be excavated as if they were attached to the living surface, but in reality, it is not unusual for artifacts to be excavated with a depth range of several tens of centimeters. This is because the soil is subjected to repeated freezing and thawing, dry and wet conditions, subterranean organisms, windfall trees, and plant roots, and is forced to change its former state without interruption even after the living surface is buried.

It was during the excavation of the Tsukimino Site group in Yamato City, Kanagawa Prefecture, that the difference in the vertical distribution between artifacts and pebble clusters was noted, and an attempt was made to estimate the old living surface (YAJIMA and SUZUKI 1976). On the Sagamino Plateau, the vertical distribution of artifacts is 40–80 cm, while the vertical distribution of pebble clusters is very narrow; the installation surface of the pebble clusters is estimated to be the old living surface. Therefore, even in the absence of pebble clusters, the old living surface can be assumed to be approximately 10 cm below the peak of the artifact excavation volume in the vertical distribution. This method was named the "Venus Line" and attracted much attention, but later it was found that the relationship between the vertical distribution of artifacts and clusters varied from site to site (ODA 1974; TSURUMARU 1983; TSUTSUMI 1984), exposing its limitations as a method for identifying an old living surface.

From a sedimentological perspective, the clue that identifies an old ground/living surface is a lull in sedimentation. When sedimentary action is interrupted by the cessation of water or wind movement that was carrying the sediments, a surface turns into where plants can grow and animals can be active. These very short depositional gaps are called diastems (BARRELL 1917). As described below, at the Sunabara Site, the sedimentation hiatus indicated by the "minor unconformity" is clearly visible and can be recognized as an old ground surface from a sedimentological standpoint.

At the Sunabara Site, it was noted that there are some horizons where sun-cracks had developed in the sediments. Sun-cracks are irregular cracks with a tortoise-shell (polygon) pattern formed when the surface of unconsolidated muddy sediments is exposed to the air and dries; hence they tend to develop in intertidal areas, river flood plains, marshlands and dry plains. In general, polygons range in size from a few millimeters to 30 cm or more; fractures are generally 1 mm to 5 cm wide and 1 to 2 cm deep, and the fractures are filled with overlying sediment. The presence of sun-cracks is a criterion for the recognition of an old ground surface because it indicates that the surface was exposed to the atmosphere immediately after deposition.

Validation of in-situ nature

The artifactuality of the lithics at the Sunabara Site is not based solely on the observation of the artifacts themselves. The information recovered from the excavation area with the redesigned protocol incorporated sedimentological research methods served as supporting evidence. As described later, the artifactuality of the lithic distribution is presented, but the in-situ nature of it must be evaluated as a precondition for this decision.

In the study of the Sunabara Site, we focused on the occurrence of *takashikozo*. *Takashikozo* is a type of limonite observed in the sediment and is a cylindrical or tubular mass several millimeters to several centimeters in diameter and up to a few centimeters in length. *Takashikozo* is considered to be formed by secondary accumulation of iron oxides in the sediment and their entanglement in plant stems and roots. Since *takashikozo* is found in reducing clay to silt layers, it indicates that the area was an environment where plants such as reeds were growing at the time of their formation. The in-situ *takashikozo* is observed in outcrops and stratigraphic sections in a nearly orthogonal position to the bedding plane, and it shows a circular cross-sectional morphology on a flat surface. On the other hand, if *takashikozo* is exposed to strong water currents after its formation, it may be moved and become deposited lying on the bedding plane, or it may be damaged and recognized as a mottled pattern. In addition, adhered iron on stone artifacts left on the old ground surface is often connected to *takashikozo* in the sediment. These points can be used as a basis for determining the depositional process of an old ground surface and the in situ-nature of artifacts.

In the excavation of the Sunabara Site, fabric analysis was thoroughly conducted not only on lithic artifacts but also on stone materials that could be immediately identified as natural gravels. Fabric analysis is a method of measuring and analyzing the occurrence of archaeological finds (long axis direction, strike direction, dip angle) and for clarifying the formation process of archaeological sites (BERTRAN and TEXIER 1995). It is a method of analyzing sedimentary gravels in structural geology and sedimentology applied to archaeological sites. The long axis direction is a value indicating the degree to which the long axis of the material faces away from magnetic north. The strike direction is measured at the intersection of the plane formed by the maximum length and width of the material and the horizontal plane (strike line), and it is expressed in the same way as the long axis direction. Dip angle is measured between the horizontal plane and the plane formed by the maximum length and width, and it is measured orthogonally to the strike direction. If the dip angle is 60° and dip direction is toward the east, it is expressed as 60° E. If the dip direction is toward the west, it is expressed as 60° W. A compass was used to measure the longitudinal direction, and a clinometer was used to measure strike direction and dip angle. In the analysis of the measurements, a Schmidt net projection was used to represent the three-dimensional information of the occurrence.

The significance of the fabric analysis at archaeological sites can be summarized as follows: (1) clarification of the depositional process and (2) determination of the in-situ nature of artifacts. For (1), it is necessary to measure all finds, not only artifacts but also natural gravels found at archaeological sites, and to compare the occurrence of archaeological samples with those in natural deposits. An imbricate structure is an arrangement of flattened gravels and other materials facing in a certain direction, like fallen dominoes. This can be frequently observed in present-day rivers. This is a result of the gravels being arranged in a stable direction that offers the least resistance to the flow of water. Conversely, if the dip direction of the finds is varied (isotopic), they may retain their in-situ nature, which may serve as supporting evidence for the determination of the artifactuality of the find.

Phenocryst Microscopic Observation (PMO) method

The two main problems in the observation of stone materials such as those found at the Sunabara Site are: (1) the distinguishing of fracture surface from cortex and (2) the identification of the fracture direction. In coarse rhyolite, there are many places where the division of surfaces and the overlapping relationship between flake scars are not clear, and the heterogeneity is much greater than in the general lithic raw stone materials, hence it is quite difficult to decide the direction of fractures. However, on a quartz phenocryst, we can realize the glassy and relatively homogeneous surface with general fracture markings such as ripple mark and fracture lance useful for the understanding of the lithic artifact.

To confirm that phenocrysts are useful for estimating the degree of patination development and fracture direction, an experimental archaeological method was employed. Details of the experiment have been previously published (UEMINE 2014) but are summarized here. Coarse silicified rhyolite collected near the Sunabara Site was struck directly with a stone hammer, detaching flakes. Phenocrysts on the surfaces of the flakes from the experiment were observed using a Keyence VK-X210 laser scanning microscope at about 400x magnification (Figure 5.3-a). Quartz phenocrysts on freshly fractured surfaces are lustrous and smooth (lustrous phenocrysts, 1 to 3 in Figure 5.3-a), while phenocrysts on the cortex were found to be matte with a weak luster and a loss of smoothness (matte phenocrysts, 4 to 6 in Figure 5.3-a). The observation of a few lustrous parts on matte phenocrysts

suggests that weathering causes dissolution of constituent elements and formation of secondary materials on the phenocryst surface; in addition, the repeated exposure and binding of bubbles in the phenocryst resulted in the formation of an uneven appearance.

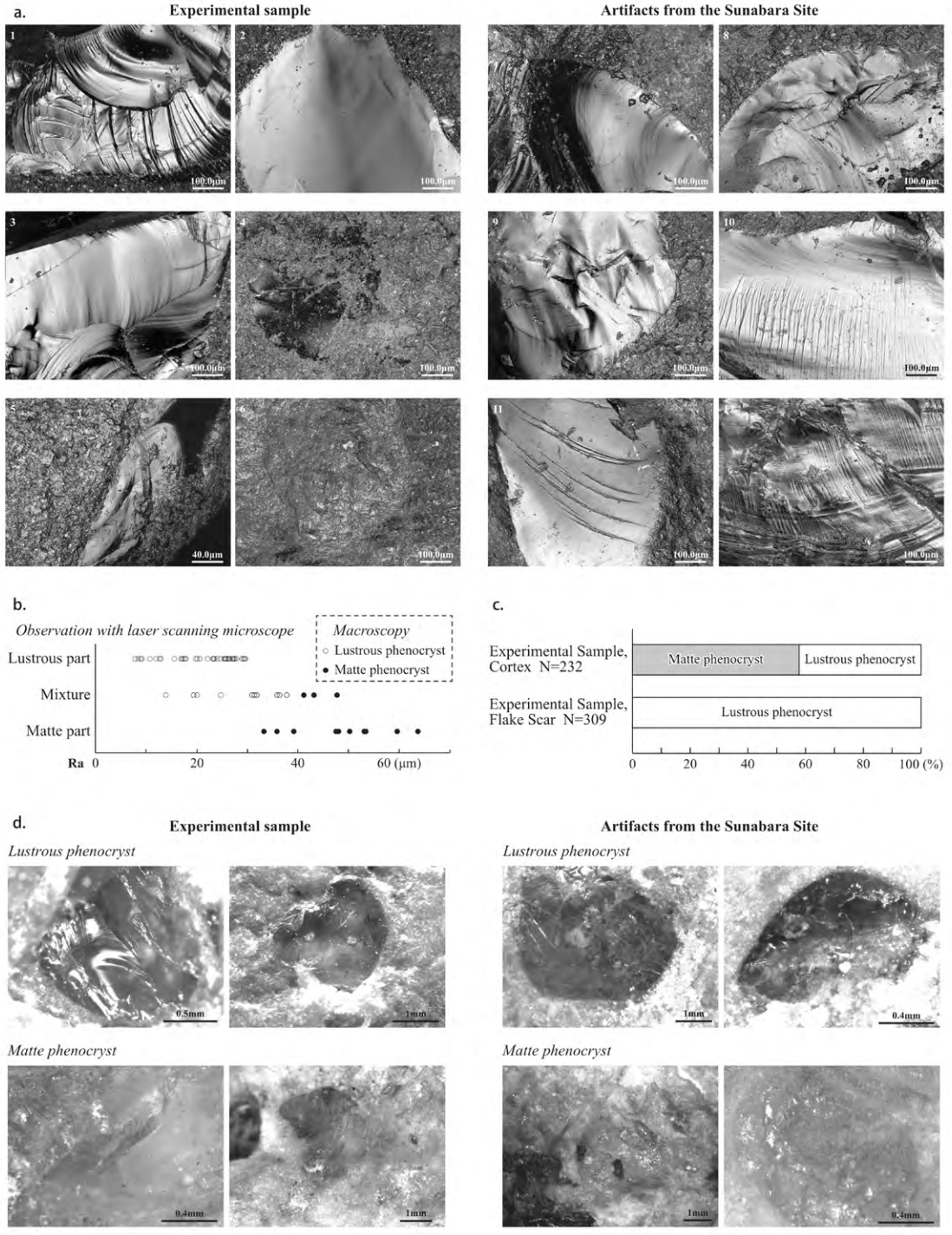

Figure 5.3 Prerequisite data of Phenocryst Microscopic Observation (PMO) Method

a. Photo with laser scanning microscope; b. Surface roughness of phenocryst; c. Transparency of phenocryst and place of appearance; d. Photo of phenocryst with general USB microscope

Lustrous phenocrysts and matte phenocrysts can be visually distinguished in the laser microscope images; in the arithmetic mean roughness (Ra) calculated from the laser microscope images, they show an exclusive trend around 40 μm (Figure 5.3-b). The lustrous and matte phenocrysts can be distinguished by low-magnification observation with a loupe. The former are highly transparent and shiny, while the latter are whitish, almost lusterless, and appear integrated with the groundmass.

The above experimental results show that it is possible to determine roughly when the phenocrysts were fractured based on the distinction between the two types of phenocrysts. It is obvious that the degree of weathering of the fracture surface increases in the following order (Figure 5.3-c): a surface with only lustrous phenocrysts, one with a mixture of lustrous and matte phenocrysts, and finally with only matte phenocrysts. While the first is considered a fractured surface, the latter two are considered as cortex.

Phenocrysts that appeared on the fractured surface of the experimentally acquired flakes were then observed using an AnMo Electronics USB digital microscope, Dino-Lite Premier2 S Polarizer, at 10 to 255x magnification (Figure 5.3-d). Lustrous and matte phenocrysts were able to be distinguished. Additionally, fracture lance, hackle scar, step of fracture termination, and split mark from fracture initiation were observed in phenocrysts (Figure 5.4).

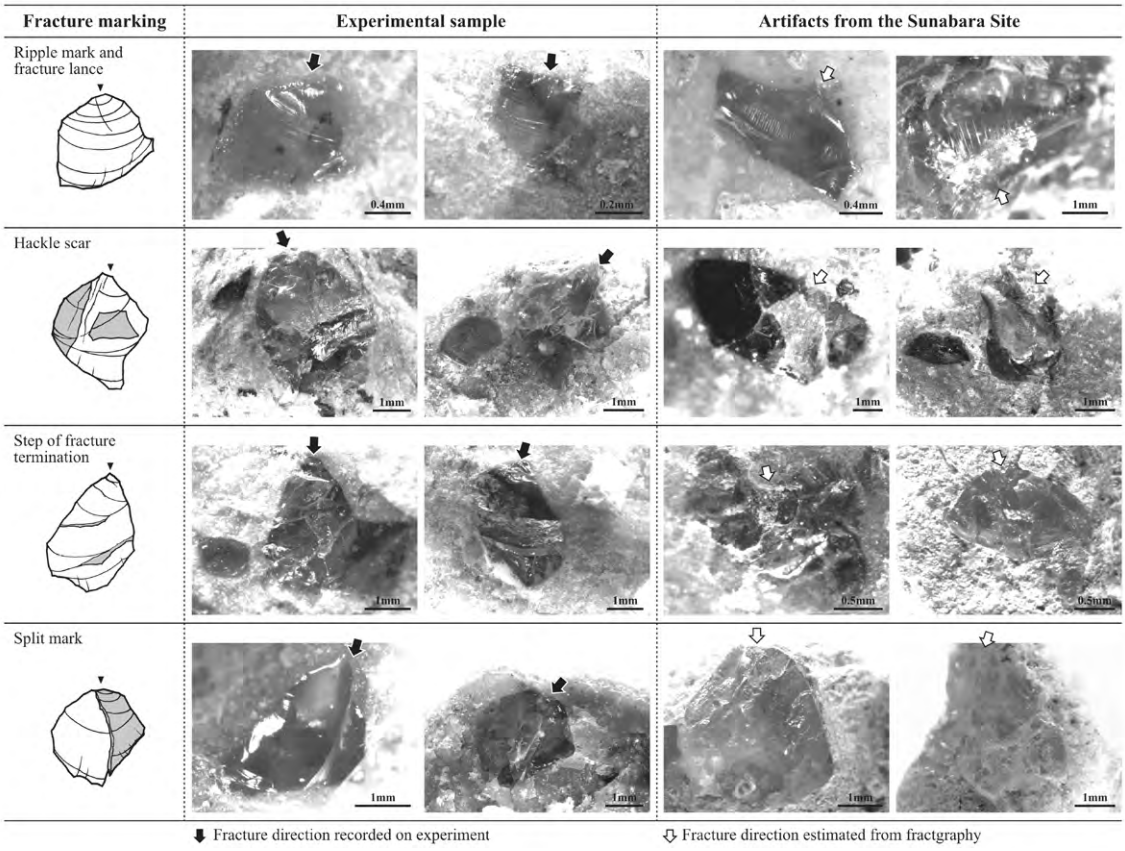

Figure 5.4 Fracture markings on phenocrysts observed with general USB digital microscope

In all the phenocrysts which have fracture markings (N=309), we observed them using a microscope and estimated the fracture direction of the fractured surface based on the results of these observations. We then compared the results with the previously recorded fracture direction at the time of the

experimental flaking. Finally, the accuracy of this fracture-direction decision method was estimated. That is, if the fracture direction of a fracture surface is determined from a single phenocryst, the probability that the fracture direction read from the phenocryst falls within ±20 degrees of the "correct direction" is about 65%, and if two phenocrysts are observed on a fracture surface, the probability is approximately 88%. However, it should be noted that the accuracy is slightly lower for the phenocrysts located around the fracture initiation.

The PMO (Phenocrysts Microscopic Observation) method, which was developed based on the above studies, was used to review the materials from the Sunabara Site (UEMINE 2014). Among the coarse rhyolite silicified materials, there are 31 samples for which phenocrysts were found on each face of the material and overlapping relationships between the faces could be determined.

Results

Dating of the terraces

Three small-scale marine terraces are developed around the Sunabara Site (Figure 5.5-B). The highest of the terraces, the middle terrace, is about 21 to 31 m above sea level, and two lower terraces are distributed below it. The Sunabara Site is located on the middle terrace. The reason for the large difference in elevation of the

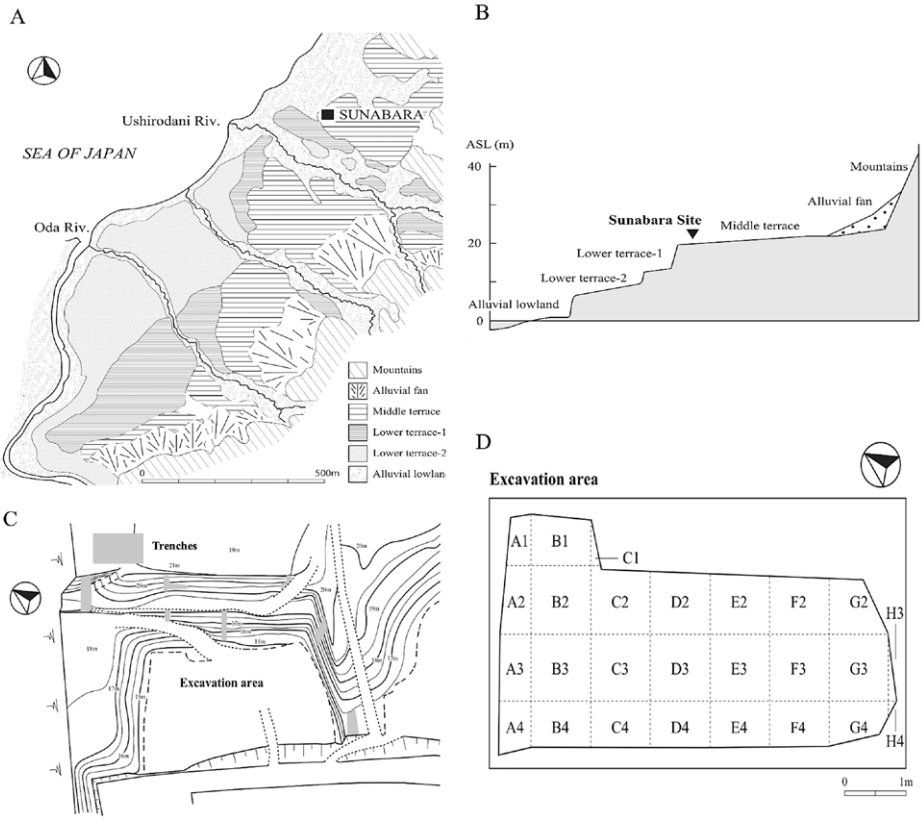

Figure 5.5 Geomorphological data of the Sunabara Site

A: Geomorphological classification around the site; B: Schematic diagram of geomorphological classification and elevations; C: Topography around the site from the northeast
D: Grid division in the excavation area

middle terrace (21–31 m) is that the terrace is covered by a fan where it backs onto the mountain. The former shoreline elevation of the middle terrace is thought to be around 23 m above sea level. In the middle terrace, a layer of beach sand and gravel about 100 cm thick is deposited, and on top of that is a layer of fluvial sand and river gravel about 60 cm thick. Above this sand and gravel layer, paleosols and SK tephra (dating to ca. 110,000 BP) are deposited. On the other hand, DMP tehpra (ca. 130,000 BP) is not recognized in or under the sand and gravel beds.

Considering the continuity of the topographic surface and the degree of dissection, the middle terrace is considered to have been formed in MIS 5e (130,000–115,000 BP). The corresponding layer is Layer IX of the Sunabara Site (see below). ŌNISHI (1979) compared this middle terrace depositional layer to the Sashimi Formation deposited in MIS 5, and KANO et al. (1991) pointed out that SK tephra was deposited above the Sashimi Formation. As discussed below, SK tephra was also detected in the Layer VIa at the Sunabara Site, which is consistent with these assumptions.

Higher marine terraces around 25 m have developed in the dune area of Itazu, about 5 km northeast of the site. The deposits of the Itazu terrace consist of the Jinzai formation (Miocene, ca. 23~5 Ma) at the lowermost part; and above the Jinzai formation, a marine sand and gravel alternation about 5 m thick is mixed with up to 20 cm thick circular gravel. Overlying this sand and gravel alternation is a 90-cm thick red soil (Hue 2.5YR4/8 to 10R4/8) with an upper elevation of 25 m above sea level. Overlying this red soil is a 45-cm thick layer of yellowish-brown loess. DMP tephra is interbedded in the loess layer at a thickness of 15 cm. Therefore, the marine sand and gravel alternation to red clay layer above the Jinzai Formation is considered to have been deposited in MIS 7, and the overlying loess is considered to have been deposited in MIS 6. Above the loess layer, paleo-sand dune deposits are found at the thickness of 250 cm. The paleo-dune is considered to have formed in response to the high sea level period of MIS 5e, and at that time, a sand and gravel beach that formed near the shoreline extended around the Sunabara Site. This sand and gravel beach would eventually leave the water and become the middle terraces, but Itazu was already land at that time, and the eolian dust carried by the wind from the beach must have formed paleo-dunes.

Stratigraphy

The basic stratigraphy of the Sunabara Site is shown in Figure 5.6. The layers were named by assigning Roman numerals starting from the top to the bottom, excluding the topsoil. When the layer was subdivided, the sub-layer numbers were assigned by adding lower-case letters of the alphabet from the upper part, and when the sub-layer were further subdivided according to their relationship to the sun-cracked surface, which is discussed below, branch numbers were assigned by Arabic numerals.

Each single layer in the succession was classified by lithology. The facies of each layer, in order *from lowest to highest*, are as follows.

Layer XIV is a hard, compact conglomerate gravel layer with a thickness of up to 3 m as far as was ascertained. It includes mainly circular and sub-circular cobbles with a maximum length of 10 to 20 cm, and conglomerate, sandstone, and mudstone are prominent, but boulders and chalcedony pebbles are rare. It may correspond to the Fujina Formation (Neogene).

Layer XIII is yellowish brown (10YR5/6) is a loose gravel layer. Circular and sub-circular gravels with a maximum length of about 15 cm are deposited with a thickness of about 50 cm. Like Layer XII, it can be

compared to the Sashimi formation (Quaternary) and is considered to be continuous with the inland ancient alluvial fan deposit.

Layer XII is a dark grayish-yellow fine-grained sandy layer with a thickness of about 20 to 40 cm. Parallel lamination can be observed, and like the Layer XIII, it may be contrasted with the Sashimi Formation.

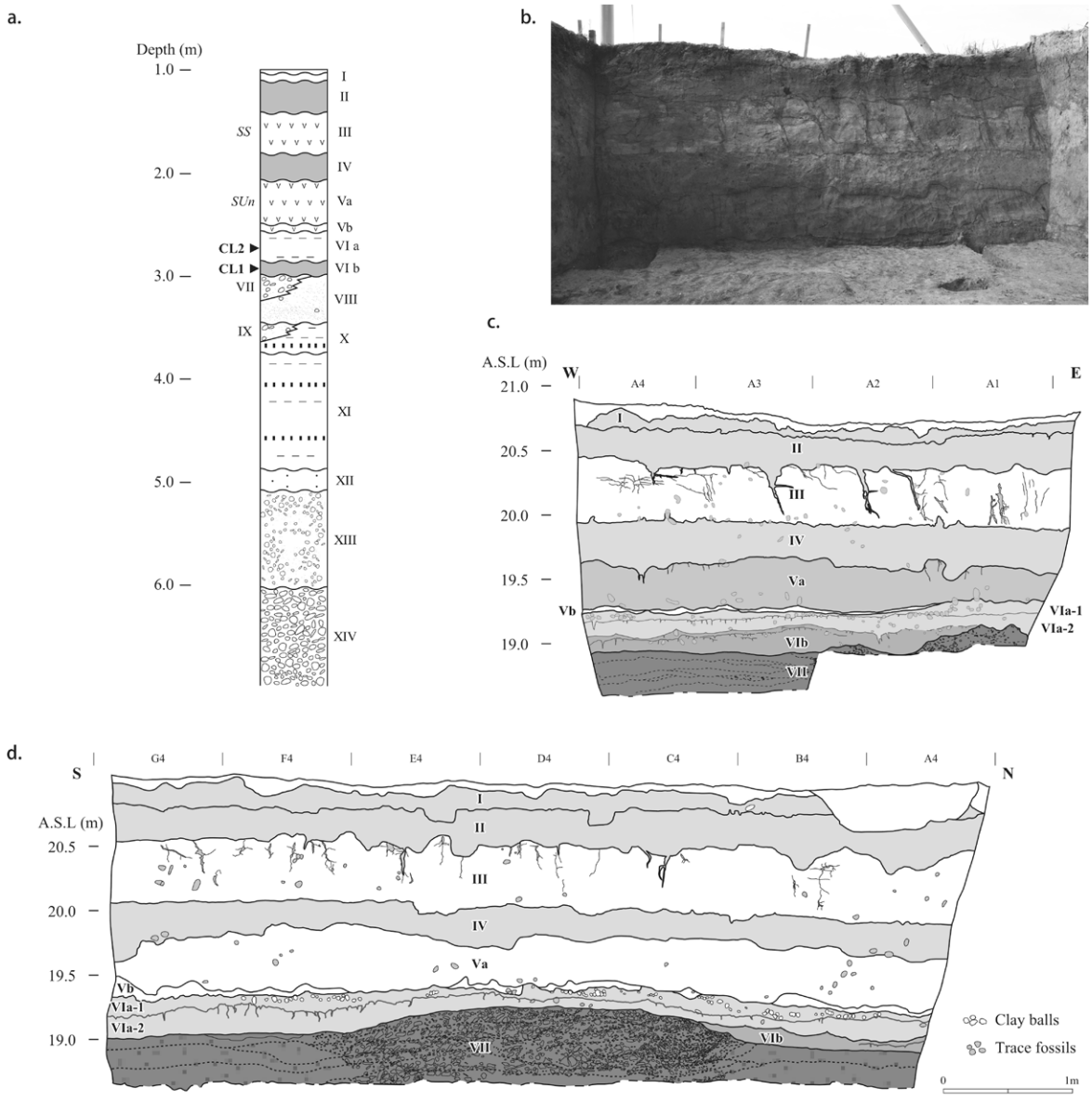

Figure 5.6 Stratigraphical data of the Sunabara Site

a. Basic stratigraphy of the site; b. Photo of north section;

c. Stratigraphy of north section; d. Stratigraphy of west section

Layer XI is brown (7.5YR4/4) or grayish olive (5Y6/2) sand to clay and bright brown (7.5YR5/8) to bright reddish brown (5YR5/8) sand are deposited in alternating layers. Local *takashikozo* were observed in the grayish olive layer, indicating that Layer XI was deposited in a lake environment. Pot-holes were detected in the middle of the layer in the vicinity of the site, indicating that the layer encompasses an erosion surface caused by fluvial activities.

Layer X is bright brown (7.5YR5/6) silt layer with a maximum thickness of 50 cm. The lower part of the layer is composed of *takashikozo* kept in situ, which is in the heterotopic facies with Layer IX.

Layer IX pinched out.

Layer VIII is a fluvial silt layer mixed with sand and gravel, with a thickness of about 30-50 cm. After the deposition of the Layer IX, the terrace surface on which the Sunabara Site is located was dewatered by the relative decline in sea level, and the Layer VIII was deposited as a result.

Layer VII is a dike-like rise (braid bar). It was found within the excavation area and on the western cliff face, crossing the excavation area in a north-south direction. The thickness of the layer is approximately 60 cm at the thickest part. The sediments are mainly fine gravels, but also contain a large amount of pebbles and cobbles. Layer VII and VIII show interfingering on the west wall of the excavation area, and both are considered to be heterotopic facies.

Layer VIb is the fine-grained muddy silt layer with paleosoiled brown (7.5YR4.5/5) to bright reddish brown (5YR5/6). It is only found in the northwestern part of the excavation area. It is about 20 cm thick and contains a small amount of granules to cobbles. Muddy soil overtopped the elevated gravel deposit (Layer VII) at the time of the water outflow and filled the depression in the northwest corner of the excavation area, but no significant lamination was observed. The lower part of the layer, which is grayish in color, may be a gradation layer with the lower layer (Layer VIII) and contains 5–7% manganese grains. The upper part of Layer VIb is light reddish brown and contains many mottles, but few manganese grains. A sun-cracked surface (ScS-3), which bears artifacts and natural gravels, was detected in Layer VIb, which is subdivided into Layer VIb-1 and VIb-2.

Layer VIa is the dull yellowish brown (10YR5/4) to bright yellowish brown (10YR6/6) muddy silt overlies the lower layers (Layer VIb and VII) throughout the excavation area. The thickness of the layer is approximately 15~40 cm. It contains gray clay blocks and reddish-brown mottles (5–7%). It contains granules to cobbles, and the included gravels are larger in diameter than in the lower Layer VIa. Most of the gravel visualized during excavation of Layer VIa consisted of decayed tuffaceous andesite, which was well weathered to be sliced by a steel excavation tool but was presumably originally relatively hard rock. No lamination is observed in the Layer VIa, but regular undulations (current ripples, wavelength of about 40 cm), probably formed by unidirectional water flow, are observed on the bedding plane of the lower layer. Along with lithic artifacts and natural gravel, sun-cracked surface (ScS-1), trace fossils, and a carbonized leaf were detected, which were subdivided into the Layer VIa-1 and VIa-2. The presence of clay balls (1~3 cm in diameter) in Layer VIa-1 indicates that the sediment was deposited in a hydrostatic environment where the water level rises. Volcanic glass, biotite, and white rock fragments derived from SK tephra (ca. 110,000 BP) were detected in the upper part of Layer VIa.

Layer Vb is the bright brown (7.5YR5/7) to bright yellowish brown (10YR7/6) tephra. It remains as a thin layer in the excavation area, but in some places the layer is about 10 cm thick. The tephra was detected, but the source was not identified. No artifacts or carbides are present.

Layer Va is the yellowish brown (10YR5/6) to bright yellowish brown (10YR6/6) tephra layer, deposited over about 40 cm. It contains about 1% circular to angular gravels with a diameter of less than 1 cm. This tephra was identified as SUn tephra (ca. 60,000–70,000 BP). The bottom of Layer Va is clearly detectable as an undulating stratigraphic surface with manganese agglomerations over a thickness of 1-2 cm; it is clear that Layers Vb and Va are unconformably related, and a large temporal gap between the two can be assumed. No artifacts or charred materials were included.

Layer IV is the brown (7.5YR4/6) to bright brown (7.5YR5/6) paleosol layer, deposited about 25~30 cm thick, with a few weathered pebbles 0.5-1.0 cm in size at the interface between Layers IV and III. It contains no artifacts or carbonized material.

Layer III is the brown (10YR4/6) to dull yellowish brown (10YR5/4) tephra layer, about 40~50 cm thick. The homogeneous, fine-grained sediments are tightly consolidated. It was named SS tephra. Fission track dating at the Sunabara Site indicates 53±9 ka. No artifacts or charred materials are present.

Layer II is the brown (7.5YR4/4 to 4/6) paleosol layer, deposited over ca. 30 cm. It is compared to MIS 3 (60,000–24,000 BP), a slightly warmer period during the last glacial period. A large amount of AT tephra was detected from the upper part of Layer II. No artifacts or carbides were recovered.

Layer I is the dark reddish brown (5YR3/4) silt layer with a thickness of about 5 cm. Although K-Ah tephra (ca. 7,300 BP) is mixed in this layer, it lacks sediments after MIS 2 (24,000–11,600 BP), indicating that the surface of the terrace has been heavily plowed. No artifacts or charred materials are present. Modern cultivated soil is deposited on top of Layer I for about 5 cm.

The stratigraphic relationships of the above layers are unconformable, but the layers subdivided by Layer VI, the cultural layer, are diastemically related.

Sun-cracked surfaces as 'old ground surfaces'

The three sun-cracked surfaces detected in the cultural layer, Layer VI, are referred to as ScS-1 to 3, respectively. Of the three sun-cracked surfaces, ScS-1, which extends over almost the entire excavation area, recorded the most information. In this excavation, the sun-crack was detected by careful excavation from the top surface of Layer VI, and then its spread was followed extensively. As a result, ScS-1 was detected as an undulating topography showing a micro-elevation in the center of the excavation area (Figure 5.7-a). This micro-elevation reflects the rise of Layer VII (sand and gravel bar) formed in the center of the area. The sun-crack is trapezoidal on the micro-elevation in the center of the area and becomes smaller and more circumscribed as it advances to the lowland areas to the south and north of the area (Figure 5.7-b). The sun-crack maximum width is about 4 cm and up to 7 cm deep.

The sun-cracks comprising ScS-1 were observed throughout the excavation area, but the spread of ScS-2 could not be captured in the southern half of the area. This is considered to be because ScS-3 was eroded by the water flow from the northeast direction during the deposition of Layer VIa-2 and partially disappeared. Similarly, the sun-cracked surface of ScS-1 may have been slightly eroded during the deposition of Layer VIa-1. Therefore, it is necessary to consider the possibility that the original elevation of the sun-cracked surface in the southern half of the area was several centimeters higher. On the other hand, in the northern half of the area, the sun-cracked surface has suffered little erosion due to the deposition of the upper layers, since the elevation of Layer VII (sand and gravel bar) serves as a dike.

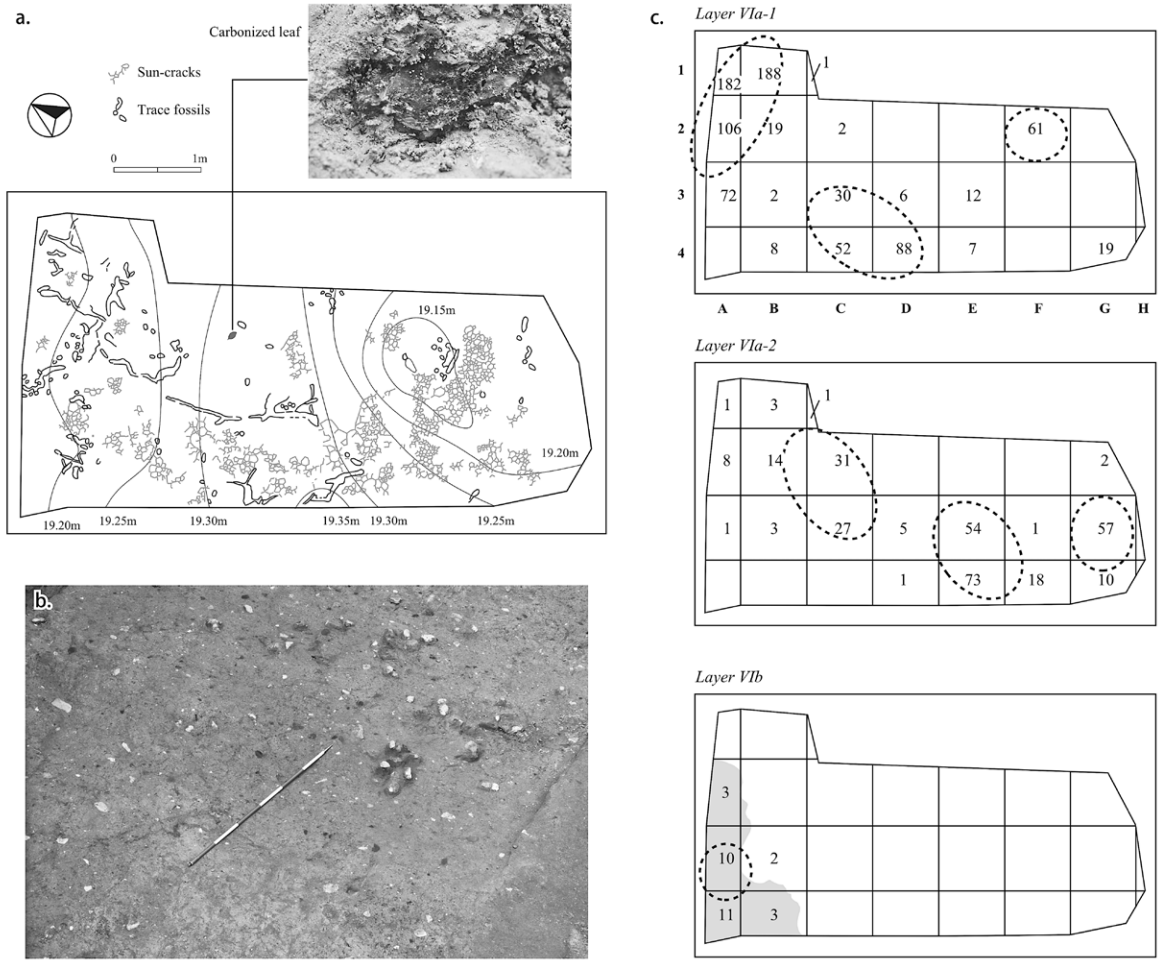

Figure 5.7 Sedimentological data on each sun-cracked surface

a. Microtopography and findings on ScS-1; b. Sun-cracks on ScS-1; c. Concentrations of artifacts and natural pebbles in each layer (including minute materials recovered by sieving excavated soil). Gray area represents deposition area of the layer VIb

A carbonized leaf was detected near the center of the excavation area on ScS-1 (Figure 5.7-a). Since veins were observed, the leaf may have originated from a broad-leaf tree. On ScS-1, trace fossils, which are the traces of subterranean animals (burrows, crawl marks), were also detected. It appeared as circular patterns of 3 to 5 cm in diameter on the cross section and as linear traces on the surface. The interior of the trace fossil is filled with sediment from the upper layer (Layer Va), which is soft and easy to excavate, making it clearly distinguishable from the base sediment. These appear to be burrows of small mammals, and the fact that sun-cracks have been cut in some areas suggests that small mammals moved near the surface after the surface dried out.

These traces indicate the existence of old ground surfaces in the cultural layers, Layers VIa and VIb. These old ground surfaces, which are represented by sun-cracks, provided sufficient depositional and living environments for plants and animals, including humans, to function as living surfaces in the past. Among Layer VIa, the layer that covers ScS-1 and contains white-gray clay balls is Layer VIa-1, and the layer between ScS-1 and ScS-2 is Layer VIa-2. Layer VIb, which is below Layer VIa, is similarly subdivided into Layer VIb-1 above ScS-3 and Layer VIb-2 below.

During the excavation of this site, the relationship of all lithic tools and gravel excavated from the excavation area to the sun-cracked surface was kept in mind, and the excavation was carefully conducted using not only 3D coordinate records with the total station but also fabric analysis. As a result, in the process of organizing the vast amount of data, we were able to divide the majority of artifacts and natural pebbles into sub-layers, enabling us to conduct multifaceted analysis and examination in relation to the old ground surface.

Distribution of artifacts and natural pebbles

Figure 5.7-c shows the distribution of the artifacts and natural pebbles taken up after recording the 3D location information and minute materials recovered by sieving of the excavated soil for each sublayer. Artifacts and natural pebbles tend to be excavated in different positions in each sublayer. Several concentration areas can be recognized on each sun-cracked surface: in Layer VIa-1, the material is concentrated in three groups: around the A1, A2, and B1 grids; around the C3, C4, and D4 grids; and around the F2 grid. Considering the undulation of the top surface of ScS-1 (Figure 5.7-a), it is understood that the material from Layer VIa-1 was concentrated in areas where the ground sloped slightly. In Layer VIa-2, on the other hand, the distribution range differs from that of Layer VIa-1, with materials concentrated in three groups: a group centered on the B2, C2, and C3 grids; a group concentrated around the E3, E4, and F4 grids; and a group centered on the G3 grid. Artifacts and natural pebbles from Layers VIb are concentrated in the northwestern corner of the area, as the deposition of Layer VIb is limited to this area.

"Artifacts" from the braid bar?

Since Layer VIa contains a large number of natural pebbles, some researchers have suggested that artifacts and natural pebbles are inclusions from Layer VII (braid bar) or even lower layers (INADA 2009). Indeed, in Layer VIa, artifacts and natural pebbles tend to be concentrated in the area where Layer VII is deposited (Figure 5.7-c), hence the relationship between the two may be problematic. However, a detailed comparison of the Layers VIa and VIb, from which the artifacts were extracted, with the material below the Layer VII, which contains a large number of natural pebbles, is hard to carry out.

According to the quantitative discrimination of the roundness of unearthed material based on Pettijohn's figure (PETTIJOHN 1975), most of natural pebbles below Layer VII are subrounded to rounded gravel, whereas in Layers VIa and VIb, angular and subangular gravels make up the majority (Figure 5.8-a). As mentioned above, each layer contains lots of soft andesitic rounded decayed gravel. Although these are fragile and not recovered, the percentage of circular gravel should originally have been slightly higher than in these data. However, the inability to recover decayed gravel is not limited to Layers VIa and VIb; it is same below Layer VII. The difference in the degree of circularity shown here is significant, suggesting that the artifacts and natural pebbles in Layers VIa and VIb and the natural pebbles in the Layer VII and below were originally derived from different sources.

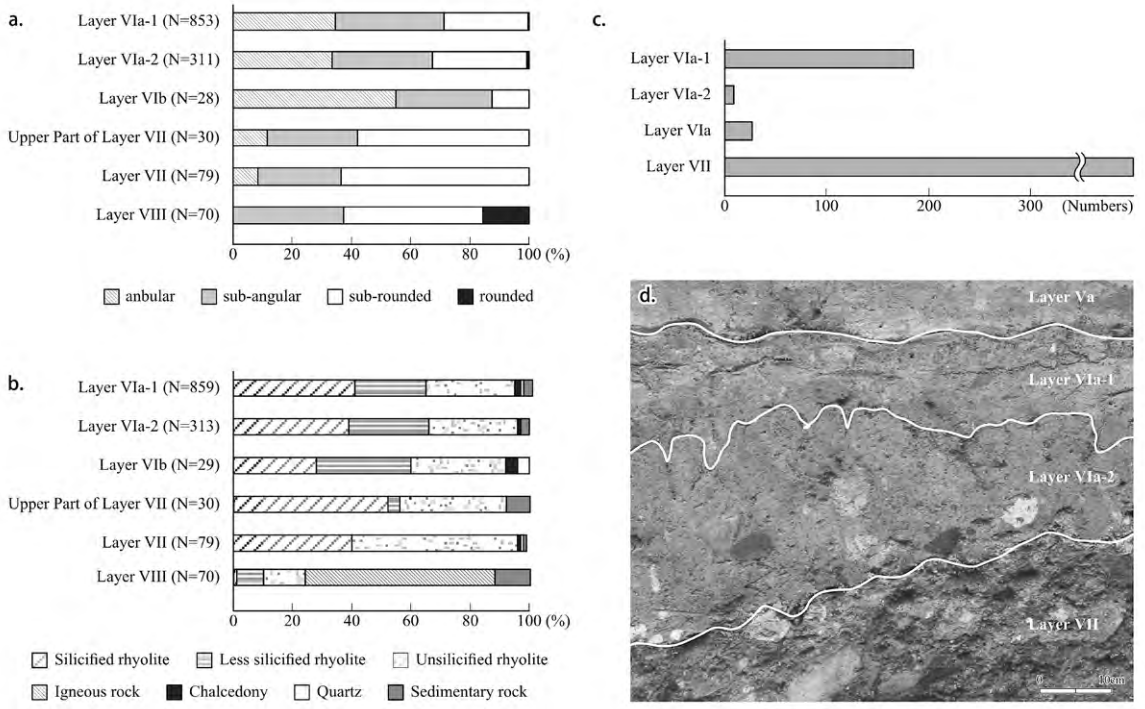

Figure 5.8 Sedimentological data regarding the cultural layers and the layer VII
a. Roundness of stone materials; b. Rock composition of stone materials; c. Vertical transition of the number of stone materials in A2, A4 and B4 grids. It includes minute materials recovering by sieving excavated soil; d. Redeposition of gravels in the upper part of the layer VII (West profile, E4 grid)

On the other hand, cross-sectional observation of the upper part of Layer VII shows that natural pebbles originating from the Layer VII were moved and redeposited as the upper layers (Layers VIa and VIb) were deposited. However, the maximum distance of vertical movement of the pebbles is limited to 10 cm from the stratigraphic surface (Figure 5.8-d). Similarly in the rock type, there is a clear difference in composition between Layers VIa and VIb and those below Layer VII (Figure 5.8-b). The silicified rhyolite, less silicified rhyolite, and chalcedony, which are also used to make stone tools, are prominent in Layers VIa and VIb. Layer VII is similar to Layers VIa and VIb in the percentage of silicified rhyolite, but there is a clear difference in the high percentage of unsilicified rhyolite and the absence of less silicified rhyolite. Layer VIII is completely different from the other layers in terms of rock type composition.

In the northwest corner of the excavation area (A2–A4, B4 grids) (Figures 5.5-D), where all Layers VIa to VII were deposited, a layer-by-layer comparison of the number of artifacts and natural pebbles recovered shows no unidirectional decrease in the number of artifacts recovered from Layer VII to the upper layers (Figure 5.8-c). The volume zone is in Layer VI-1, while the lower layers, VIa-2 and VIb, have extremely low excavated volumes. The peak of the excavated volume is in Layer VIa-1, while the lower layers, VIa-2 and VIb, have extremely low excavated volumes. These data reject the idea that the artifacts and natural pebbles in Layers VIa and VIb originated from Layer VII or lower.

In-situ nature judged by takashikozo *and fabric analysis*

Mottles are frequently found in Layers VIa and VIb, including *takashikozo*. The *takashikozo* in Layer VIa-2 to VIb-2 is nearly upright in the cross-section and is divided at its upper end by sun-cracked surfaces (Figure 5.9-a). On each sun-cracked surface, a circular section with a diameter of about 5 mm was detected. In other words, aquatic plants such as reeds, which are found in present-day wetlands, are thought to have thrived on the surface until each old ground surface was covered and buried. It is reasonable to assume that the *takashikozo* was formed by the attachment of lignite around the roots of these plants.

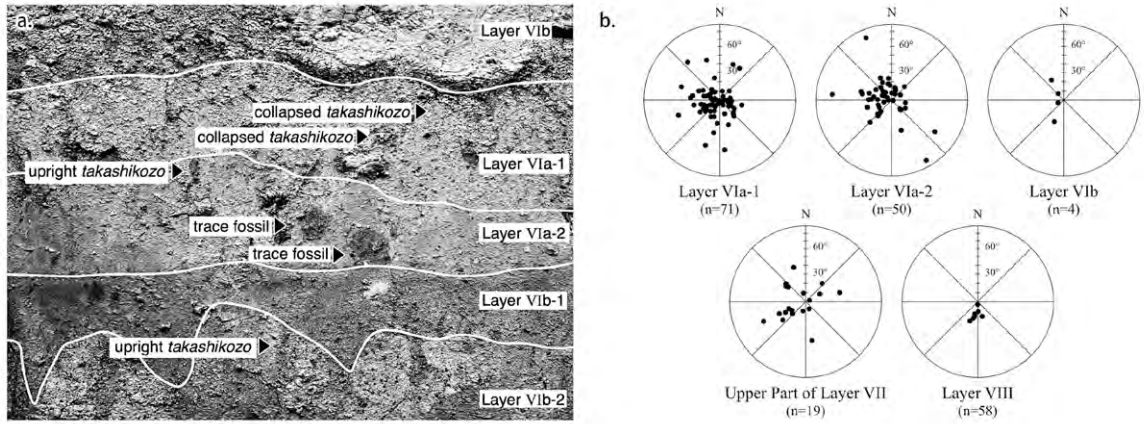

Figure 5.9 Sedimentological data regarding *in-situ* nature of the material from the cultural layers

a. Occurrence of *takashikozo*. White line represents boundary of layers (sun-crack surfaces).

This photo shows latex replica of A3 grid on north profile inverted.

b. Schmidt net projection of strike direction and dip angle of artifact and natural pebble.

N = magnetic north

In contrast to the highly local occurrence of *takashikozo* on the sun-cracked surface, *takashikozo* rarely retain their cylindrical shape in Layer VIa-1 covering ScS-1. Even those that can barely be observed are found with the inclination tipped sideways at less than 45°. As mentioned above, clay balls can be seen in Layer VIa-1, suggesting temporary river flooding. The occurrence of *takashikozo* in the same layer indicates that the ground surface was eroded by the overflow, and the washed out *takashikozo* was damaged.

The in-situ nature of the lithic tools and gravels can also be examined from the analysis of the preferred orientation by fabric analysis. The natural pebbles of Layer XIV observed on the southern outcrop of the Sunabara Site show westward imbrication (strike direction N40–44° E, dip angle 32–48° W), which is clearly caused by water flow from the northwest, i.e., from the seaward side. A similar paleocurrent direction is observed in the lower part of Layer XIII. On the other hand, above the middle part of the Layer XIII, the paleocurrent direction changes: the gravels of Layer IX, for which fabric analysis was conducted, show eastward imbrication (strike direction N40° E, dip angle 18° E), indicating that the sediments were transported by water flow from the southeast to the northwest. Layer VIII (fluvial silt) also shows similar paleocurrent direction, and Layer VII (braid bar), which is heterotopic facies of Layer VIII, has an eastward imbrication near its base (strike direction N20° E and dip angle 35° E) and near the center (strike direction N30–40° W and dip angle 18° E), suggest that sediments were supplied from the east (Figure 9-b). Similarly, the upper part of Layer VII shows an eastward imbrication. For the Layers

VII and VIII, the long axis direction is nearly parallel to the paleocurrent direction, which is common in relatively low viscosity gravelly deposits of turbidity current (turbidites) (e.g., WALKER 1975). This gravel alignment trend is consistent with the depositional environment indicated by the facies of the sediment.

In contrast to the natural sedimentary layers below Layer VII, which show clear imbrication, Layers VIa and VIb which contain the possible artifacts, the material does not show a preferred alignment and an isotropic pattern (Lenoble et al. 2004). The materials are inclined in both the east and west directions, and the values are more erratic than those of data from below Layer VII. These results suggest that the artifacts and pebbles analyzed in the fabric analysis were not deposited by temporary water flow.

These observations suggest that artifacts and natural pebbles left on the surface at that time were buried keeping in situ. The artifacts and natural pebbles may have been transported into the excavation area by other factor that cannot be explained by natural processes during the sedimentary hiatus.

Lithic assemblages

A total of 37 artifacts are stratigraphically divided into two cultural layers at least. We call Layer VIb 'cultural Layer I' and Layer VIa 'cultural Layer II'. The lithic raw materials used for artifacts at the Sunabara Site are silicified rhyolite, quartz, and chalcedony. Of these, our surveys around the site have confirmed that rhyolite and quartzite are found in the Ōmori, Fujina, and Sashimi formation. Most of the gravels collected around the site are unsilicified rhyolite and sedimentary rocks (chert, tuff, etc.), whereas volcanic rocks (dacite, basalt, etc.) are scarce. Silicified rhyolite and chalcedony from the Fujina formation account for less than 1% of the gravels collected in the area. In particular, only one dense and sufficiently large chalcedony, such as that used in the flakes collected by NARUSE, has been identified in the vicinity of the site among the gravels of the middle terrace.

The number of lithic artifacts excavated from cultural Layer I was six in total: one chopping tool, two pointed scrapers, one flake, and two chips. The reason for the small number of finds from cultural Layer I is that the distribution of the VIb layer is limited to the northwest corner of the excavation area. Figure 5.10-1 is a dense silicified rhyolite pointed scraper, made of a trapezoidal flake. The platform side is folded by pressure from the dorsal side. The thickened terminal end is retouched at a steep angle from the ventral side and shaped so that the top edge is pointed. The size of the scars from retouching is not constant. Figure 5.10-2, which is a fragment, is presumed to have been detached from the same gravel as Figure 5.10-1, but it is not refitted. It was excavated about 1 m away from Figure 5.10-1. Both Figure 5.10-1 and -2 are hardly worn. Figure 5.10-3 is the chalcedony flake that led to the discovery of the site. Calcite-like deposits and iron oxide mottles can be seen on the surface. A very small platform remains, and diffuse bulbar scars can be observed on the ventral surface adjacent to the platform. Both lateral margins are extremely sharp. Figure 5.10-4 is also a pointed scraper made of silicified rhyolite, with flat nodular surfaces that have been weathered and abraded in the center of both sides. Both side edges are straight and shaped by Helwan retouch. The upper edge is shaped into a sharp point by a sharply angled flaking from the right side. It may be that it should be classified as a bec. Figure 5.10-5 is chopping tool made of silicified rhyolite, and the blade edge is made by alternating flaking at one end of a subangular piece of gravel. The upper view of the blade edge has a zigzag shape. The ridges are sharp and unabraded.

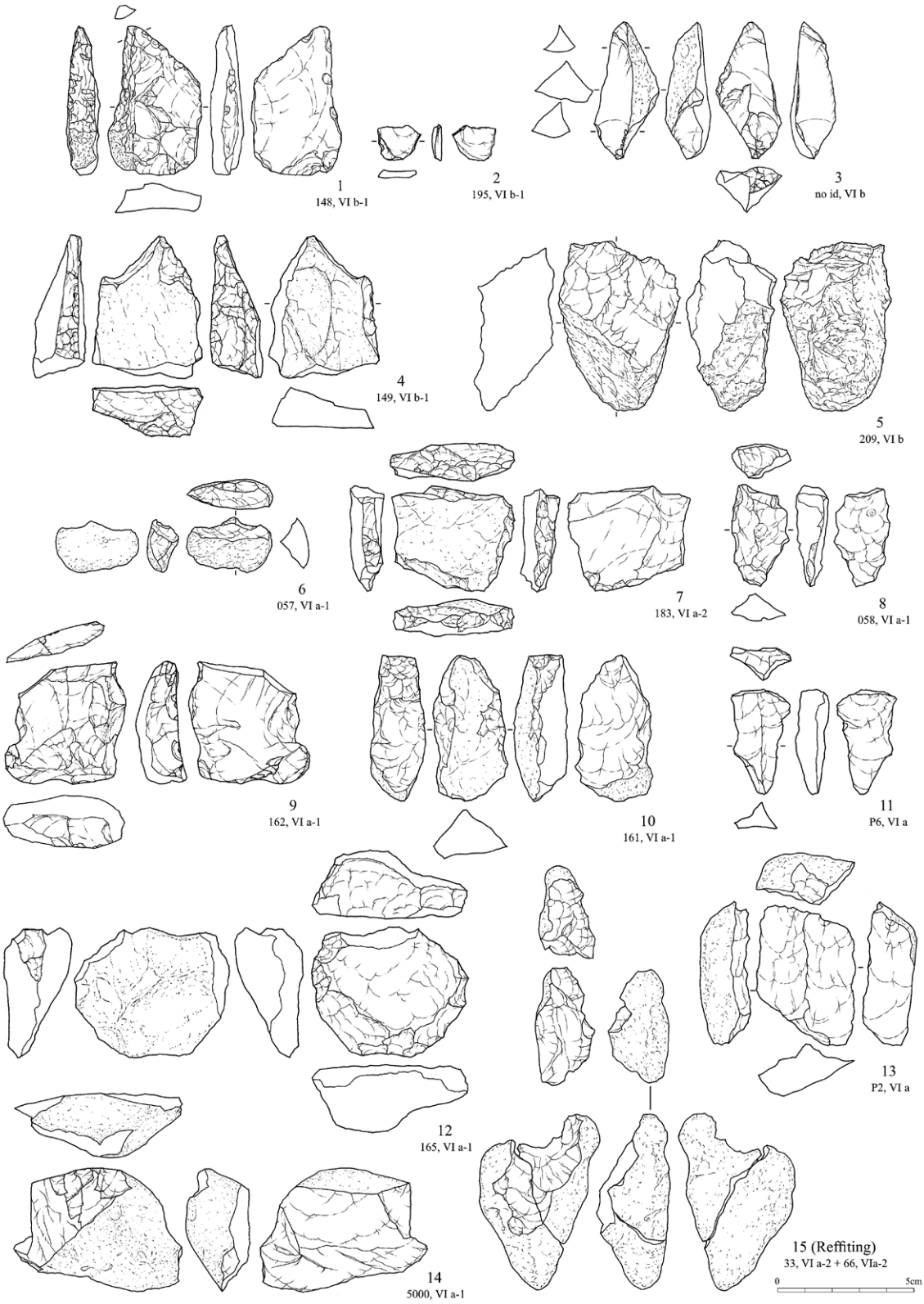

Figure 5.10 Drawings of lithic artifacts from the Sunabara Site

See text for descriptions

Cultural Layer II consists of 30 artifacts: one bec, three side scrapers, two burins, ten flakes, three cores, ten chunks, and one hammerstone. Layer VIa covers the entire excavation area. Figure 5.10-6 is a quartz bec, with two flake scars left on the edge of the round pebble, creating a short protrusion. The half-split face has been abraded and is weathered differently from the flake scar on the upper margin. Figure 5.10-7 is a silicified rhyolite side scraper that retains extensive weathered and abraded exfoliated surfaces on both sides. The circumference of the original flake is irregularly retouched. Figure 5.10-9 and -10 are burins, the former is made of chalcedony and the latter is made of silicified rhyolite. The upper side of Figure 5.10-9 was folded from the ventral surface to the dorsal surface, and this folded surface was exposed twice as a striking surface to create a burin facet on the side. In Figure 5.10-10, a burin facet is left on both sides of the strike of a thick elongated flake. Figure 5.10-14 is a wide flake made of silicified rhyolite. A thick flake with bending initiation (TSIRK 2014) was detached by striking the flat cortex. Prior to this flaking, the protrusion of the dorsal surface was removed by several blows. Both the margins and ridges are extremely sharp. Figure 5.10-15 consists of two samples, excavated about 25 cm apart, which were refitted. The cortex of the subrounded pebble of silicified rhyolite was struck and a flake detached. A distinct bulb can be seen on the ventral surface of the flake. Figures 5.10-11 and -13 are pointed flakes made of silicified rhyolite, with two negative flake scars on the dorsal surface and a ridge in the center. The flat surface was struck as a striking platform, the ridge was removed, and a flake with bulbs was produced. Figure 5.10-13 is a core made of subrounded pebble of silicified rhyolite. At the upper end, a thin negative flake scar was left on the back-trending cortex, and two elongated flakes were detached by striking near the ridge between the cortex and flake scar.

Artifactuality verified by PMO method

Among the silicified rhyolite materials, there are 31 materials in which phenocrysts are found in all parts of the material, and overlapping relationships between flake scars can be determined. Of these, five objects were described as artifacts (Figure 5.10-5, -8, -11, and -13); the remaining 26 were treated as natural pebbles in the excavation report (MATSUFUJI and UEMINE 2013).

The PMO method was used to identify the fracture direction of each flake surface, and the overlapping relationships among the flake scars were synthesized and classified into eleven types (Figures 5.11 and 5.12). The classification criteria are explained below, and particularly important materials are described individually. The fracture direction was estimated from phenocryst observations; and if a bulb-like bulge could be seen in the direction of the striking platform, or if the flake scar itself was convex, the surface was judged to be a positive flake scar. Conversely, a negative flake scar was considered to be so if there was a bulb-derived concavity in the direction of the strike or if the entire surface was concave.

In the following illustrations, black dots represent the position of a phenocryst, and arrows indicate the fracture direction estimated from the microscopic observation of phenocrysts. Marks on the ridge shows the overlapping relationship between two flake scars. The stick-mark side is older, and the circle-mark side is newer.

C type

Negative flake scars can be identified, but no positive flake scars can be found. Based on the combination of flake scars, they can be subdivided into the following four categories. The overlapping relationships of each surface are clear, and the order of formation can be grasped as (b→a→d→e→c).

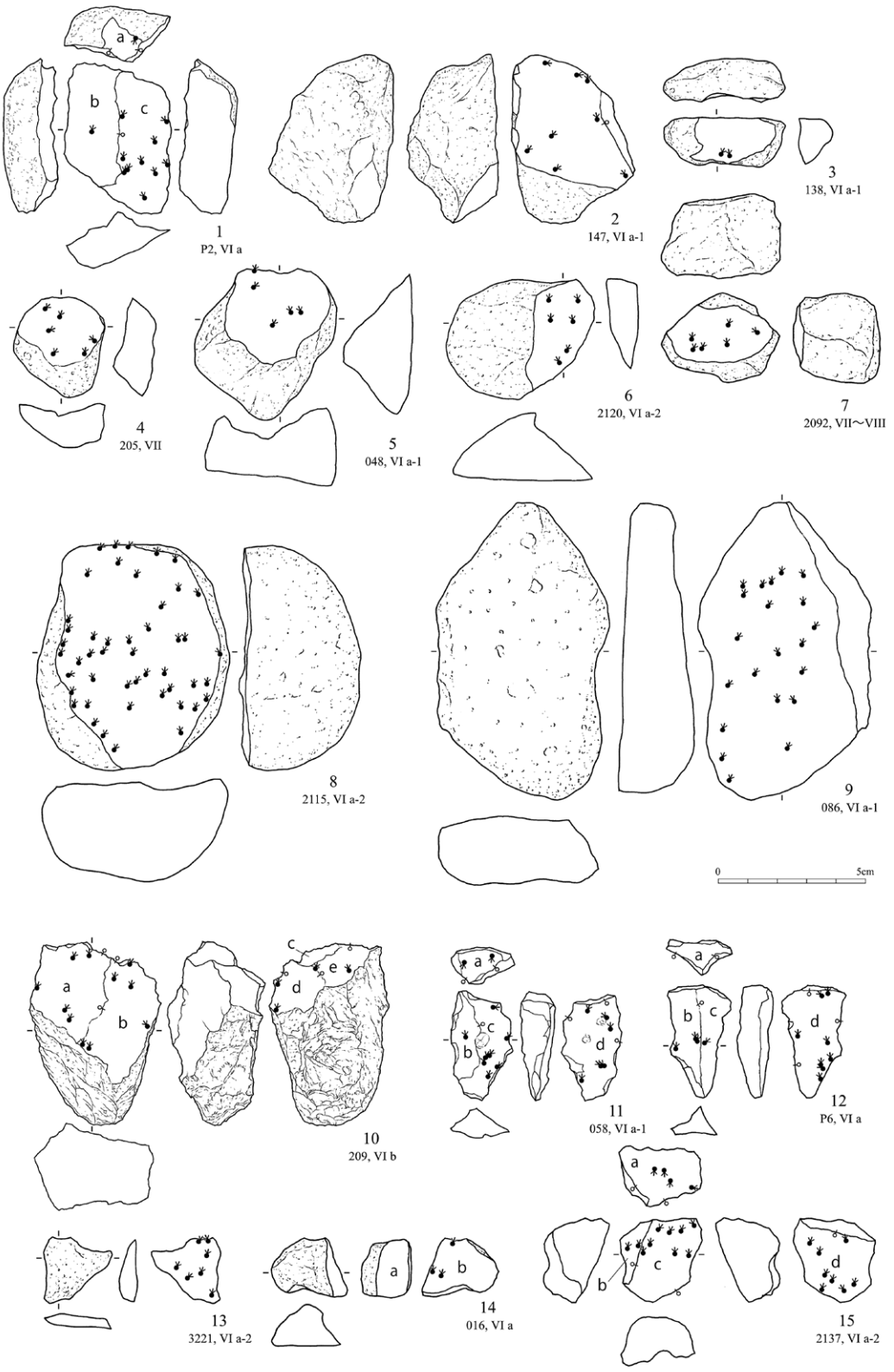

Figure 5.11 Flaking processes on silicified rhyolite

See above box for key

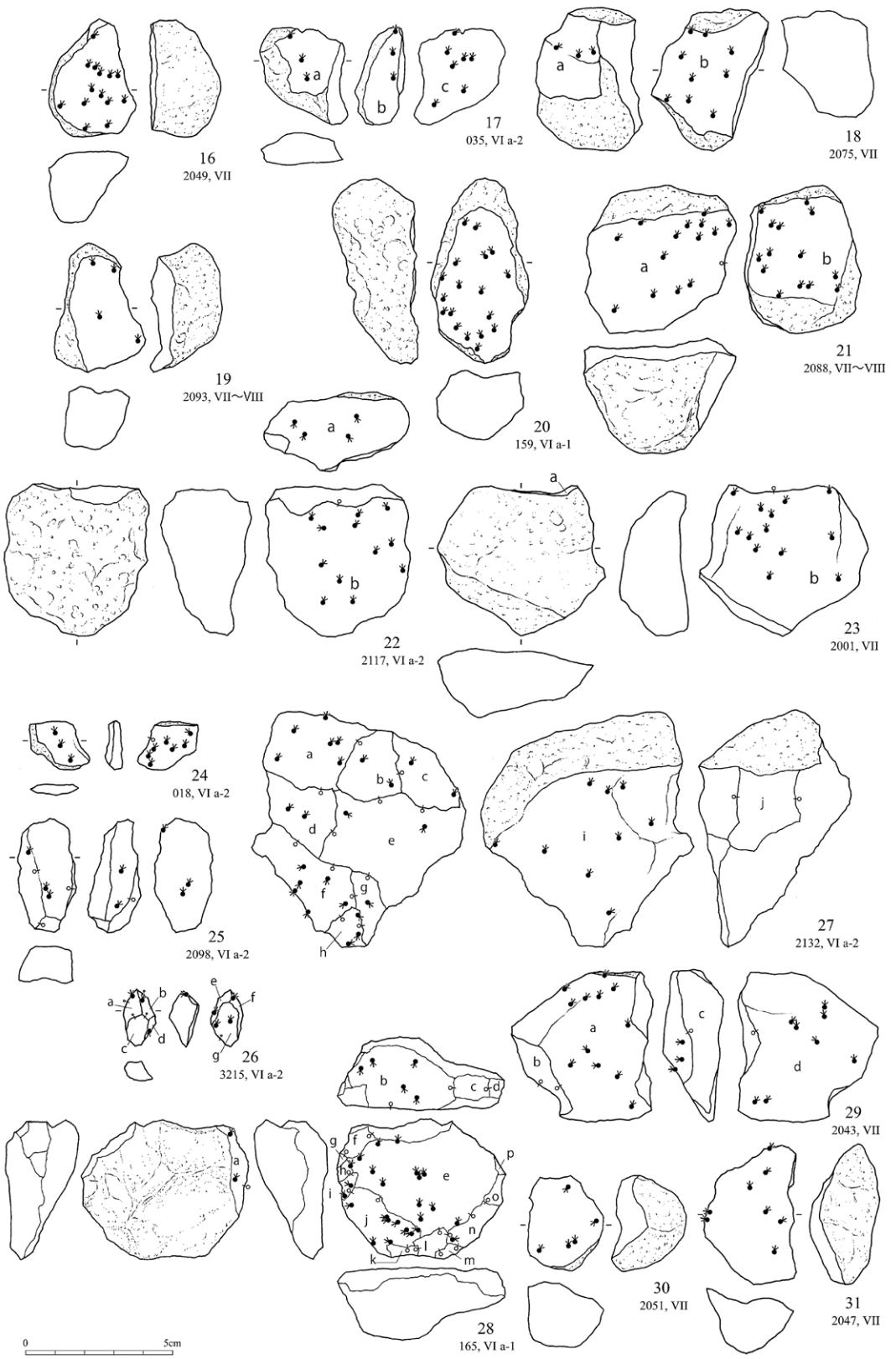

Figure 5.12 Flaking processes on silicified rhyolite, cont.

See above box for key

- Ca type is a subangular gravel with a small flake scar on the short-axis face of the gravel, and then two flake scars arising from the vicinity of the scar, parallel to the plane of the gravel. Only Figure 5.11-1 described as a core is applicable. The overlapping relationships are clear (a→b→c), and the phenocryst readings are consistent with the above findings described in Figure 5.10. The longitudinal elongation of flake scar-c may be due to a portion of the ridge of flake scar-b guiding the flaking.

- Cb type is composed of cortex except for a single negative flake scar, and the negative flake scar is left as if to remove the natural ridge of the gravel and results in a core. Figures 5.11-2 to -6 are applicable.

- Cc type is composed of cortex except for one negative flake scar, and the flake scar covers the whole of the plane, forming a split pebble shape. Figure 5.11-7 to -9 are applicable.

- Cd type is a material in which flake scars are created by alternating flaking at one end of a natural pebble. Figure 5.11-10 is applicable. This material was described as a small chopping tool in Figure 5.10.

F type

Summary of those in which positive flake scar is observed. The intention of the knapper can be inferred from the tendency of strike point selection (the position and relationship of the bulge and the ridge in the flaking area). Accordingly, the pre-situation of flaking, inferred from the phenocryst observation results, can be subdivided into the following six categories.

- Fa type shows a characteristic flaking process in common with Ca type. Figures 5.11-11 and -12 are both described as pointed flakes. In Figure 5.11-11, phenocrysts were observed in all major flake scars, which is consistent with our previous description. The most predominant flake scar is the negative flake scar (a), which was left at the upper edge from the dorsal surface and served as a striking platform for subsequent flaking. The dorsal surface has two parallel negative flake scars (b and c) from the upper direction, and a positive flake scar (d) is formed by a ridge created by the negative flake scar (b and c), forming a longitudinal flake. In Figure 5.11-12, the direction of the flaking cannot be determined because there is no phenocryst in the most predominant upper flake scar (a), but the information derived from other flake scars are consistent with our previous description in Figure 5.10. The ventral surfaces of Figures 5.11-11 and -12 show bulb-like bulges. Figure 5.11-15 also shows a similar flaking process. The most recent negative flake scar (a) is the strike surface, and flake scars are left in the order of c to b. The ridge created by the flake scar (b) is the strike surface, and the flake scars are the ridge of the flake scar (c). The ridge created in this process leads to the negative flake scar (d). Bending initiation (TSIRK 2014) can be observed.

- Fb type is a material that appears to incorporate a natural ridge of gravel into the dorsal surface, and the ridge guides the flaking, causing the flakes to become longitudinal. The ridge guides the flaking and the flake becomes longitudinal. Figures 5.11-14 and 5.12-18 to -21, are all made of angular gravel, and the cortex is selected as the strike surface. Figures 5.11-13 and 5.12-16 and -17 have a shattered platform, but they show similar pre-situation of flaking. Bending initiation can be observed in Figures 5.12-19 to -21.

- Fc type has a dorsal surface covered with cortex, but no prominent natural ridge is visible. Figures 5.12-22 and -23 are examples of this type.

- Fd type is a material in which the negative flake scar on the dorsal surface and the positive flake scar on the ventral surface originated from the same point of impact and were continuously produced by force applied from one direction, or flake scars on the dorsal and ventral surfaces are thought to have been left simultaneously. Figures 5.12-24 and -25 show the cortex as the strike surface. Figure 5.12-26 can be recognized as having a punctiform platform. Negative flake scars on the dorsal surface (a and b) and positive flake scars on the ventral surface (e and f) may have occurred simultaneously.

- Fe type has dorsal surfaces with negative flake scars in the orthogonal or opposite direction to the ventral surfaces. Figure 5.12-27 is applicable. In addition to flake scars in the same direction (a to c) as the ventral surface (i), negative flake scars from orthogonal and opposite directions (d to g) are incorporated into the dorsal surface. In addition to flake scars in the same direction as the ventral surface, negative flake scars from orthogonal and opposite directions are incorporated into the dorsal surface. The flaking sequence is j→a→b→c→e→d/ g→f→h→i. A complex flaking process is restored. The ventral surface (i) shows bending initiation, and the ridge derived from flake scars (a to h) is incorporated into the dorsal surface to form an elongated flake.

- Ff type is a flake with retouch-like negative flake scars. The ventral surface and the retouch-like negative flake scars were formed at the same period as far as the weathering degree of phenocryst is concerned. Figure 5.12-28 is described in Figure 5.10 as a side scraper, and the results of phenocryst observations are consistent with this understanding. The retouch-like small negative flake scars were observed on a flake with a large cortex on the dorsal surface, similar to the Fb type. Among the small scars, only flaking scar-j shows bending initiation, while negative bulbs are prominent on the other surfaces (i, k to o). The striking platform has been removed by flake scar-b. Figure 5.12-29 consists of flake scars that, like the Fd type, appear to have originated from the same impact point on both the dorsal and ventral surfaces. A negative flake scar (b) was found on the ventral surface.

P type

This material is composed of "fracture scar" and cortex, which is a single surface, but phenocrysts show multiple fracture directions. Figure 5.12-30 and -31 correspond to this type. In Figure 5.12-30, the fracture originates from the inside of the surface. This face is a pot-lid fracture and is presumed to have been affected by rapid thermal alternation (TSIRK 2014). In Figure 5.12-31, the fractures appear to have occurred from all directions around the cortex of the gravel and are unlikely to have been caused by percussion.

Table 5.1 shows the 31 items observed and classified by layer. Cb type and Fb type, which have similar pre-situation of flaking, are combined. According to this, P type is found only below Layer VII, where there is no room for artifacts, and there is little basis for judging it as an artifact, at least at the Sunabara Site. Cb, Fb, Cc, Fc and Ff types were excavated not only from Layer VIa but also from Layer VII and below. It is not possible to determine them as artifacts in Layer VIa. They are types that can occur by the natural effects.

Table 5.1 Numbers of objects in each flake-type category

Type	Layer			Total
	VIa	VIb	VII/VIII	
Ca/Fa	4			4
Cb/Fb	8		5	13
Cc	2		1	3
Cd		1		1
Fc	1		1	2
Fd	3			3
Fe	1			1
Ff	1		1	2
p			2	2
Total	20	1	10	31

As for Fd type, it would be appropriate to conclude that natural effects can generate flakes as well, given that Figure 5.12-29, excavated from below Layer VII, has the characteristics of the Fd type. On the other hand, Ca and Fa type have only been excavated from Layer VIa, and the complexity of the flaking process makes it extremely difficult to explain that they were caused by natural effects. In particular, Figures 5.13-a.1 and a.2 are very similar in platform and size; and from the surface composition, Figure 5.13-a.3 can be considered to be the stage just before the flakes like Figures 5.13-a.1 and a.2 were detached. One part of the gravel is split off, and it is used as a striking platform on which the elongated flake is continuously produced, incorporating the ridge of the preceding negative flake scar as a guide. The flaking procedure and pre-situation illustrated in Figure 5.13-b can be explained much more easily by assuming human intervention.

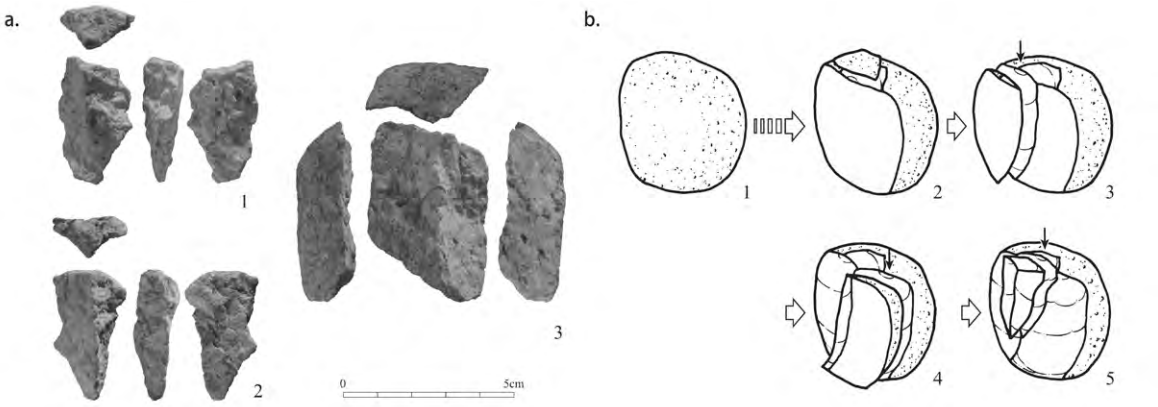

Figure 5.13 Silicified rhyolite materials determined to have high artifactuality by PMO method
a. Photos of the applicable materials
b. Schematic diagram of flaking process of Ca and Fa types

Discussion

Methodological contribution of Sunabara Site

The unprecedented and severe ordeal of the hoax by FUJIMURA forced a major methodological shift and transformation in Japanese Paleolithic archaeology. The excavation of the Sunabara Site was a sincere attempt to meet this challenge, and to further develop the research perspectives and techniques developed during the investigation of the hoax. Our research in the field forced a major shift from the traditional excavation method. In other words, by incorporating the detection of old ground surfaces focusing on sun-cracks and trace fossils, and the verification of an in-situ nature using fabric analysis of artifacts and natural pebbles, the formation process of archaeological sites can be empirically discussed in relation to the depositional environment. This allows us to empirically discuss the formation process of archaeological sites in relation to the sedimentary environment. As an extension of the collection and analysis of such sedimentological data, we can now provide an objective basis for determining the artifactuality of the materials. The stratigraphy of the archaeological site was not simply based on color tone, but on the stratigraphic materials and depositional environment, and this was understood within the topographic stratigraphy of the surrounding area of the site. This has enabled us to understand the stratigraphy of the site and human activities in the geomorphic history of the area, and it has also contributed to the dating of the cultural layer.

Since the 2009 academic excavation, the majority of opinions regarding the Sunabara Site material have been negative in terms of artifactuality, but most of the doubts remain based on the researcher's experience with "lithic certification". We should have learned from the hoax that "the evidence for artifactuality of a lithic object" should not be based only on the characteristics and composition of the flake scars, but also on the analysis of the depositional environment in which it was deposited.

Based on sedimentological analysis and old ground surface identification, the occurrence of the Sunabara Site material cannot be dismissed as negative. Old ground surfaces with sun-cracks and *takashikozo* are present in the sediment of the marine terrace belonging to the same period as the Shimosueyoshi terrace (MIS 5e). The potentially artifactual materials with flaked surfaces are solidly in situ on the old ground surface, with multiple concentrations at different locations in each layer. Can this strange situation be explained as a product of the natural effects?

Most of the artifacts excavated at the Sunabara Site were made of coarse silicified rhyolite, which makes reading the flaking procedure significantly more difficult than for fine-grained, homogeneous stones such as obsidian and flint. To overcome this problem, we devised the PMO method to read the formation process of stone materials from quartz grains contained in rocks as phenocrysts; and we attempted an objective "reading" without being influenced by empirical rules of the observer. As a result, it was confirmed that the Layers VIa and VIb, which are assumed to be cultural layers, contain materials with complex flaking sequences that are unlikely to be geofacts caused by natural effects. The PMO method ensures that grounded discussions proceed, clarifying areas where researchers can build common understanding with each other and areas where they differ. The accumulation of findings based on this method should lead not only the Sunabara Site materials, but also coarse lithic materials containing phenocrysts from other sites, to a final destination in the discussion.

Notably, the findings for the unearthed materials from the Sunabara Site with the usual procedure of the lithic observation were consistent with the inspection results using PMO method. This proves that reproducible "readings" can be obtained even for coarse and heterogeneous stone materials. By

carefully observing the artifacts and reading what they indicate, we can build up a series of testable hypotheses. Without these steady steps, there can be no progress in archaeological research.

Sunabara Site in East Asian Paleolithic culture

Two cultural layers were identified stratigraphically in the fluvial sediments (muddy silt) immediately above the fluvial gravel beds that overlie the marine middle terrace formed in MIS 5e, about 2 m below the present surface. The Cultural Layer I is included in Layer VIb, and the Cultural Layer II is included in Layer VIa. Geologic and topographic survey and tephrochronology revealed that the lower Cultural layer, VIb, corresponds to MIS 5e and the upper cultural layer, Cultural Layer II, to MIS 5d.

In the Japanese archipelago, the Levallois technique was once regarded as an indicator of the Middle Paleolithic culture, and its related materials were searched for (SERIZAWA 1966). Today, however, it is clear that the Levallois technique was certainly transmitted to Siberia and the Mongolian plateau, but not to most of present-day China, the Korean Peninsula, or the Japanese archipelago (HU et al. 2019).

Unless we overestimate the maritime navigational capabilities of the extinct humans, the timing when humans could have arrived in Japanese archipelago is limited to the period when the Japanese archipelago was connected to the continents. In particular, the formation ages of land bridges are significant when considering a route through the Korean Peninsula. Based on the species transition of proboscis fossils, the formation ages of a land bridge are considered to have occurred at approximately 1.2 million years ago, again at 630,000 BP and at 430,000 BP (TARUNO 2010). After that, Honshū Island may have been isolated from the continent until the beginning of the Upper Paleolithic age (ca. 37,000 BP?). In other words, the Sunabara Site, dating to MIS 5, suggests the existence of a land bridge or ice bridge in MIS 6 and that humans migrated across it to the Japanese archipelago.

Other lithic assemblages that may be older than the lithic assemblage at the Sunabara Site include a hard sandstone hammerstone found by the authors in a fine-grained Paleolithic layer (MIS 7 to 8?) at the Kakeya Site in Unnan City, Shimane Prefecture, and a cleaver dating to MIS 6 from the Itazu Site in Izumo City, Shimane Prefecture. The cleaver material at Itazu is common to lithic artifacts from the Korean Peninsula (MATSUFUJI, NARUSE et al. 2013). The presence or absence of land and ice bridges in MIS6, where marine oxygen isotope ratios are extremely low, is of interest. Most Korean Pre-Upper Paleolithic assemblages were found in warm-period paleosol and significantly fewer from cold-period loess (NAKAGAWA 2012). The reasons for the decrease in the number of sites during the cold period must be left to future research, but it is possible that human populations on the Korean Peninsula moved to warmer areas during the cold period. The Japanese archipelago may be one of the candidates as a destination for their migration (MATSUFUJI 2014).

From the end of the Middle Pleistocene to the first half of the Late Pleistocene, the production of small stone tools continued in East Asia, much as it had before that period. These stone tool assemblages were known as the small flake-tool industry. The MIS 5 to 4 lithic assemblage in northern China is similar to the denticulate Mousterian of Western Europe, which some have proposed to be called the Houjiayao denticulate industry (MAGARA 2015). The Sunabara industry has elements of a small flake-tool industry. In addition, other sites that include the Tategahana Site (Nojiri-ko Jinrui Kōkogaku Gurūpu 2006) and the Kanedori III and IV industries (KIKUCHI et al. 1986) may date before 37,000 cal BP. The number of excavated materials at each of these sites is small, and it is difficult to determine whether the original composition of the sites is fully reflected in the excavated materials. However, the industries remaining up to the first half of MIS 3 (60,000–24,000 BP) are considered to belong to the small flake-tool industry,

although there are a few large stone tools in them. In other words, aspects of the pre-37 ka Paleolithic culture of the Japanese archipelago can be considered to fit within the framework of East Asian cultural trends.

However, although these lithic assemblages are similar to older lithic assemblages in their use of hard rock for tool making, more local rocks were selected. It is difficult to point out high similarities to continental lithic culture in typological features. This is in contrast to the composition of a handaxe-like stone tool in the later Kanedori III industry (MIS 4). The lithic assemblages of MIS 5 may reflect the regional adaptation of human cultures that have become Galapagos-like isolated after being cut off from the continent.

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CHAPTER 6

Recent Research on the Early and Middle Paleolithic in Japan: an Overview

SATŌ Hiroyuki 佐藤宏之

Although the "Fujimura scandal" in 2000 led to the nullification of over one hundred "Early" and "Middle" Paleolithic assemblages, there exists in the Archipelago currently some 30 sites which are purported to yield pre-Upper-Palaeolithic artifacts. These are the sites which Fujimura was clearly not involved in, or those where investigations began since the "Scandal" of 2000. The assemblages consist of pointed pebble tools, choppers and small flake tools, and are estimated to date between 100,000 to 40,000 years ago by radiometric dating such as OSL, tephro-chronological and sedimentological studies, and techno-typological aspects of lithics.

Keywords: Japanese archaeology, Paleolithic, Early Paleolithic, Middle Paleolithic, excavation, lithic artifacts, Kanedori Site, Kashiyamatate Site

Recent Research after the "Fujimura Scandal"

The "Fujimura Scandal" in 2000 led to the nullification of over 100 Lower and Middle Paleolithic assemblages in Japanese archaeology (The Japanese Archaeological Association 2004). Presently, however, some 30 pre-Upper Paleolithic sites exist in the Japanese archipelago, in which FUJIMURA was not involved or which were identified after the Fujimura Scandal came to light (discussed as the Fujimura hoax in the Part I Introduction). Some of these sites are known from surface collection only, but there are others for which we have some ideas as to the contents—either because of the results of scientific excavation or because the specimens have been collected from geological cross-sections.

Geographic Setting and Distribution of the Early and Middle Paleolithic Sites in the Japanese Archipelago

The geographical setting of the Japanese archipelago during the Late Pleistocene was much different from the present (Figure 6.1). The dark-colored area around the archipelago indicates a sea depth of less than 100 m. In the Last Glacial Maximum, the Japanese archipelago expanded to this area at least this far because of sea level regression. Although the entire picture is not shown on this map, the Japanese archipelago in the Late Pleistocene was composed of three geographic units. First, present-day Hokkaidō was part of the Paleo-Hokkaidō Peninsula, connected to the continent through Sakhalin, along with the southern Kuril Islands. Second, present-day Honshū, Shikoku, and Kyūshū formed a single island named Paleo-Honshū Island which was not connected to the Korean Peninsula (IWASE 2012). Third, the Ryūkyū Islands were islands as they are today, even though the land areas would have been larger than at present.

Paleo-Honshū Island, however, was last connected to the Korean Peninsula for a short period at the beginning of the Late Pleistocene about 120,000~130,000 BP, when the Paleoloxodon–Sinomegaceroides complex is thought to have arrived from the Korean Peninsula. This complex is one of the two main faunal groups of Late Pleistocene Japan—the other one being the mammoth fauna, derived from the northern cold zone and spread across the Paleo-Hokkaidō Peninsula (SATŌ 2015). These geographic situations set the main factors that determined the original characteristics of the Japanese Middle

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Paleolithic. In the following pages, some representative examples of those sites that have been reported as Early and Middle Paleolithic will be discussed.

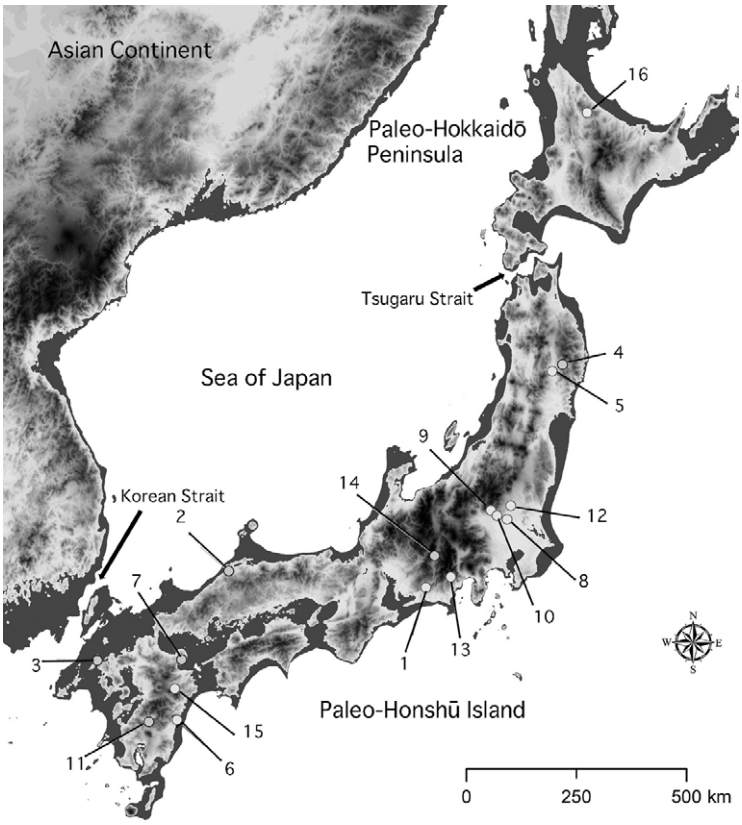

Figure 6.1 Geographic setting, and distribution of Early and Middle Paleolithic sites in the Japanese archipelago

1. Kaseizawa (Early Paleolithic?)
(Middle Paleolithic): 2. Sunabara, 3. Iriguchi, 4. Kanedori, 5. Kashiyamatate, 6. Ushiromuta, 7. Sozudai, 8. Fujiyama, 9. Kiribara, 10. Gongenyama 1/2, 11. Ono, 12. Hoshino Tankenkan, 13. Nutabura, 14. Takesa-Nakahara, 15. Kamishitada, 16. Rubenosawa

N.B. Site numbers on this map coincide with Table 6.1

Tentative Chronology of the Japanese Pre-Upper Paleolithic

Table 6.1 is a tentative chronology of the Japanese Early and Middle Paleolithic. The numbers for the sites here coincide with the site numbers shown on the map in Figure 1. It should be noted that the boundary between the Lower and Middle Paleolithic in Japan is set tentatively at the beginning of the Late Pleistocene dated to 120,000 BP. For each site, the cultural stage, name of the site, region, research method, estimated age, and basis of age estimation are shown. At present, the Kaseizawa Site, in Aichi Prefecture, is the only site that has been claimed to belong to the Japanese Early Paleolithic (KŌMURA 1968). However, its exact chronological position is unclear due to the fact that the specimens were collected while the site was being destroyed by construction activities. The Kaseizawa Site assemblage contained some pointed pebble tools (Figure 6.2: 1, and 6.2: 2), various flake tools (Figure 6.2 : 3 to 10), and a discoidal core (Figure 6.2: 11)—revealing a combination of large and small tools. Since the pointed pebble tool is made from a flat pebble, it cannot be called a pick.

Other sites are assigned to the Middle Paleolithic as they are estimated to be younger than 120,000 BP. The Middle Paleolithic stage is sub-divided into three sub-stages; the early Middle Paleolithic (120,000~60,000 BP), the late Middle Paleolithic (60,000~50,000 BP), and the transition from Middle to Upper Paleolithic (50,000~40,000 BP).

Age estimation is based, in most cases, on thermo-luminescence dates and tephrochronology. As many volcanic eruptions occurred throughout the Pleistocene in Japan, dates and stratigraphic contexts of tephra are very useful for dating archaeological sites. Widespread tephras, such as K-Tz (95,000 BP), DKP (55,000 BP), Aso-4 (90,000~85,000 BP), and AT (30,000 BP)—with their origins of eruption in Kyūshū

or Chūgoku mountains—are particularly useful for chronological study of the Middle Paleolithic. The recent advances in the analysis of boring core samples from sea bottom sediments and high resolution dating of the tephras contained in these cores has contributed to progress in dating. The occurrence of a reddish-brown paleosol, which is supposed to have been formed in the warm period, and periglacial involution, which formed in the cold period, are also used for chronological study. Phytolith and pollen analyses are also used for the estimation of climatic conditions. And, in the transition from the Middle to Upper Paleolithic, AMS dating and techno-typological comparison with Upper Paleolithic assemblages are also useful. As the Japanese Upper Paleolithic assemblages are based on blade technology and blade points appear from the beginning, it is relatively easy to determine when the transition took place.

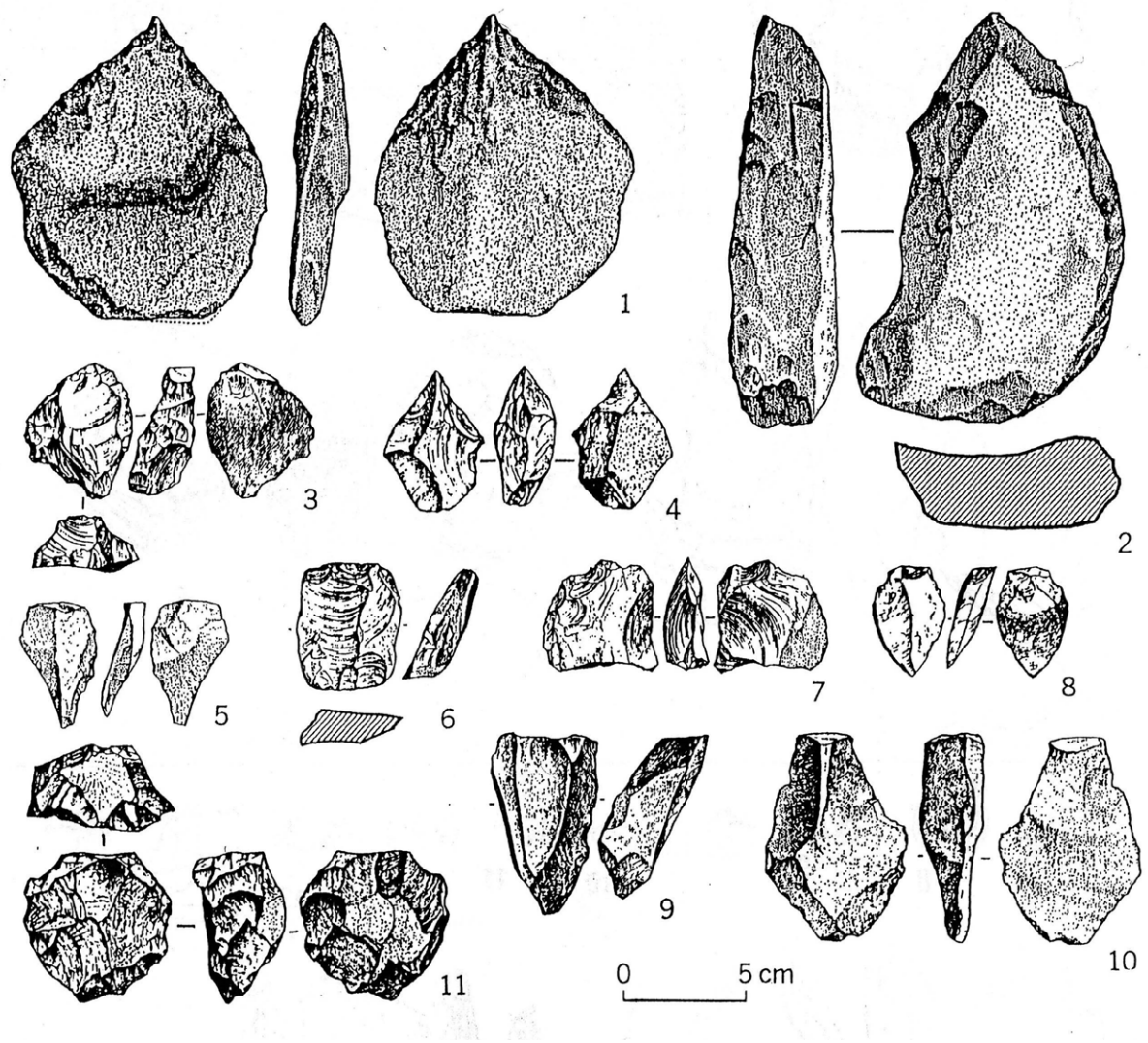

Figure 6.2 Lithic assemblage of the Kaseizawa Site

1 and 2 Pointed pebble tools, 3 to 10 small flake tools, 11 discoidal core

Table 6.1 Tentative chronology of Japanese Early and Middle Paleolithic

Age and Stage	*No. in Fig. 1*	*Site Name*	*Region*	*Research Method*	*Estimated Age (ka)*	*Basis of Age Estimation*
Early Paleolithic	1	Kaseizawa	Central Honshu	surface collection	200 ka?	topography
early Middle Paleolithic	2	Sunabara CL.2**		excavation	120	Paleo-soil (MIS5e)
		Sunabara CL.2	Western Honshū	excavation	110	SK*** (110 ka); (MIS5d)
	3	Iriguchi L4 **	Northern Kyūshū	excavation	100	103±23 ka (IRSL)
		Iriguchi L.3b	Northern Kyūshū	excavation	100~85	90±11 ka (IRSL); L.3: Aso-4*** (90~85 ka)
	4	Kanedori CL.4	Northern Honshū	excavation	90~50	Aso-4; 56±21 ka (TL)
	5	Kashiyama-tate L.4a	Northern Honshū	excavation	90~40	Aso-4
	6	Ushiromuta CL.5	Southern Kyūshū	excavation	90~60	Aso-4; A-IW (60 ka); 35.5±4 (TL)
	7	Sōzudai	Northern Kyūshū	excavation	110~50	Kj-P1(50 ka); K-Tz (95 ka); Kj-Sm (110 ka)
Late Middle Paleolithic	8	Fujiyama	Central Honshū	surface collection	55~>50	just before Ag-UP (unknown), but after DKP (55 ka)
	9	Kiribara	Central Honshū	surface collection	55~50	between Ag-UP/Hr-HP (50 ka)
	10	Gongenyama 1	Central Honshū	surface collection	55~50	between Ag-UP/Hr-HP
	4	Kanedori CL.3	Northern Honshū	excavation	50~(40)	46,480±710 Cyr BP (AMS); 31±6 ka, 50±10 ka (TL)
	5	Kashiyama-tate L.2c.Lw	Northern Honshū	excavation	50~33	involution
	11	Ōno lowest CL.	Southern Kyūshū	excavation	70~55	69.3±13.9 (OSL)
Transition from Middle to Upper Paleolithic	12	Hoshino Tankenkan	Central Honshu	surface collection	>45	before Ag-KP (45 ka)
	10	Gongenyama 2	Central Honshū	surface collection	50~45	between Hr-HP/Ag-KP
	6	Ushiromuta CL.4	Southern Kyūshū	excavation	45~40	just before Kr-Iw (40 ka)
	13	Nutabura CL.1	Central Honshū	excavation	50~40	techno-typology; before AT (30 ka)
	14	Takesa-Nakahara A-C	Central Honshū	excavation	50~40	techno-typology; before AT (30 ka)
	15	Kamishitada CL.2	Central Kyūshū	excavation	50~40	techno-typology
Middle Paleolithic	16	Rubenosawa	Hokkaidō	excavation	?	techno-typology

** L: Layer, CL: Cultural layer

***SK, Aso-4, etc. are the names of tephra

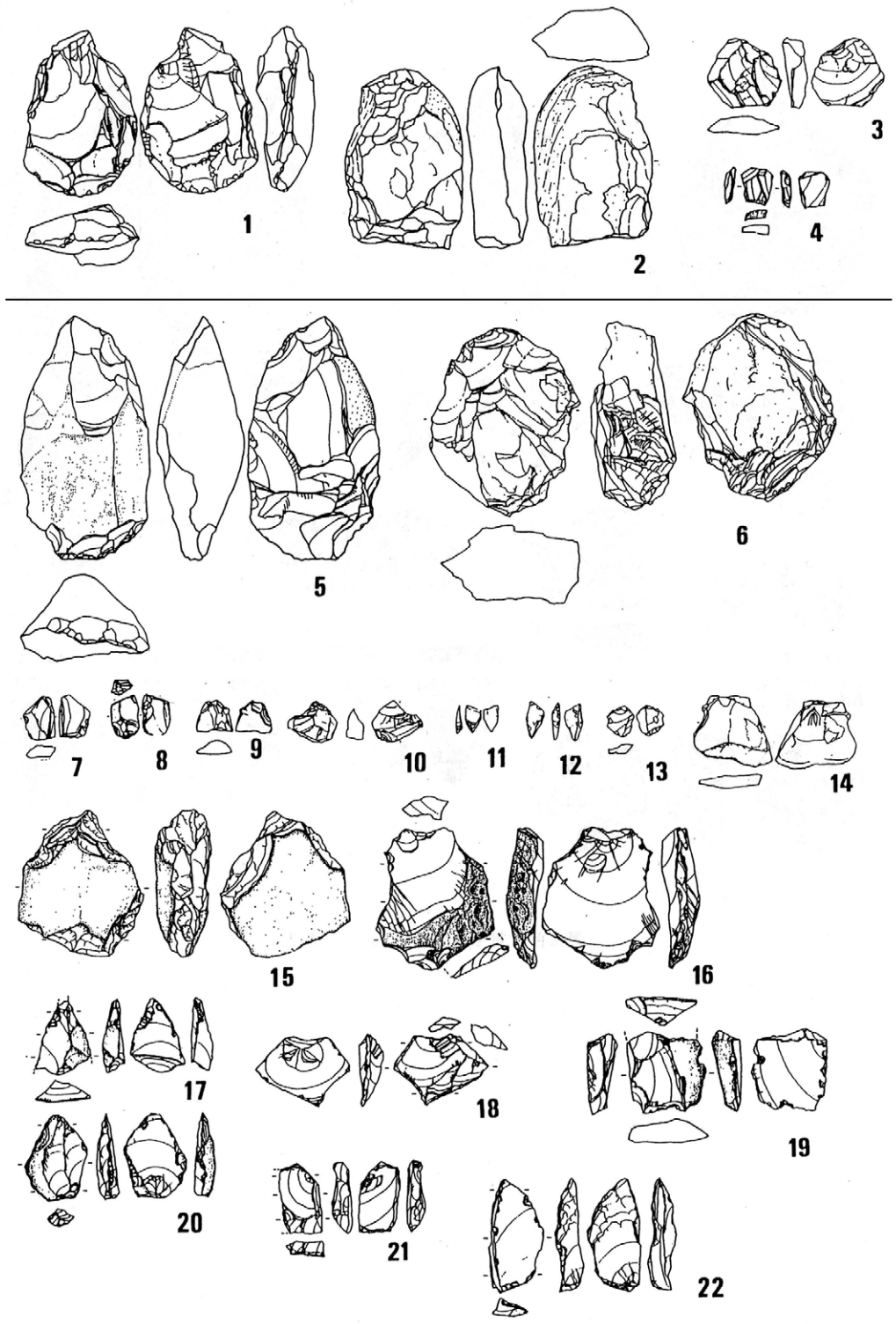

Figure 6.3 Early and late Middle Paleolithic assemblages of the Kanedori and Kashiyamatate Sites

Early Middle Paleolithic: 1~3 Kanedori CL.4; 4 Kashiyamatate L.4a

Late Middle Paleolithic: 5~14 Kanedori CL.3; 15~22 Kashiyamatate L.2c, Lower

Kanedori and Kashiyamatate Sites

The Kanedori Site (KIKUCHI 1986, KURODA 2005) and Kashiyamatate Site (KIKUCHI 1996), located in Iwate Prefecture are examples where the assemblages of two different stages have been recovered in stratigraphic sequences. Assemblages of cultural layer (CL) 4 of Kanedori (Figure 6.3: 1~3) and CL 4a (Figure 6.3: 4) of Kashiyamatate date to the early Middle Paleolithic stage (120~60,000 BP), and CL 3 of Kanedori (Figure 6.3: 5~4) and CL 2c Lower of Kashiyamatate (Figure 6.3: 15~22) are late Middle Paleolithic in date (60,000~50,000 BP). Large tools are neither pointed pebble tools nor choppers but have a form transitional to the characteristic axes that appear at the beginning of the early Upper Paleolithic of the Japanese archipelago (Figure 5.3: 1, 5). Small flake tools include trapezoids (Figure 6.3: 4, 7, 11~13, 20), scrapers (Figure 6.3: 3, 8, 19, 21), slanted points (Figure 6.3: 18), and awls (Figure 6.3: 10, 17).

Transition from Middle to Upper Paleolithic

Assemblages of the transition from the Middle to Upper Paleolithic (50,000~40,000 BP) are shown in Figure 6.4 (ANZAI and SATŌ 1990). Large tools become less numerous, and among the small flake tools, some of the elongated flake tools have retouched bases (Figure 6.4: 10, 16, 17, 30, 31). This is considered to indicate a technological connection to the blade point of the early Upper Paleolithic.

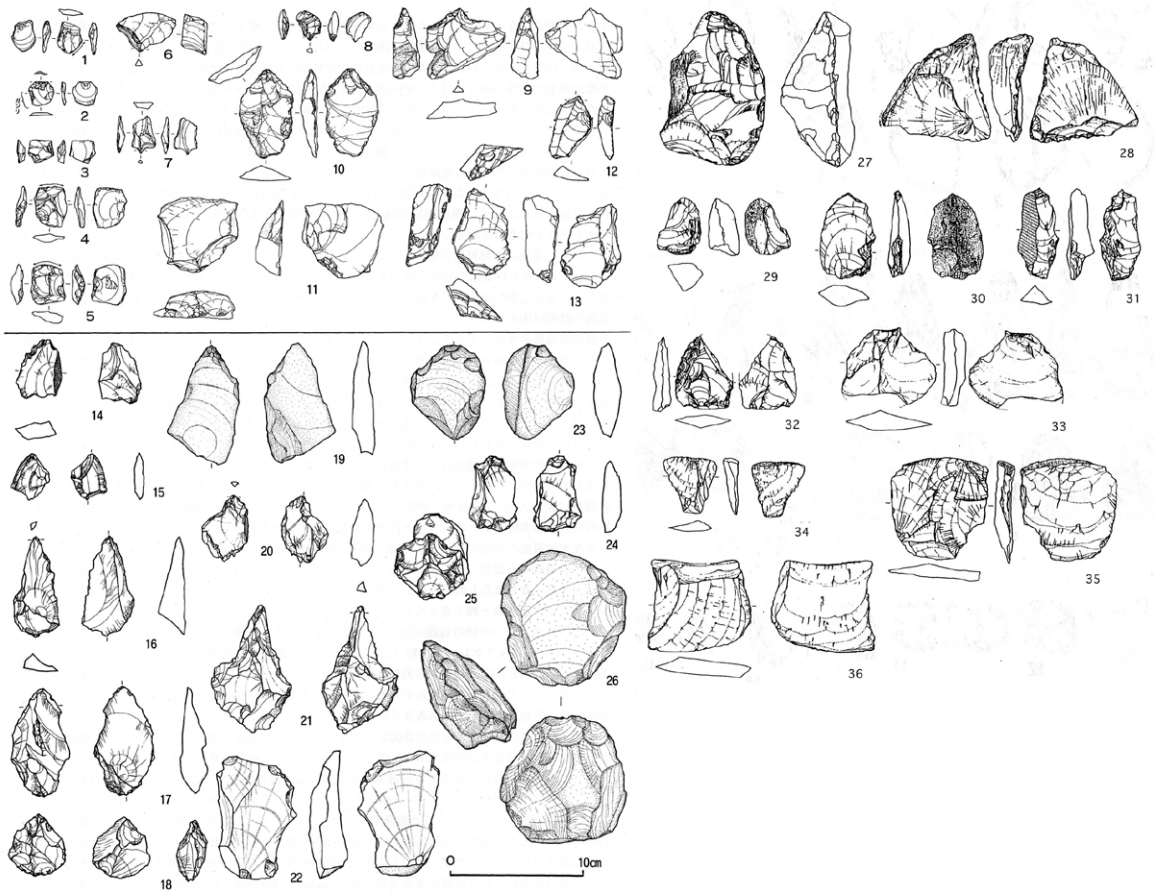

Figure 6.4 Transition from Middle to Upper Paleolithic assemblages

1~13 Nutabura site; 14~26 Ishikohara site; 27~36 Gongenyama 2

Discussion and Conclusion

The characteristics of Middle Paleolithic assemblages in the Japanese archipelago may be summarized as being composed of large tools (such as pointed pebble tools and choppers) and small flake tools (such as slanted points, trapezoids, scrapers, and awls). It should be noted, however, that the large tools do not include any hand axes, and flake tools do *not* include flakes made by the Levallois technique.

The Late Acheulian technology that spread during late Lower Paleolithic times from western Eurasia did not reach east of the India–Tibet–Mongolia border. In the area east of the border, the Early Acheulian technology of producing hand axes with the pebble cortex left around the base continued to be practiced. This boundary called the "Movius Line", which divides the Eurasian continent, is thought to have been formed sometime between 450,000 and 350,000 BP (SATŌ 2005; DEREVIANKO 2011). In the continental part of East Asia, the Lower and Middle Paleolithic assemblages are characterized mostly by choppers, with a smaller number of picks. In China, large pebble tools and hand axes are present during the Early Paleolithic. However, they appear, curiously, during the Middle Paleolithic in the Korean Peninsula that formed, at that time, the eastern coastal region of the Asian continent. The reason why these tools do not occur in Japan may be because the archipelago was not connected to the Korean Peninsula for the last 120,000 years.

Because of the Movius Line, the Mousterian technology did not reach eastern Asia during Middle Paleolithic times. Instead, scrapers, perforators and other small flake tools were made from flakes which were detached from discoidal or rectangular prepared cores. The small flake tools of the Middle Paleolithic assemblages of the Japanese archipelago share these characteristics (SATŌ 2004).

In the Japanese archipelago, the earliest reliably dated assemblages are in the Middle Paleolithic stage, mainly composed of small flake tools detached from prepared cores by non-Levallois methods, and a few large tools such as pointed pebble tools and choppers. Although the number of Upper Paleolithic assemblages is over 14,500 (Nihon Kyūsekki Gakkai 2010), there are only about 30 Middle Paleolithic assemblages, a very small number in comparison to situations in China and Korea. The reason is likely to be the Late Pleistocene geographical setting.

The approach taken by many Japanese researchers of Paleolithic studies regarding these Middle Paleolithic materials strikes me as problematic. Aftermath and shock of the FUJIMURA Scandal has been so serious that many Japanese scholars hold negative views about any sites and data purportedly to be of pre-Upper Paleolithic age. While the problem is being actively debated, the discussion often starts with the premise that the Middle Paleolithic did not exist in the archipelago.

Many Japanese scholars insist that they cannot accept the evidence unless the following two conditions are met: First, all the unearthed lithics are fully recognizable artifacts and were recovered from a concentrated area where flaking would have taken place; and second, these lithics are recovered from one of the layers of continuous sediments such as aeolian loam. However, these conditions can be met only during the Upper Paleolithic, after the hunter-gatherers moved into the lowland areas leaving the traces of their activities in the sediments. With greater mobility, they hunted large game animals and procured the lithic raw materials suitable for their blade-based tool kits, such as obsidian, from distant sources. The Middle Paleolithic hominins, by contrast, kept themselves in relatively small activity areas in the mountainous regions, utilizing locally available lithic materials. The Middle Paleolithic sites, located in different topographic zones of the Archipelago, look quite different from Upper Paleolithic sites, but they are in fact quite similar to sites of the Middle Paleolithic in the rest of the world.

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Part II

Island Interactions and Socio-political Development

CHAPTER 7

INTRODUCTION TO ISLAND INTERACTIONS IN THE PROTOHISTORIC PERIOD

Gina L. BARNES and Barbara SEYOCK

From the Palaeolithic Onwards in Japan

Chapters in Part I of this volume dealt primarily with evidence for the establishment of the Paleolithic Period in the Japanese archipelago prior to 40,000 years ago. Human occupation of the islands thereafter entailed living through the last Ice Age, ca. 22,000–19,000 years ago, although few of the mountains saw any glaciation. In the terminal Pleistocene, ceramic skills were deployed around 16,000 years ago, probably stimulated by developments on the continent—as the earliest pottery in the world is now found on the China Mainland. The culture that formed around the use of ceramic bullet-shaped bowls and spear or bow-and-arrow hunting tools was a culture that had to deal with the variable climate of the Allerød and Little Dryas warming and cooling that preceded the rise of sea level with the advent of the Holocene at 11,600 years ago. This ceramic-using culture prior to the Holocene has, for the most part, now been included in the Jōmon Period, probably the longest lived hunter-gatherer period in world history (14,000 to 900/400 BCE).

The Jōmon, however, were not just hunter-gatherers. They were master fishers, deriving much of their protein from fish and shellfish in addition to deer and boar. They also developed horticultural skills that provided foodstuffs by tending wild and domesticated plants—including nut trees, gourds, soybeans, perilla, and barnyard millet among many others (see Table 5.2 in BARNES 2015). Settled life was enabled due to these rich resources and the development of storage technologies, with salmon and nutmeats particularly abundant in the northeast Tōhoku region. Jōmon coastal sites are often characterized by shellmounds due to the heavy reliance on this resource for their own subsistence and for trading inland.

Because the Jōmon peoples used ceramics and grew some food, they have often been labeled "neolithic" in the archaeological literature, but seeds and grains never provided staple foods for the development of hierarchical society. This all changed around 1,000 BCE when disruptions on the continent probably led to the migration of farmers from the Korean Peninsula into northern Kyūshū. The Peninsula was closer to the agricultural developments on the China Mainland, so millets and barley earlier came to be grown there by 3,500 BCE; rice followed in the northern Peninsula at ca. 1,500 BCE. Farmers migrating from the southern Peninsula met little initial resistence from the local Jōmon populations in North Kyūshū because the western archipelago was sparsely occupied due to the concentration of natural resources in the temperate forests of the Kantō and Tōhoku regions, from modern Tōkyō northwards. One of the earliest Jōmon sites to have been widely recognized was the Ōmori Shellmound near Tōkyō, which was introduced to the western world in 1879 by Edward S. Morse, a visiting professor of biology to Tōkyō Imperial University. Morse's work is presented and annotated below in Part III.

The melding of cultures between farmers from the Peninsula with North Kyūshū Jōmon provided the seeds of a new culture, the Yayoi, which spread through the archipelago during the half-millennium from 900 to 400 BCE. It appears that most of the Jōmon peoples were absorbed into this new farming culture without violence, but some hunting-gathering communities were pushed northwards until they

established the Satsumon culture in Hokkaidō and then emerged as the historic Ainu in the 17th century—a peoples influenced by the Okohtsk farther north. The Yayoi Period itself (900 BCE–250 CE) ended with the development of social hierarchies and mounded-tomb burials for the elite. The Jōmon and Yayoi Periods thus overlap during the first millennium BCE, while the Satsumon culture is contemporaneous with the Kofun Period (250–710 CE). The names of these periods reflect the dominant cultural trait: Jōmon means "cord-marked" (ceramics)—a description used by Morse, deriving from his knowledge of similar pottery from northeastern America and Denmark. Yayoi is the name of a district in Tōkyō where the period's (late) pottery was first identified, and *kofun* means "old mound".

If the Yayoi were an agriculturally based people, why aren't they considered neolithic? Perhaps the early stages of Yayoi are good candidates, but the term had already been co-opted for the Jōmon because of their use of ceramics, polished stone tools, and horticulture. Moreover, the first wave of migrants from the Peninsula were not the last: successive waves and trading brought in bronze-working and iron-smelting skills around 300 BCE. And because these metals arrived together, the later Yayoi are considered *neither* a Bronze Age *nor* an Iron Age peoples! Moreover, descriptions of the contemporaneous occupants of the archipelago (the Yayoi) appear in Chinese chronicles dating to the Later Han Dynasty (25–220 CE); these have led the later Yayoi to be know as "protohistoric". Thus, the Yayoi Period was agricultural in its first half, while maintaining a modicum of hunting and gathering, while metals were added in its later half—but only in the west/central archipelago.

The beginning date of Yayoi, a period which is looked upon as the foundation for historic Japanese culture, has been highly controversial at least since the turn of the millennium when National Museum of Japanese History researchers released AMS dates for the 10th century BCE. Since then, the traditional date of 300 BCE has been extended back to 500, 800, and 900 BCE by various authors. In Chapter 8, SHŌDA Shin'ya discusses in detail the different postulations, with the main controversy pitting ^{14}C dates against typological cross-dating of artifacts with the continent's material remains and its historical record. More recently, dendrochronology has been utilized for more specific dating. SHODA wrote in 2007 that "there is no consensus yet", and he deplores that problems still exist in both arenas of ^{14}C dating and artifact typology that have yet to be solved. He concludes that the problem is not just a Jōmon–Yayoi one but involves reassessing the whole of Northeast Asian archaeology during that crucial period. He also maintains that time-lag between center and periphery needs revising, as it affects when artifacts were first created and adopted later.

Table 7.1 Yayoi-Kofun timetable

Yayoi		Kofun	
Initial (Earliest)	1000–800 BC	**Early**	250–400 AD
Early	800–450 BC	**Middle**	400–500 AD
Middle	450 BC–50 AD	**Late**	500–710 AD
Late	50–250 AD	**(Asuka)**	552–710 AD
		(Ritsuryo)	645–mid-10c

Island Interactions

The Japanese islands of Tsushima and Iki, located in the Strait of Korea, play a significant role in the changing network of relationships in prehistoric and protohistoric times between the main Japanese islands and the continent. Recurring migrations of population groups, waves of cultural and technological developments, maritime trade and exchange are clearly evident in the archaeological remains of these two small islands and reveal the importance of these two stepping stones between peninsular and insular cultures. Accordingly, three chapters in this book—Jane OKSBJERG on Karakami Site (Chapter 9), MIYAMOTO Kazuo on prehistoric interaction (Chapter 10), and TAWARA Kanji on Tsushima as a boundary region (Chapter 11)—focus on respective archaeological data, their analysis and interpretation.

By focusing on Iki Island in the Korea Strait between modern Japan and Korea, Jane OKSBJERG uses MIYAMOTO Kazuo's specification of 800 BCE as the beginning of the Yayoi Period in order to frame the sudden population increase on Iki around 500 BCE in Early Yayoi. MIYAMOTO has postulated that climatic deterioration around this time stimulated another wave of agriculturalists from the Korean Peninsula to set sail across the Korea Strait. The Harunotsuji Site, established on Iki at this time, grew to be triple-moated, covering ca. 100 ha, and served as a trading center. Nearby, the smaller moated site of Karakami was founded in Middle Yayoi and excavated several times in the late 20th century. OKSBJERG recounts the vagaries of these excavations at Karakami Site and the fates of the artifacts and records through the ensuing decades, complete with her excavation diary from participation in the 2006 field season. The account is personalized, sprinkled with personal communications from her hosts, MIYAMOTO and TSUJITA Jun'ichiro, of what she was told at the time. This unusual exposition style is revealing of the kind of interaction between foreign students and Japanese archaeologists that can be achieved, and such comments comprise an informal conduit in print to relay the thinking of local specialists. Several important results of the 2006 excavation revealed a possible welcoming facility for peninsular traders/diplomats in a time of little migration from the continent. The potential discoveries of wheat and barley together with hunter-gathering also opens a window onto subsistence practices other than rice agriculture in Middle Yayoi, even in Kyūshū—homeland of agricultural Yayoi.

MIYAYMOTO Kazuo highlights Iki Islands' both northward and southward exchange from the Neolithic to the Iron Age and moreover introduces the latest finds from the intriguing Karakami Site, where he has carried out several excavation campaigns. In this way, he expands Jane OKSBJERG's earlier vivid excavation diary to include various chronological and geographical aspects regarding cross-cultural maritime connections and developments through Iki and Tsushima Islands. Finds of *mumun* pottery from the Korean Peninsula (undecorated pottery culture, c. 15th–7th century BCE and Bronze Age, c. 7th–4th centruy CE) are widely spread on the islands in the Korea Strait and adjacent coastal areas, thus underlining the immigrations from the southern Korean Peninsula that initiated the advent of Yayoi culture in Japan. Karakami Site pottery finds relating to a later period prove evidence of the even more far-reaching connection to the Chinese Lelang commandery in the northwest of the Korean Peninsula in the early centuries CE.

From a historical perspective, the Chinese chronicle *Weizhi* describes in detail the route of the embassies that go back and forth between Lelang and the court of the 3rd-century Japanese Queen Himiko. It moreover provides a meticulous description of the topographical and cultural peculiarities of the individual travel stations, one of them Iki Island. A location that has also been similarly significant for those embassies and seafaring traders is Tsushima Island, the largest and—both in protohistoric times and historically—most important island lying in the Korea Strait. TAWARA Kanji reconsiders the

traditional notion of "Tsushima Island as a Boundary Region", emphasizing again the close relationship between Peninsular and archipelago cultures by summarizing the history of archaeological research in Tsushima and presenting more recent archaeological data excavated from relevant sites. Due to its topgraphical position, wet paddy-field agriculture had been difficult to implement in Yayoi-period Tsushima culture. Still, pottery type analysis and the amount of bronze artifacts and iron ingots show a significant social complexity during this period.

Barbara Seyock creates a different picture in her description of the archaeological situation on Jeju Island (Chapter 12). Questioning the notion of the sea as a barrier or as a means of exchange and communication, Jeju Island serves as a case study in ancient mainland-island interaction during the Korean Proto-Three Kingdoms Period, contemporaneous with the Japanese Yayoi Period. Jeju lies off the main travel routes of early peoples, and therefore the question arises in how far Jeju people, regardless of the remoteness of the island, participated in the general developments of the border region between the Korean Peninsula and Japanese Islands. Some Han Chinese elite goods—typical for intercultural relations and social hierarchies—reached Jeju; other typical finds are sparse or absent. After analysing the archaeological data as well as the historical record, Jeju Island appears to have been only partially involved in the general developments of the Korean Han and Japanese Wa spheres.

While coastlines indeed form a natural border to human movements and claims, and without doubt, seascapes must have been considered dangerous and off-putting from the very start of recognizing a 'beyond', criticism had been postulated regarding land-centred views, which underlie the general perception of a newer line of research in island archaeology (in the West) (Rainbird 2007: 1–3, 163–173). Placing islands in a larger framework by including coastal areas from neighbouring regions and putting emphasis on their passage function instead of concentrating on their apparent seclusiveness actually is the aim of several chapters in this book. The concept of the sea as a means of intercultural exchange and communication is cultivated here in reference to both micro and macro island—as well as peninsular and mainland—cultures.

A case in point is Sugiyama Cohe investigation of sites on Miyake and Kōzu Islands, far from the Korea Strait in the Izu Island Chain south of Tōkyō (Chapter 13). Kōzushima (Kōzu Island) was a well-known source of obsidian used during Palaeolithic, Jōmon, and Yayoi times. In fact, the 100 km voyage to Kōzushima from Hōnshū, the main island of Japan, has been used to substantiate Palaeolithic peoples' sea-faring abilities. In Middle Yayoi, the Kōzu obsidian resources were again exploited by farmers who settled on Miyakejima, almost completely replacing obsidian from the Wada Pass region of central Hōnshū in distributional terms. Another continuity from the Jōmon period was the manufacture of shell bracelets on Miyakejima for export. Intermittent use of the sites on Miyake Island is attributed to possible volcanic eruptions, and the sites were finally abandoned in middle Late Yayoi and not reoccupied until the Kofun Period.

In Chapter 14, Chia focusses even further abroad on the ancient human habitation in the Semporna region in Malaysia and its relationships or origins in Southeast Asia and the Pacific region, thereby expanding the geographical scope of research approaches regarding maritime and coastal archaeology in East Asia to include the Southeast Asia-China network. Chia attempts to trace possible affinities of the maritime-based inhabitants of Semporna with other ancient populations in Southeast Asia, China, Japan, Melanesia and Australia. Sites from this area highlight the structures and networks of prehistoric long-distance sea trading in this macro region.

Beginnings of Japanese civilization

In terms of research history, the historical and cultural developments of Japan have been repeatedly discussed against the background of an "isolated" geographical location. Homogeneity—both cultural and ethnic—has been a key word in all (J.) *Nihonron* discourses (or *Nihonjinron*, "theories about Japan/Japanese"). This decades-long discussion focused on the islanders' distinctive "Japaneseness", and at times it stressed certain cultural characteristics as formative elements of a society that is 'different'—be it in the historic postulates of the (J.) *kokugaku* (national learning) movement in 18th century Japan, or with regard to the symbolic importance that in more recent times has been awarded to rice as a collective element of the Japanese 'self' (OHNUKI-TIERNEY 1993; AMINO 2001: 235-244).

The impact of mainland civilization on the advent of Japan's earliest cultures, however, cannot be neglected; and in Japanese studies, the stereotype of an isolated country should long be considered discarded (see SEYOCK 2004; BARNES 2007; HUDSON 1999). Given the structure and tradition of archaeological research in Japan, however, local, regional and—in a further step—national issues have received chief attention from the scholarly world. In the last decades, Japan's position within an overall East Asian framework (from both archaeological and historical perspectives) eventually began to attract a larger audience and broader approaches, just to mention the 'sea people' concept of AMINO Yoshihiko, PAI's Lelang-centered 'interaction sphere', BARNES' 'Yellow Sea interaction sphere', or SEYOCK's theory of a joined Han-Wa culture around the Korea Strait (AMINO 2007; PAI 1989, 1992; BARNES 1993; SEYOCK 2003, 2004).

One important type of continental artifact in the development of Japanese culture was a bronze mirror from the continent—a diagnostic artifact from the Han-Dynasty China that signaled the interest of elites in the Japanese Islands in continental culture. Imported mirrors from the Early (Western) Han Dynasty (206 BCE–CE 9) are found in Middle Yayoi chiefly burials in Kyūshū, together with peninsular bronze stabbing swords (daggers) and Chinese spearheads interred in jar burials or stone cist graves. One was discovered at Middle Yayoi Karakami, discussed by OSKBJERG above. There is evidence that hierarchical society in the later Yayoi Period was stimulated through competition of regional chieftains (perhaps the heads of the small "countries" referred to in the Chinese dynastic history, the *Weizhi*) for access to bronzes. By Late Yayoi, the triumvirate of bronze mirror, iron sword, and jade *magatama* curved bead had become signature funeral goods of chieftains interred in mounded burials—surviving today as the three imperial treasures that play a part in the succession ceremonies of Japanese emperors. One particular type of bonze mirror, the *sankakubuchi shinjūkyō* (triangular-rimmed deity-beast mirror) may have been associated with the figure of Queen Himiko mentioned in the *Weizhi*. This mirror type suddenly became the most important grave good at the transition from the terminal Yayoi Period into the Early Kofun Period (3rd to 4th centuries CE). However, other Late (Eastern) Han Dynasty (25–220 CE) mirrors are also found in proliferation, and these form the majority of the fragments which were turned into pendulant ornaments from Late Yayoi through Early Kofun Period, as descibed by TSUJITA Jun'ichirō (Chapter 15).

TSUJITA's chapter concentrates on the production and distribution of mirror fragments found in Late Yayoi and Early Kofun burials. Present during the 1st to 4th centuries CE, mainly in the Japanese Archipelago with some on the Korean Peninsula, they became most popular in Japan in the 2nd to 3rd centuries CE. TSUJITA attributes this to the decline in production and export of Chinese mirrors during the unstable Late Han Dynasty, leading to the inheritance of mirrors down the generations—not whole mirrors but fragments thereof. He discusses the types of mirrors used, how they became fragmented, and how those fragments were distributed to reside in regional tombs. At the beginning of the Kofun

Period, whole mirrors were once again imported into Japan and became the dominant grave good, with fragments playing a lesser role. In both cases, however, the bronze mirror is attested to have been an extremely valuable item that played a role in the political hierarchy of the emerging Japanese state.

The construction of large burial mounds for regional elite rulers became manifest in the Late Yayoi Period, although the earliest dates to the 1st century BCE—possibly inspired by Yayoi travels to Lelang where Han Dynasty-style earthen mounds might have been seen around the commandery. In Late Yayoi, regional styles of construction signified different political realms: for example, the square mound-burials with corner projections on the Japan Sea-side of Honshū, or the round or square mounds enclosed by a moat on the Pacific seaboard. In the early 3rd century CE, a keyhole-shaped tomb was developed, consisting of either a round or square mound with one triangular projection. The standardized keyhole shape with a round rear mound became the highest status tomb shape in Japan and was rapidly copied throughout the islands. The grave goods repertoire focused on bronze mirrors, weaponry, and jade magatama beads. In the 5th century, mirrors virtually disappeared, and iron armor and weapons became paramount, linked to wars on the Korean Peninsula. A new corridor-style stone chamber was also introduced from Korea, leading to a change in burial ceramics, rituals, and mythology. Relations with the Peninsula increased in the 6th century, with Buddhism being introduced together with temple architecture and iconic sculptures.

The fate of mound-building in the Kofun Period is often attributed to the rise of temple-building instead, with resources being redirected by the elite. However, Jane OKSBJERG's discussion of keyhole-shaped tomb development in Okayama Prefecture throws a different light on the matter. She notes how the construction of very large tombs declined decades before Buddhist influence in Okayama Prefecture. In Chapter 16, OKSBJERG presents construction circumstances for several tombs in the small intermontane basins west of Okayama City; their sizes show a continuous decrease in length from the early 5th to mid-6th centuries: east of the Takahashi River are very large early 5th-century keyhole tombs of Kamo-Tsukuriyama (360 m) and Misu-Tsukuriyama (286 m), and a smaller mid-5th century keyhole tomb Ryōgūzan (190 m). West of the Takahashi River are scallop-shaped Tenguyama (80 m), and the keyhole tomb Shōbuzaka (42 m)—both late 5th century—and the mid-6th century keyhole tomb Nima-Ōtsuka (38 m). The cultural shifts between these two areas within the old Kibi region enlighten us on the changing relationships of regional elites with central Yamato powers and states on the Korean Peninsula.

The chapters in Part II range across many western Pacific islands and adjoining mainland; it recounts the entire scope of developments in Japanese civilization, from the initiation of wet-rice agriculture to the rise of small polities leading to the consolidation of the first state-level society. In the late 19th century, the possibility to view and even enter the large corridor-tombs of this early-developing state caught the attention of a visiting professor from the United States, Dr. Edward S. Morse. He referred to these tombs as 'dolmens' due to their internal stone structures, with some ceiling rocks weighing up to 7 tons. Morse's discussion of these dolmens is presented and annotated in Part III.

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CHAPTER 8

A COMMENT ON THE YAYOI PERIOD DATING CONTROVERSY

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Two decades have elapsed since the National Museum of Japan announced the re-dating of the beginning of the Yayoi Period, based at that time on new data obtained from AMS dating of organic samples attached to pottery sherds. Yayoi, so it was said, began more than 500 years earlier than thought. The announcement triggered a hot debate among archaeologists, mainly in Japan, and the controversy has not since lost its explosiveness. This essay analyses the different levels of the Yayoi dating controversy in detail, and it uncovers the reasons lying behind this unsettled and at the same time absorbing debate (eds.).

Keywords: Japanese archaeology, Yayoi dating controversy, theory, ^{14}C dating, metal artifacts, pottery, AMS dating

Introduction

In May 2003, the National Museum of Japanese History (NMJH) announced that the beginning of Yayoi Period dates back to 500 years earlier than it had previously been thought; charred remains stuck to pottery samples had been analyzed by AMS ^{14}C dating (HARUNARI *et al.* 2003). A few archaeologists accepted the new dating right away, while many scholars expressed critical opinions.

Especially the archaeologists in the Kyūshū region, who had been playing a leading role in the dating of the Yayoi Period, strongly rejected it. The reason for this may be found in the great confidence archaeologists used to have in the dating of the Yayoi Period, which after all had remained unchanged for nearly 50 years. Moreover, the NMJH announcement lacked evidence on several points. Subsequently, it was not possible to persuade the audience to fully agree with the new dating. After more than several years, there are still various contrary opinions, not only addressing the chasm between the methods of natural science (^{14}C dating) and 'purely' archaeological approaches (typological cross-dating). Even among merely archaeological perspectives, different beliefs add to the controversy.

Why is this controversy going on? And why is it important? Isn't it just a recurrence of the '^{14}C revolution' in the Japanese Archipelago?

In this paper, I attempt to explain what kind of discussions are currently going on relating to this subject and to evaluate their meaning. Actually, many similar articles have already been published, but almost all of them are in Japanese; very few appeared in English.[1] For an interested international audience, it is consequently difficult to follow this highly intriguing discussion.

[1] As far as I know, KEALLY's critique (KEALLY 2004) was the only one, but unfortunately his article's quotations are mainly from newspapers, not academic papers. It should be noted that what newspapers wrote is NOT what most archaeologists thought and discussed. In Korea, an article introducing this controversy appeared in *Journal of the Korean Archaeological Society*, the leading journal in Korean archaeology (CHOI 2006). It shows that there is a lot of interest in this topic.

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I already made a brief presentation on this matter in English at the 3rd World Wide SEAA Congress in Daejeon, South Korea (SHŌDA 2004a).[2] I have also written some essays on this subject in Japanese (2004b, 2006) and Korean (2005). The following essay, however, aims to introduce the many discussions that are going on, rather than stressing the author's opinion. It has to be emphasized that there is no factual consensus yet, and the conclusions I draw are open to modification. I will start this essay by looking back on the history of ^{14}C dating in Japan and on the traditional dating of the Yayoi Period. I will then focus on various new opinions connected to the subject, and in conclusion, discuss the problems and meaning of the Yayoi dating controversy.

^{14}C Dating in Japanese Archaeology

In Japan, ^{14}C-dating was applied in 1951 for the first time (LIBBY 1951: 295). Charcoal remains were examined, excavated from a dwelling pit in the vicinity of Ubayama Shellmound (Ubayama *kaizuka*) in Chiba Prefecture, which belongs to the Middle Jōmon Period. As ISHIKAWA mentioned in his paper (2006: 60), by the end of the 1950s Japanese archaeologists had started to recognize the importance of ^{14}C-dating; and in studies focusing specifically on the dating of the Yayoi Period, references to ^{14}C dating as well began to appear (MORI 1968). However, many Japanese archaeologists seemed to regard ^{14}C dating less effective than the chronological sequences they had achieved by the typological method over a long period of time. In typological studies of Yayoi pottery or Kofun-period Sueki stoneware, the time span of each chronological phase represented less than 30 years, thus apparently being much more precise than ^{14}C dating.

Bronze mirrors from Han dynasty China are a common find in latter Yayoi-period elite burials, and the production times of many of them are known by absolute date. Therefore, the approximate calendar year of a Yayoi find—at least from the 1st century BCE onwards—was already known, while ^{14}C dating obviously offered a much wider range of chronological results. ^{14}C dating thus appeared useless within a Yayoi framework, contrary to the situation in previous cultural phases in Japan. SAHARA (1981: 12) accordingly wrote, "The archaeologists who use ^{14}C dating in the Yayoi Period just select the dates which fit their opinion from various data." Not only with regard to relative chronology but also absolute dating, there was a serious controversy between ^{14}C dating and typological cross-dating in the 1960s.[3] YAMANOUCHI and SATO (1962) strongly rejected the ^{14}C dating of Natsushima Shellmound (CRANE *et al.* 1960), who proposed Jōmon pottery as the oldest in the world by comparing the artifacts of the continent and the Japanese Archipelago.

Even now, many Japanese archaeologists think highly of their achievements of those days. Dates were determined by 'archaeological' methods without relying on ^{14}C. Unfortunately, the material at that time was too limited to reveal that a 'long chronology' (*chōki hennen*) is possible purely by artifact cross-dating. As IMAMURA (2005: 183) mentions, in consequence of YAMANOUCHI's opinion, many Japanese

[2] Fumiko IKAWA-SMITH, moreover, organized and chaired a session on the "Problems presented by the AMS Radiocarbon Dates for the Yayoi Period in Japan" at the same conference, thus initiating the first international platform for discussing the topic (IKAWA-SMITH 2004). Unfortunately, the papers have not been published since. The session comprised presentations of Fumiko IKAWA-SMITH, FUJIO Shin'ichirō and SAKAMOTO Minoru (National Museum of Japanese History), TAKAKURA Hiroaki (Seinan Gakuin University) and MIZOGUCHI Kōji (Kyūshū University), and discussants were Sarah M. NELSON (University of Denver) and Gina L. BARNES (University of Durham) [see program and abstracts in SEAA-web > Archive > SEAA Conferences (eds.)].

[3] IMAMURA (1996: 46-50) explained this controversy in detail.

archaeologists are reluctant to follow ^{14}C dating even now and feel ashamed to rely on it.

It is too easy to just "believe" the dates offered by a laboratory; dating and chronology were (and are) some of the most fundamental and important subjects in Japanese archaeology. If I may carry this line of reasoning further, if small pieces of charcoal tell everything, many efforts spent on typological study become meaningless.

So, for a long time, typology and ^{14}C-dating were in a delicate relationship (YOSHIDA 2005: 37). However, like TSUJI (1999) recently has shown by dating the Sannai-Maruyama Site, AMS ^{14}C dating and typological chronology can actually coincide in their results. Few scholars regard ^{14}C dating as absolute nonsense, but many archaeologists think that it is necessary to have ^{14}C results checked by the typological method.

Yayoi-period Dating As It Used To Be

As mentioned above, ^{14}C dating was utilized to determine the beginning of the Yayoi Period in the late 1960s (MORI 1968). However, some scholars offered dates for the Yayoi Period even before that. For instance, KOBAYASHI (1951) and SUGIHARA (1961) presented dates for the Yayoi Period using mirrors and coins from China, without ^{14}C data. Both studies described the date of the beginning of Early Yayoi as the 3rd or 2nd century BCE. In the 1970s, OKAZAKI (1971) and HASHIGUCHI (1979) also assumed the beginning of Early Yayoi at about 300 BCE.

Around this time the definition of "Yayoi Period" began to change. Paddy fields, a characteristic feature of the Yayoi culture, were excavated a Itazuke Site (1977–78) and Nabatake Site (1980–81), but they belonged to the stage of Yu'usu-type pottery which had been considered as Final Jōmon. SAHARA (1983: 5) suggested that this stage should be incorporated into the Yayoi Period and called it "Initial Yayoi". The dating of Yu'usu-type pottery was considered to be 5th to 4th century BCE, as this stage was thought to precede Early Yayoi only slightly (e.g., OKAZAKI 1971). From that time on, the beginning of the Yayoi Period has been regarded as dating from the 5th century BCE.

Coinciding with an increase of excavated material from the Korean Peninsula, some scholars on the other hand investigated the dating of Yayoi by using material other than Han-dynasty mirrors or coins unearthed in Japan. They focused on lute-shaped (or Liaoning type) bronze daggers,[4] a find distributed in China, Korea, and Japan. This type of bronze dagger dates back to the end of the 9th century BCE, so it is very useful for estimating the beginning of the Yayoi Period. In Japan, however, only one example is extant, coming from the Imagawa Site in Fukuoka Prefecture, which belongs to Early Yayoi. Thus, the Korean materials (over 60 pieces) were used alternatively to determine the date. Some of the daggers have been excavated together with pottery or stone tools that have a firm position in relative chronology. Moreover, cross-dating of pottery or stone tools between the southern part of the Korean Peninsula and northern Kyūshū has been done in detail. It is therefore possible to date the Yayoi Period by using these materials. TAKESUE (2002: 3), for example, determined the beginning date of Yayoi Period as the 6th or 5th century BCE, according to the artifact cross-dating method and to tree-ring dating.

As early as 1996 it was, moreover, announced that the Middle Yayoi in the Kinki area (around Osaka, Nara, and Kyōto) should be re-dated a hundred years back. At the Ikegami-Sone Site in Osaka, a wooden pillar of a building, belonging to the later part of Middle Yayoi, had been dated 52 BCE by

[4] This kind of dagger or short stabbing sword is called *qurenqing tongduanjian* or *dongbeixi duanjia* in China, *bipa-hyeong donggeom* in Korea, and *ryōnei-shiki dōken* or *biwa-gata dōken* in Japan.

dendrochronology. That was about a hundred years earlier than the date commonly accepted (MITSUTANI 2000: 47). The influence of this re-dating, however, was limited to the Kinki area. Kyūshū or other areas were not involved, although on the other hand, the new dating somehow solved the gap that existed until that time between Kyūshū and Kinki chronologies. As mentioned above, TAKESUE postulated the earliest date for the beginning of Yayoi at 5th or 6th century BCE, by making use of new material, before the NMJH announcement. The NMJH, however, presented their conviction of an even much earlier date only one year later.

Old Opinions vs. New Opinions

The National Museum of Japanese History claimed the new dating of the Yayoi Period in May 2003. Initially the discussion seemed to become a mere conflict between 'believers' and 'sceptics'. Three months later, a meeting took place in Tōkyō with the aim of rethinking the archaeological evidence of the traditional dating,[5] i.e., the short chronology (*tanki hennen*). Some of the scholars there admitted that the evidence which had determined that dating of the Yayoi Period was not accurate, even if there were still many archaeologists who insisted on the short chronology and its 'evidence'—like TAKAKURA (2003) and HASHIGUCHI (2003). These scholars strongly rejected the NMJH's opinion by presenting some evidence which supported the old, short chronology.

Much of the evidence in favor of a short chronology, however, has a problem with the various archaeological contexts. For example, the ironware from dwelling pit no. 16 at the Magarita Site is one of the most important pieces of evidence produced in this discussion. The dwelling belongs to Initial Yayoi, so it shows that ironware already appeared during this stage. In the Korean Peninsula ironware is thought to have been introduced by the state of Yan in the Chinese Warring States era, 5th–3rd centuries BCE (e.g., SHIOMI 1982: 225). Thus, the date of Initial Yayoi cannot be earlier than that. However, the Magarita dwelling pit is overlapped by some other archaeological features, and the "ironware" is just a fragment which is no larger than about 3 cm, reported as "excavated near the floor".

There is additional 'evidence' from China playing an important role in the dating: bronze dagger and Warring States era's *mingdao* knife-coin finds from Loushang tumuli site in Liaoning Province. According to this 'combination', AKIYAMA (1969, 25) dated the newer type of lute-shaped daggers as lasting until the 3rd century BCE. Although LIN (1980, 150) pointed out that these materials have not beyond doubt been unearthed together, the majority followed the dates by AKIYAMA. Actually, according to the site report, these finds were not excavated by archaeologists but were donated by a junior high school student who happened to live in the vicinity of the site. GOTŌ (2005: 36) also pointed out this problem and claimed a necessity for a re-examination of the material to support the dating.

ŌNUKI Shizuo is among those who have long been arguing in favor of the long chronology, even though his full paper on this subject was published no earlier than 2005 (ŌNUKI 2005). He pointed out that in North Korea, there was a shift from short chronology to long chronology in accordance with new materials unearthed in China, such as at the Nanshangen Site excavated in the 1960s (ŌNUKI 2003: 40). We also know of Zhou-dynasty wares with calendar year inscriptions from the 1st millennium BCE. Archaeologists are thus able to date the materials of this age, such as the above-mentioned lute-shaped bronze dagger, without carbon dating. A problem concerns the so-called "inclined chronology" (*keisha hennen*), which is based on the perception of a long time- lag between the same type of find depending

[5] *Yayoi jidai no jissai no nendai o rikai suru hōhō* 弥生時代の実年代をどうとらえるか [How can we interpret the true dating of the Yayoi Period?], 9 June 2003, at the University of Tōkyō.

on its location in the center or in the periphery of a culture. Ōnuki criticized that in previous studies, the dates of the finds from the periphery were considered much too young owing to the adoption of the inclined chronology (Ōnuki 2003: 42).

Unfortunately, historical events were also used to support this inclined chronology. The bronze dagger with narrow blade (*sehyeong donggeom*) is the type of dagger following the lute-shaped one in the Korean Peninsula. The distribution of this dagger is limited to south of Cheongcheon River, while the distribution of *mingdao* coins is limited to north of it. YUN (1972, 124-127) linked these distributions to events in historical records such as the Chinese *Shiji Xiongnu Liezhuan* and the *Weilue*. The historical records tell about the invasion of the Liaodong area by a Yan general named Qinkai. Qinkai served king Zhao, who was on the throne during the years 311 to 279 BCE. YUN assumed that the lute-shaped daggers continued to exist until this time and were then replaced by the narrow dagger, thus mirroring the major political changes in Liaodong. YUN considered the end of the lute-shaped dagger to be the end of the 4th century to the beginning of the 3rd century BCE. This, however, is not logically acceptable because there is no evidence that narrow-bladed bronze daggers appeared at the same time as *mingdao* coins. Although it seems an absolutely groundless argument, it made many archaeologists believe in the short chronology. YUN's argument was based on a dating that many archaeologists assumed to be correct at that time. On the other hand, YUN's linking of find distributions with historical events somehow ended up with the conviction of archaeologists that the dating is built on firm grounds of historical events. It was very hard to get out of this circular reasoning once it had started.

In South Korea, the lute-shaped dagger was dated as early as the 8th century BCE in the 1990s, in relation to bronzes from north-eastern China (YI 1992: 131). This "long chronology" was, however, only addressing the appearance of the lute-shaped dagger; the dating of the subsequent narrow-bladed dagger was not influenced. Thus, the period of lute-shaped daggers was enlarged by almost 500 years in the Korean Peninsula. This dating was widely accepted in Korea; however, Japanese scholars did not follow suit. While the long chronology was accepted in the 1990s in Korean archaeology, in Japan archaeologists continued to favor the short chronology (SHŌDA 2006, 144). As a result, a gap of about 300 years arose regarding the early 1st millennium BCE between Korean and Japanese perceptions, although for the later phase, common viewpoints and dating existed.

After the announcement by NMJH, two Japanese leading scholars on bronze wares in northeastern Asia nevertheless changed their standpoint from short chronology to long chronology (see MIYAMOTO 2004; OKAUCHI 2004). MIYAMOTO (2004) regards the beginning of Yayoi as no earlier than 9th century BCE; TAKESUE (2004) and myself (SHŌDA 2005) as no earlier than 8th century BCE according to cross-chronology, independent from AMS data. Both opinions postulate younger dates than those presented by NMJH. They consider the 10th century BCE date of NMJH as too early when checked by typological cross-dating.

Discussion

The majority of archaeologists are aware of the need to change the viewpoint for Northeast Asia's 1st millennium BCE, especially for the Korean Peninsula and Japanese Archipelago. Still various contradictory opinions exist. It is not the simple question whether to believe in AMS or not. As ŌNUKI (2005: 106) stresses, the most important point in this discussion is that ^{14}C dating made many archaeologists aware of the necessity to reassess the typological studies they made. Still, many problems are left on all sides, either concerning AMS dating or typological cross-dating using inscribed wares from China. For instance, ISHIKAWA (2006) criticizes not AMS dating itself, but the way NMJH

interprets the data. IWANAGA (2005), on the other hand, pointed out the difficulties and logical problems in cross-dating.

For the material that has been the focus of the AMS dating itself, YOSHIDA (2005: 54) warned that "the problem is, that we don't know what the charred material actually was." NMJH announced that the Initial Yayoi dates back to the 10th century BCE, but there are only three samples for the earlier part of Initial Yayoi (FUJIO *et al.* 2005: 82). Moreover, the samples presented contain a sherd, which is the mere bottom part of a pot, and we cannot identify to which type it belongs. NMJH thus determined the date of the beginning of the Yayoi Period mainly on the basis of AMS dates from the later part of Final Jōmon and the later part of Initial Yayoi, and they still have not fulfilled the duty to explain. The evidence NJMH presented is not enough to make many scholars understand and agree.

Cross-dating from the Central Plain in China also faces problems due to the shortage of materials. Only five examples of lute-shaped bronze daggers have been unearthed in China in assemblages of bronze wares which can be absolutely dated. The pottery chronology for this area, moreover, is not distinct enough to discuss the dating in detail. Many scholars wrote papers on lute-shaped bronze daggers in China, North and South Korea, and Japan, but they had not compared and referred to each other sufficiently (SHŌDA 2006: 134). Research on this subject should be practiced from a broader point of view.

As I pointed out at the beginning, conclusions are still open to modification. It is important to compare the results of these two absolutely independent methods and to investigate the differences and their reasons. There is no need to look for common ground right now. The announcement in 2003 influenced Japanese archaeology dramatically, but unlike the "second radiocarbon revolution" in Europe (RENFREW 1973: 94), the framework did not 'collapse'. This change of dating will never transform the megalithic structures or metallurgy of Japan into the earliest in East Asia.

It is possible in Northeast Asia to salvage large parts of the traditional structures, especially with regard to their relative position in each area. But the circumstances change when it comes to crossing "the fault zone" in the Korean Peninsula. Inclined chronology 'solved' the time-lag by enlarging the time span of Korean Early and Middle Bronze Age—which means the age of the lute-shaped bronze dagger—and by connecting the old dates of the inscribed wares with the younger dates, which are believed to be commensurate with the Yayoi Period.

In consequence, the cross-dating of China–Korea or Korea–Japan needs to be corrected. It includes reassessing the diffusion of bronze and iron from China eastwards. In South Korea, abundant archaeological data have been unearthed recently through numerous rescue excavations. They will help both typological study and ^{14}C dating.

Conclusion

The dating controversy cannot be schematized as archaeological typology suffering defeat to carbon dating. In Japan also, the relationship between the two methods is getting more cooperative than in the past. Again, it is important to verify each by comparing the results of different methods based on different principles and to discuss the differences and the reasons for that. Now archaeologists have to reconstruct the history of the 1st millennium BCE not only in Japan but also for the whole of Northeast Asia. Inclined chronology was denied, and we have to reassess the relationship between center and periphery, not only from a passive perspective but more simultaneously and interactively.

This essay mainly dealt with the beginning date of the Yayoi Period, but there are more complicated problems when it comes to determine Early and Middle Yayoi Periods. I will refer to them at the next opportunity.

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CHAPTER 9

KARAKAMI—A YAYOI SITE ON IKI ISLAND

Jane OKSBJERG

In September 2006, Jane OKSBJERG joined the team of the Kyūshū University Department of Archaeology for an excavation campaign at the Yayoi-period Karakami site on Iki Island (Nagasaki Prefecture), lying off the coast of North Kyūshū. Her vivid and graphic account of the investigation, accompanied by numerous snapshots from the field, allows a genuine look at what digging is like in Japan (eds.).

Keywords: Japanese archaeology, excavation, island archaeology, Karakami site, Yayoi, Wei chronicles, Wa, trade, intercultural relations

Introduction

The following is an account of the Yayoi-period site of Karakami in the western part of the Island of Iki, located 20 km off the north-western coast of Kyūshū (Maps 9.1, 9.2). It takes its point of departure in the description of the island in an early Chinese document, but it is mainly based on discoveries made during the excavation of the site in September 2006 as well as on interviews with Professor MIYAMOTO Kazuo and Assistant Professor TSUJITA Jun'ichirō (both Kyūshū University, Fukuoka, Department of Archaeology). These were carried out in conjunction with the excavation procedure. Professor MIYAMOTO also communicated all information relating to the excavation history of the site. The author together with 21 other students joined the excavation led by Professor MIYAMOTO and Dr. TSUJITA.

Map 9.1 Provinces of the Korean Peninsula at the time of the "Records of Wei"

The distantly located Wa (Japan) was known, to an unidentified extent, to the Chinese in the Yayoi Period. Iki and Tsushima Islands are located between Byeonhan, on the Korean Peninsula, and Wa.

Topography and Historical Accounts

The modestly sized Iki Island (238 km^2) in the Strait of Korea is mentioned in the Chinese chronicle of the Wei Dynasty, the *Weizhi* (221–265 CE), whose time frame covers the last decades of Late Yayoi (1–250 CE) and touches upon the following Early Kofun (250–400 CE). Its entry is a description of the island as one of several "countries" along the route leading from the Chinese commandery of Lelang in the northern part of the Korean Peninsula to the legendary Queendom of Yamatai within the realms of the

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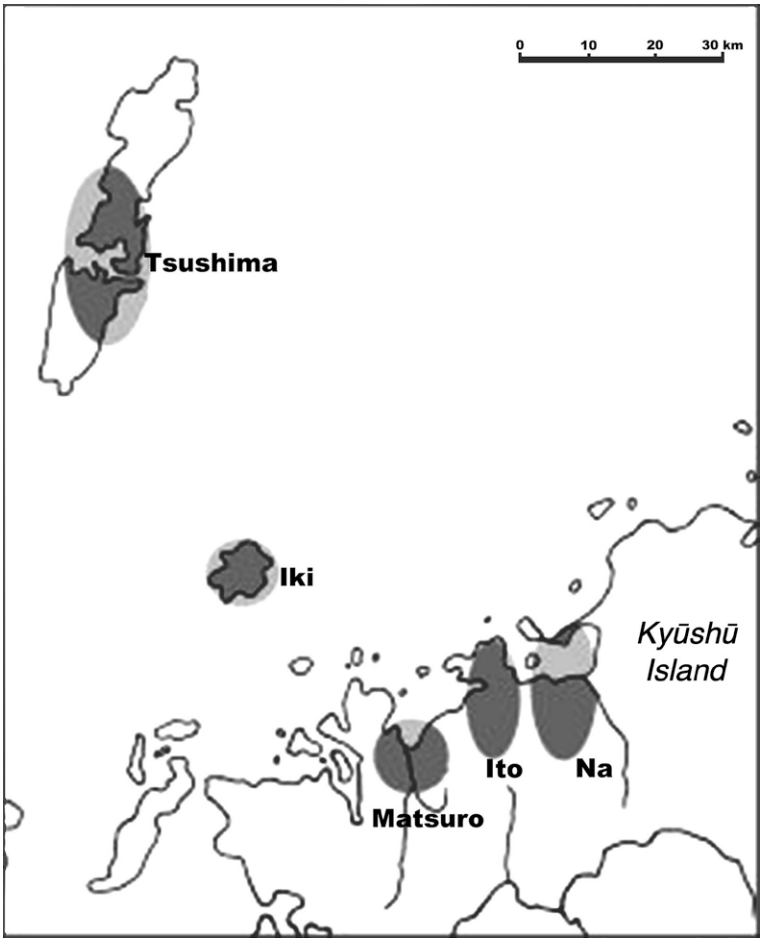
region that the Chinese knew as Wo (J. Wa), located on the islands east of China.



Map 9.2 The five currently identified kingdoms of Wa, mentioned in the "Records of Wei"

Iki Island is located between Tsushima Island and the northwest coast of Kyūshū that houses the former kingdoms of Matsuro, Ito, and Na

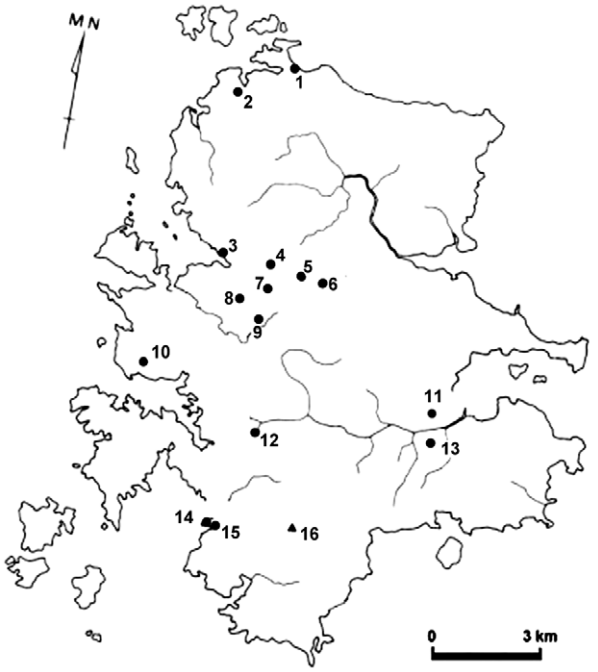
The identification at present of the locations of the more distantly located "countries" of this route, notably the final destination of Yamatai itself is lost in the obscurity of the directions presented in the "Records of Wei" (C. *Weizhi*). Iki, however, is located at the nearer end of the route, and can be conveniently identified as the island next to Tsushima Island, mentioned immediately preceding that of Iki and located 40 km to its northwest. The "country of Iki" is described along lines similar to those of other "countries" encountered by travelers, according to population size and natural environment. At the time of the "Records of Wei", Iki allegedly held 3,000 households and was administered by a chief official and his assistant, a system parallel to that of the neighbouring island Tsushima. Iki is described as "full of bushy thickets of bamboo and trees" (TSUNODA and CARRINGTON GOODRICH 1951: 8).

Tsushima, with its much larger size (696 km^2), held only about 1,000 households and had "no good rice fields, but (the people) live(d) upon marine products"; whereas Iki housed "some" rice fields but still not enough to provide for its inhabitants. People at both islands, therefore, sailed out to purchase rice (TSUNODA and CARRINGTON GOODRICH 1951: 8). Interes-tingly, archaeological excavations at Iki in recent time support this statement in the Wei chronicle that not much rice was grown in the island even in places that would have been well suited for this.

The southern part of Iki with its lowlands makes up the island's fertile area, where crops could be grown, whereas the topography of the northern part resembles that of mountainous Tsushima—a setting that invites hunters and fishermen but not agriculturalists. Farming groups were attracted by the natural environment of southern Iki, but the main crop seems to have been wheat rather than rice.

Harunotsuji Site

Iki's largest Yayoi settlement, Harunotsuji (Map 9.3), was founded in the earliest phases of Early Yayoi (500–300 BCE)[1] when people emigrated from the Korean Peninsula to the Japanese archipelago. There are various explanations as to what caused the relatively sudden increase in human migration, resulting eventually in the change within the archipelago of the main mode of subsistence from hunting, fishing and gathering to farming. According to Professor MIYAMOTO, the large-scale movement of people from the Peninsula to North Kyūshū originates in a climatic deterioration at the end of the Jōmon Period that would have obstructed the growing and ripening of rice in the Peninsula. North Kyūshū is located south of southern Korea, and this area offered the climate needed for rice agriculture. It was during these early waves of migration that a group of people settled in the eastern part of Iki and established the Harunotsuji settlement.



Map 9.3 Iki Island with its main archaeological sites

1. Amagahara-Sejōgami Site; 2. Katsumoto Castle ruins; 3. Matsuzaki Site; 4. Sasazuka Kofun; 5. Onino'iwaya Kofun; 6. Kokubunji ruins; 7. Sōroku Kofun; 8. Tsushimazuka Kofun; 9. Karakami Site; 10. Oniyakubo Kofun; 11. Otsukayama Kofun; 12. Kurumade Site; 13. Harunotsuji Site; 14. Kamasaki Coast Site; 15. Nakiri Site; 16. Mount Takenotsuji

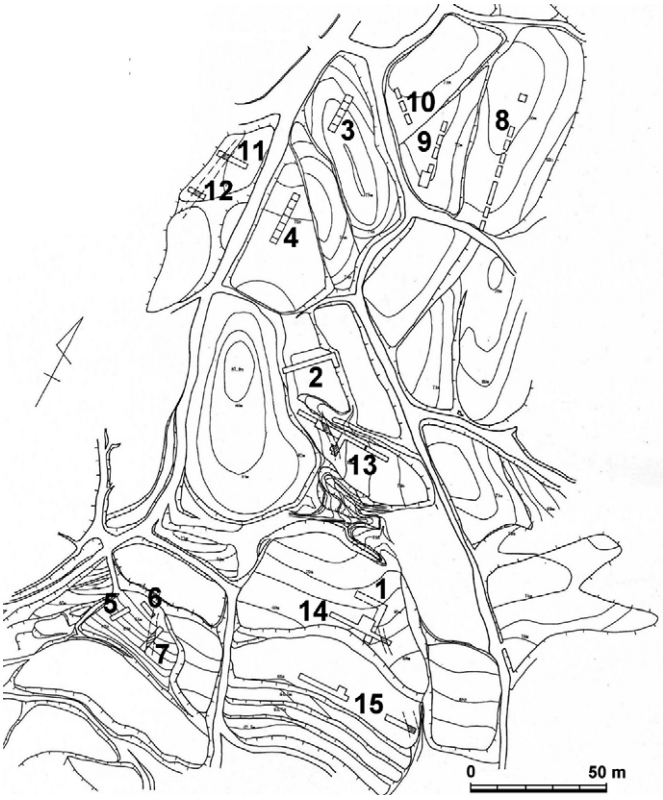
Harunotsuji is known today as one among a large number of Yayoi sites that were surrounded by moats. Its three moats laid out in a concentric circle design, however, also incorporate it into a narrower group of Yayoi sites with multiple moats; and they signal its character as a nucleus site, whose size was considerably larger than the average and which housed many more industries than most farming settlements. Multiply moated settlements show evidence of a high degree of far distance exchange as well as a wide range of productions of highly rated goods. The typical location for such a settlement is that of a large plain that makes room for adjacent fields. This setting is true also for Harunotsuji whose circular moats cover an area of approximately 100 ha, a size that exceeds that of any other Yayoi settlement in either Iki or Tsushima, but which fits comfortably with the scales of other important moated settlements. The sequence of moat construction at the site likewise falls into a temporal pattern known from several

[1] The exact dating of Initial and Early Yayoi is presently a matter of much debate caused by varying results of AMS tests according to sample-type and the difficulty of matching some of the results with continental imports of well-known date, being further complicated by the diffuse state of the calibration curve in the years between 800–400 BCE. The dates used in this article are those suggested by MIYAMOTO Kazuo, who sets the beginning of the Yayoi Period to 800 BCE [see also Chapter 8 by SHŌDA Shin'ya in this volume (eds.)]

other multiply moated settlements.[2] Harunotsuji's first moat was constructed already in Early Yayoi, since the construction of moats was part of the cultural package brought in from the Peninsula, but more moats were added to the outside of the first moat during the Yayoi Period.

Karakami Site

Karakami (Map 9.4) was a somewhat smaller settlement, situated on the slope of a hill. Furthermore, it has given no finds from the beginning of the Yayoi Period. The establishment of Karakami stems from some point of time during Middle Yayoi; hence it is later than that of Harunotsuji. MIYAMOTO is of the opinion that among the settlements on Iki, we should probably assess Karakami to be second to Harunotsuji in size.



Map 9.4 The Karakami site

The 2006 excavation overlaid Trenches 1 and 14 (Nos. 1 and 14 on the map above). See Map 9.5.

1. 1951–1952 Trench 1: Tō-A Board of Archaeology, Kyōto University
2. 1951–1952 Trench 2: Tō-A Board of Archaeology, Kyōto University (discovery of shellmound and scattered finds reported from this location in 1926 and 1939)
3. 1977 Trench 3: Kyūshū University
4. 1977 Trench 4: Kyūshū University
5. 1977 Trench 5: Kyūshū University
6. 1977 Trench 6: Kyūshū University
7. 1977 Trench 7: Kyūshū University
8. 1983–1984 Nagasaki-ken Dept. of Culture
9. 1983–1984 Nagasaki-ken Dept. of Culture
10. 1984 Nagasaki-ken Dept. of Culture
11. 1984 Nagasaki-ken Dept. of Culture
12. 1984 Nagasaki-ken Dept. of Culture
13. 2004 Kyūshū University
14. 2005 Kyūshū University
15. 2005 Kyūshū University

Karakami was also equipped with a moat, but in contrast to the situation at Harunotsuji, the moat at Karakami was laid out in a triangular fashion. Within the smaller moated settlements, a great variety of moat outlay exists (ARBOUSSE-BASTIDE 2005: 31), but the moat at Karakami is highly unusual, because of its location on a mountain slope. The moat-legs east and west of the settlement stretched obliquely until they met at the top of the mountain behind a small hill that marks the peak of the slope. No regular moat-part was constructed at the southern edge of the place, which was the foot of the hill, since

[2] This sequence has been investigated among other regions in the Nara Basin, where Karako-Kagi, Byodobo-Iwamuro, and Tsuboi-Daifuku sites have proved outstanding examples of alternating but mutually concurrent maintenance and negligence of moats.

segregation from the outside world was provided by the Karida'in River. In modern times, the topography of the site has been modified from a smooth slope into three terraced fields (Figures 9.1~9.4).

Figure 9.1 The 2006 excavation took place on the higher of three terraces. Two parts of Trench 15 were laid out at the one in the centre of the picture in 2005 (from the east).

Figure 9.2 A view from the lowest terrace before the steep fall to the foot of the mountain. The bed of the presently shallow current of the Karida'in River can be distinguished below.

Figure 9.3 The Karida'in River (from the east). The mountain hosting the Karakami Site is to the right

Figure 9.4 Southwestern corner of the excavation overlooking the valley below

Research History

The existence of both the Karakami and the Harunotsuji sites was known prior to actual excavation, based on finds of pottery and other artifacts on their surface. Treasure hunting took place at Karakami as early as 1926, when a bronze mirror was found; but the first professional excavation was carried out in 1952, when an excavation team from Kyōto University (Tō-A Board of Archaeology) cut the first L-shaped trench (Map 9.4, Trench 1). The excavation was led by MIZUNO Sei'ichi assisted by OKAZAKI Takashi. A substantial amount of pottery and other artifacts were retrieved and brought to Kyōto, but the results of this early investigation on the island came to suffer a sad fate, since the artifacts remained in the storage room of Kyōto University for more than 30 years without further analysis or interpretation, followed by 20 more years in another storage room, namely that of Kyūshū University. Consequently, Professor MIYAMOTO had decided to attempt a resurrection of some of the lost data

stemming from the earlier excavation during the one to be carried out during 14–27 September 2006.

The logbook and drawings from the 1952 excavation had been stored together with the artifacts, but a genuine report was never written or published—presumably because of MIZUNO's becoming tied up with research overseas and OKAZAKI's change of post to Nagoya University, and because of Iki being outside the geographical area normally covered by researchers at Kyōto University.

OKAZAKI was originally from Fukuoka, and he took a life-long interest in the accounts of the Wei chronicle. His aim was to compare the information within these entries with the archaeological remains and apart from excavating in Iki, he also led investigations in Karatsu, located at the coast north-west of Fukuoka—a place that has been identified as the former Matsuro kingdom. Other kingdoms mentioned in the Wei chronicle are that of Ito, identified to be Maebaru east of Karatsu and that of Na, which is the Fukuoka area itself. After working at Nagoya University for two and a half years, OKAZAKI was subsequently made associate professor at Kyūshū University in 1960. In the ensuing decade, he excavated in Karatsu, upon which he began writing a large volume on his finds and on the Matsuro kingdom.

In 1977, OKAZAKI was back at Iki and Karakami, but this time with a team from Kyūshū University. That year, five trenches were laid out: two north of the small peak on top of the slope (Trenches 3, 4) and three approximately halfway down the slope (Trenches 5, 6, 7). What was not recognized by that time was that features uncovered in Trenches 6 and 7 were moat parts. This, however, became clear to OKAZAKI when in 1983–84 he opened two trenches north-west of the hill peak (Trenches 11, 12), and each presented moat features.

OKAZAKI then decided to put an end to the life in oblivion that the material from the 1952 excavation was suffering in the storage room at Kyōto University, and since the staff there willingly agreed to let it go, he had all of it moved from Kyōto to his new place of employment. OKAZAKI had plans of a new comprehensive publication relating archaeological material to the accounts of the Wei chronicle, this time about the Iki kingdom. But then, sadly, he passed away before he had even started his important task. [3]

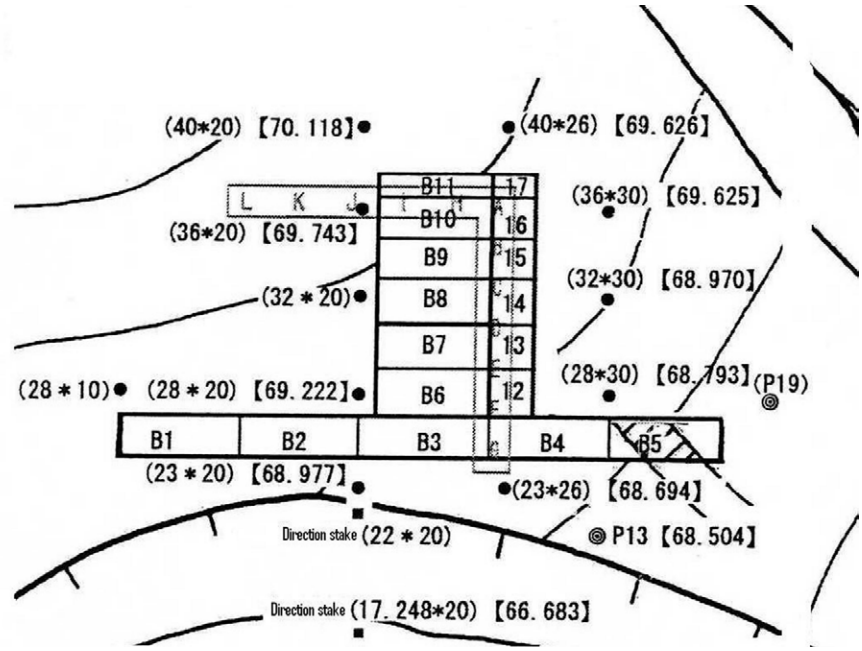
Consequently, the material and other data were now again to be left in a storage room, and they stayed there until MIYAMOTO Kazuo recently decided to make renewed efforts to revive the results gained and partly lost again from the old excavation. This decision was made after a trench was opened in September 2005 intersecting with the one made more than 50 years earlier. The new trench (Trench 14) had been laid out avoiding not only the old trench (Trench 1) but also the eastern moat-leg, which indeed it proved to do. The eastern moat-leg had been identified in 2004 by two parts of it further uphill (Trench 13) and was now again encountered in two places (Trenches 14, 15). Trench 14 is situated approximately halfway up the eastern moat leg.

Prior to the excavation in September 2006, the artifacts from 1952 were identified and looked through, and a search for the remaining data was initiated. Two days before the excavation started, the drawings of the profiles of the L-shaped trench were identified. As for the logbook however, only the cover was found. Two drawings exist (not reproduced in this chapter), one of the profile of the east-west oriented trench-leg, the other of the north-south oriented trench-leg.

[3] Barbara SEYOCK (2004) has subsequently published a book-length study on the Wei chronicle and the connected archaeological data from southern Korea and North Kyūshū.

Excavation Diary

On 14th September 2006, the main part of Trench 14 (Trench B on Map 9.5) from the excavation of the previous year was reopened, which meant the whole field except from the westernmost 11 m of the 25 m long and 2 m wide stretch making up the southern part of the field. The field in 2005 had included a 4 x 4 m large square protruding towards the north (grids B6~B7), and the western half of the north–south oriented leg of the old trench from 1952 (1.8 m wide) could be observed at the eastern edge of this square. At that time, Layer 3 containing Middle and Late Yayoi artifacts had been removed in grids B3, B6 and B7, whereas grids B4 and B5 had been excavated to a greater depth, i.e., Layer 4 had been removed in these grids. Upon the renewed disclosure of the trench from 1952 and due to the newly obtained access to the original drawings from which it appeared that the lowest layers of this trench had not been examined, Professor MIYAMOTO decided to let the excavation team enlarge the northern protrusion to the east (2 m) and north (7 m). This way it would be possible to examine the relationship between layers appearing on the drawing and those exposed in situ. Also, choosing this location for the present excavation meant the possibility to investigate a larger part of the eastern moat leg.



Map 9.5 Trench B (Trench 14) and the Trench 1 from 1952

Investigations in 2005 had included grids B1–7. In 2006, B3–7 were reopened and extended with B8–17. Outline of L-shaped 1952 trench shown underneath, consisting of grids A–L; grids J–L were not reopened.

Figure 9.5 16th September: First digging into the old trench (from the north). Grids H and I in the foreground; grids A-D to the left.

On 16th September, work started (Figure 9.5) digging into the grids appearing on the original drawings as H and I in the east-west oriented trench-leg and as grids A, B, C and D in the north-south oriented trench-leg. In grids H and I, shells and other organic material appeared in the refill soil from

Figure 9.6 26th September: A few of the many circular grinding stones used for processing wheat, apparently a predominant Iki crop in the Yayoi Period.

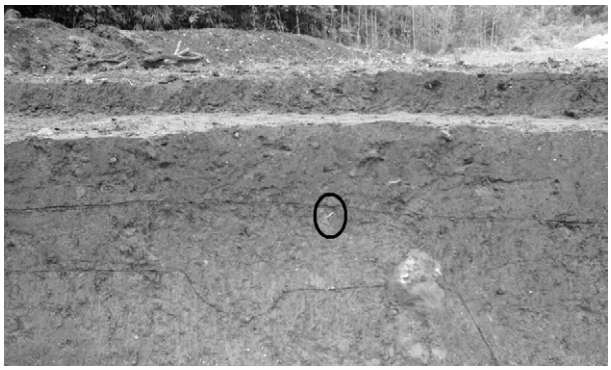


Figure 9.7 18th September: Profile of the eastern wall of the old trench, including bronze arrowhead in Grid B13, Layer 4

Figure 9.8 The long-tanged bronze arrowhead, a piece of obsidian, and half a spindle whorl

1952. Since the shell assemblage was so local, it is likely that only small portions of the old trench had been opened at a time, hence these grids were excavated meticulously with spoons although this was refilled material. That the early excavation had been that of a crude orientation using large tools like spades was suggested by the fact that in the north-south oriented trench-leg large amounts of minor pottery sherds appeared from the refilled soil. However, eventually in grids A and B respectively, two assemblages were found consisting of excessively large sherds, finds that proved to precede the identification of the original walls on both sides of the trench; these assemblages were consequently recognized as having been left in situ in the eastern and western wall respectively by the team in 1952.

Already at this early stage of excavation, several circular grinding stones had appeared (Figure 9.6), a type of tool that has been recovered during excavations all over Iki. Previously recovered items of this type have proved to have been used for grinding wheat, since protein from this cereal has been identified on the tools by PhD student KAMIJŌ Nobuhiko, who specializes in this field and who also took part in the 2006 excavation. It appears that Iki was a wheat region much more than it was a rice region, since an abundance of finds of these items goes together with finds of actual wheat grains, whereas rice grains have been recovered only to a minor degree on Iki. Also, many finds of stone sickles have been made, used for cutting the stalks of cereal plants in bunches—whereas finds of stone reapers, used for harvesting the ears of rice individually as they ripened, have been peculiarly few as well as have finds of mortars and pestles that were used for husking rice seeds. One pestle is present in the museum at Harunotsuji.

Work was set to a halt on 17th September by a typhoon that prevented the team from excavating that day; however, enough pottery

had been recovered in order to keep the whole team busy washing it throughout the day. The excavation was resumed the following day, setting out with some obstacles, but progressing well allowing for the first levelling, the disclosing of the top of Layer 3 in grids B8 and B9, and a first round with the metal detector. The recovery of a bronze arrowhead in the eastern wall of the north–south oriented trench marked the end of the day (Figures 9.7, 9.8).

On 19th September, the fill of the L-shaped trench from 1952 had been completely removed (Figure 9.9), disclosing the north-south oriented leg to have been approximately 1.5 m deep, cutting first through Layer 3 incorporating Late and late Middle Yayoi pottery, then through the moat and finally into cultural Layer 4 whose bottom had however not been reached. The east–west oriented leg, however, had not reached below the bottom of Layer 3 in its northern half and only a depth of ca. 20 cm into Layer 3 in its southern half.

Figure 9.9 19th September: Pottery assemblage in the eastern wall of layer 4, grid B, left in situ by the 1952 excavation team (also in Figure 9.10 upper right)

The following two days were spent drawing, excavating and removing Layer 3 in grids B8~B11 and in the remains of grids B12~B17. When this work finished, more than 20 kg of pottery had been collected. Exposed on top of Layer 4 were now large amounts of Middle and Late Yayoi pottery, among which were several assemblages consisting of large sherds from vessels of probably complete stature at the time of deposition. MIZUNO'S drawings from 1952 showed that rich concentrations of pottery and other artifacts, among these two iron axes, had at that time been exposed in Layer 3 of the eastern wall of the north-south oriented trench—finds that had been removed before the refilling of the trench.

Figure 9.10 21st September: View of the excavation area from the south. Note the wavy edge to the old trench (left) and the change in color marking the moat (whitish) to the moat slope (darker) where artifacts were deposited (right).

On the surface of Layer 4 in the northern part of the excavation field (Figure 9.10), the concentration of pottery and other artifacts was demarcated clearly to the northeast, following smoothly the outer

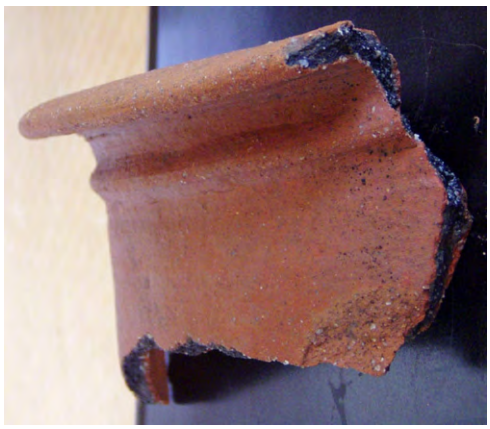
outline of the moat, whereas the demarcation towards southwest was much more diffuse, suggesting that pottery was left at the inner slope of the moat, says TSUJITA Jun'ichirō. MIYAMOTO Kazuo adds that the outer wall of many settlement moats is very steep, almost vertical, whereas the side facing inwards is much more gradually sloping. This design, known from many moated settlements, fits into the general idea of moats having functioned both as protection against entering enemies and as a place for deposition of waste as well as of ritual objects—depositions that took place from inside the settlement.

The team carried out drawings of the new surface. Leaving the cultural Layer 4 in situ and with a demarcation of a crosswise running wall of the moat; on 23rd September, the process of emptying the moat was initiated. Within the higher lying, approximately 20 cm of Layer 4, a canine tooth of a boar (western part of grid B11), a deer rib (central part of grid B10), and a net sinker (western part of B10) were recovered. An almost whole vessel appeared at the center of grid B8 (Figure 9.11a) and several fragments of red-painted pottery (characteristic for the region), turned up inside the moat (Figures 9.11b-d).

a. The nearly complete Yayoi pot

b. Jar neck of the ceremonial vessel upside down

c. Jar base showing vertical burnish marks



d. Jar rim close-up

Figure 9.11 Excavated pottery

A few finds of animal bones were also made, among these the lower jaw of a deer in the southwestern corner of grid B9. The concentration of shells in Grid I (B10) continued into the in-situ layer that was now removed. This grid was divided into smaller grids sized 25 x 25 cm, the soil of each of which was removed for flotation. A most conspicuous find was that of a human skull in the top layer of grid B10 (Figure 9.12). As the team worked its way through the moat's Layer 4, and the finds were documented, still new assemblages of pottery appeared (Figure 9.13).

Figure 9.12 22nd September: The skull in pieces cleansed and ready for photo. To the right, an almost complete pottery vessel

Figure 9.13 23rd September: More pottery sherds exposed

By the end of the day of September 24th, the moat sections in grids B9, B10, B14 and B15 had been emptied, and the design of the moat was confirmed to have been that of a flat bottom with a steep fall at the outside edge (although now disrupted by the cut of the trench) and a slope at the inside edge (Figure 9.14). Underneath the moat's Layer 4, being a 35 cm deep cultural layer from Middle and Late Yayoi, an approximately 20 cm deep black layer (Layer 5) was removed—with almost no artifacts (but containing the bones of a few small-sized animals in the southwestern part of grid B10). Below, natural reddish hill soil was disclosed. Layer 5 was a silting layer, but since the layer on top of it was also sloping (observed in the eastern profile of the old trench), MIYAMOTO concluded that soil had slipped down into the moat continuously from an elevated position. This proved to be in accordance with a plateau of ca. 2 m in width that had appeared at the inside edge of the moat. An earthen wall could have been constructed there, containing the dug-up soil from the moat, thus also Middle and Late Yayoi pottery. At this stage, the moat was still assumed to have been constructed in Late Yayoi.

Figure 9.14 25th September: Profile of the moat (from the southeast). The step-like shape of the right (north-east) edge of the moat is caused by the 1952 trench that was emptied during the current excavation. The slope on the inside edge begins at the boot on the left.

On 25th September the team cleaned the surface of the entire area for photos. When demarcating the layers in the profiles, MIYAMOTO found the stratigraphy in the

eventually very wide western profile that now appeared in conjunction with the plateau and the emptied moat to suggest that the earthen wall, and thus also the moat, had been constructed twice. In the profile, a later phase of a wall could now be observed on top of the phase indicated by the plateau. The early phase, which probably belongs to Layer 4, is thus still in situ. The later phase of the wall belongs to Layer 3 that stems from late Middle and Late Yayoi; it was removed during the 2006 excavation.

Figure 9.15 Karakami Site Open Day

Exhibits of a whetstone (top) and pottery (center), while Miyamoto Kazuo explained the finds that had been made and their significance

On 26th September, final levelling was carried out, the drawings of all surfaces and profiles were finished. Visiting expert SUGIYAMA Shinji from the Paleoenvironment Research Institute in Miyazaki Prefecture took samples of soil at the site that were to be taken back to the laboratory in Miyazaki to be analyzed for remains of plant opal. Attempts to check for pollen remains were also made. However, since the soil was very dry and solid, this was a difficult, perhaps impossible, task to carry out.

Also on the 26th at the hotel, the site Open Day was held (Figure 9.15). Artifacts had been selected and prepared for exhibiting, and at 2 pm on 26th local visitors were welcomed by a small on-site exhibition. MIYAMOTO Kazuo gave an account of the excavation, explaining the emptied moat and the profiles. After the visit, the team laid out sandbags to protect the walls and the pottery still in situ in Layer 4 (Figure 9.16), and the whole field was covered and will remain as the team left it until the excavation in 2007. All finds were packed and sent to Kyūshū University.

Figure 9.16 26th September: Laying out sandbags and sand; the excavation squares were then backfilled until the next year's investigations

Organic Remains

Flotation of the shell-layer soil from grid B10 was carried out by Dr TSUJITA together with students SAKI Mayako, HAYAKAWA Wakako, TANIZAWA Ari, and OKAMOTO Yuya. Among other finds it resulted in approximately 50 grains. Professor MIYAMOTO expected that many are wheat, and perhaps some will prove to be barley. Fish bones were recovered from the same soil during the flotation process that took place at Harunotsuji. Apart from the grains and the fish bones, the nature of which likewise remains to be identified, other dietary remains were recovered during the previous excavation. These showed up in the shape of remains of a deer and a wild boar, comprising evidence together with the fishbones that the farmers living at Karakami were also hunting and fishing.

The domesticated dog, however, was so popular in Iki that skeletal remains from it exceed the bones of hunted animals, says Professor MIYAMOTO. At Harunotsuji, dog skeletons account for 47% of the animal skeletons in one of the moats,[4] followed by boar and then deer.[5] As mentioned earlier, during earlier investigations at Karakami, a skeleton from an animal the size of a small dog or a raccoon dog was recovered towards the bottom of the moat.

The finding of a human skull adds to the ritual significance that settlement moats also seem to have had, although it is difficult to attach any further interpretation to the skull's presence in the Karakami moat. Since it was recovered at the very edge of the excavation field (western edge of grid B10), it is possible that material that could throw light on its interpretation is still left in situ.

Moat Construction and Function

The moat's content of Layer 4 was a mixture of the cultural Layers 3 and 4, since the moat was constructed twice. This explains the mixture of Middle and Late Yayoi pottery in the fill of the moat, and the presence of Middle Yayoi pottery on top of pieces from Late Yayoi in some places southwest of the wall-plateau.

The moat and the wall could initially have been constructed in Middle Yayoi to be left without maintenance at the end of the phase, which would have resulted in the wall slowly sloping down at both sides; they could then have been reconstructed in Late Yayoi and again left at the end of that phase. This fits with not only the one observed at Harunotsuji but also that of sites in other parts of Japan, e.g., sites in the Nara Basin.

Most likely the function of the moats was manifold. Still, a ritual function is attributed to many of the Yayoi-period moats (MIZOGUCHI 2002: 136-7; HIROSE 2004: 206). During excavations at some Yayoi-period settlements, whole pottery vessels and extraordinary objects have been observed in large numbers inside the moats.[6] Pits at Yayoi sites were also of various functions: some were for ritual purposes, while others were entirely for utilitarian use. It is very common to find pits located at the bottom, against the wall, or immediately adjacent to the moats. Also, at Karakami, one pit was located at the outside edge of the moat in grid B10, but it proved to be empty.

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[4] In contrast to this, there were no cats at Harunotsuji.

[5] However, this percentage is not based on flotation, and fish are not included. We have reason to suspect that fish would range high if more soil from Harunotsuji's moat was to be processed. The flotation of the soil from one pit at the site proved fish bones accounted for 80 percent of the skeletons (total number: 55) (MIYAMOTO Kazuo, personal communication, 24th September 2006).

[6] Examples of the former are at Byodobo-Iwamuro and Tsuboi-Daifuku and of the latter at Karako-Kagi, all in the Nara Basin (Kashikōken 2005: 12-13, 16-17; Tawaramoto-chō Kyōi (ed.) 1979–1997). I already addressed this topic with a paper I gave earlier in London (Oksbjerg 2006).

At this stage of the examinations, the profile of the moat could be observed in the walls of the old trench, and expectations were that the moat had been constructed in Late Yayoi, at which time we are told in the Chinese chronicles that unrest prevailed in the Wa countries.[7] For the same reason it is not irrelevant that the location of the Karakami settlement provided good protection against sudden attacks. This became quite clear when it was proved impossible to spot the rest of the excavation team from any point along the Karida'in River located at the foot of the mountain, and the exact location of the site was only identified with some difficulty. It should be borne in mind that in Late Yayoi, the forest was even denser than now; and whereas ships approaching the hill would have been spotted instantly from the hillside, the settlement itself would have been hidden from the view of newcomers. Whether the enemies that could be expected consisted of groups from other settlements at Iki—like Harunotsuji or the nearer lying Kurumade—or of people from further away we do not know, but Karakami made a good and safe place to reside, says Professor MIYAMOTO. Travellers from the settlement had easy access to the river and, if necessary, they could walk to the seaside just as they could to other settlements within the island.

Discussion

In addition to the finds of organic material described above, all in all the 2006 excavation at Karakami resulted in more than 100 kg of Middle and Late Yayoi pottery plus a few sherds of peninsular pottery. Also, more than 20 grinding stones, expected to add further support once analyzed, to the image we already have of Iki as a wheat region, were recovered. These were supplemented by mortar stones and grinding stones usually discovered in Jōmon context. Other stone artifacts were the above-mentioned net sinker, half a spindle whorl (Figure 9.8), and a chisel.

A following excavation was to take place at Karakami in September 2007, and we hoped that this would throw more light on the wite as it was in Middle Yayoi. In this phase, during which activity started at Karakami, the groups residing in Iki (and all over the archipelago) seem to have had little contact with peninsular groups. Whereas we can detect waves of immigration in Initial (800–500 BCE) and Early Yayoi (500–300 BCE), Middle Yayoi (300 BCE–CE 1) is a conspicuously self-contained phase in terms of interaction with foreign people, since finds of peninsular pottery and other artifacts from Middle Yayoi layers are rare, says MIYAMOTO Kazuo. And he has emphasized that this phase of the Yayoi Period in particular is hard to understand in respect of foreign contacts.[8]

It is in Late Yayoi that we see the mutual trading between groups on either side of the Korean Strait and the Yellow Sea. The finds of peninsular pottery in Late Yayoi layers at Karakami and particularly at Harunotsuji comprise parts of the material culture that lies behind the records written down in the Wei chronicle. Other, more conspicuous objects are the bronze mirrors found in graves in northwestern

[7] The Wei chronicle states that queen Himiko of Yamatai was enthroned in the earlier half of the 3rd century after 70 or 80 years of "disturbances and warfare" (TSUNODA and CARRINGTON GOODRICH 1951: 13). Also, it says that Himiko entered into a dispute with a neighboring king (ibid.: 15), and after her death shortly before the middle of the century, "assassination and murder followed" (ibid.: 16).

[8] In the earlier part of Middle Yayoi, peninsular people did migrate to northern Kyūshū and thus started the bronze casting tradition in the islands, but apparently, people did not move in the opposite direction, and the only explanation to that seems to be a continuous state of inconvenient climate in the Peninsula. In the later part of Middle Yayoi on the other hand, we have solid proof that groups from the archipelago migrated to Neukdo Island off the Korean Peninsula, but apparently by that time there was no migration into the Japanese archipelago (MIYAMOTO Kazuo, personal communication, 17 September 2006).

Kyūshū and fragments of these in the Kinki region,[9] not to mention the golden seal given to the Na king in 57 CE and recovered on the small island of Shikanoshima in Fukuoka Bay in 1784.[10]

The location of the Karida'in River at the foot of the Karakami hillside would have provided good harboring facilities, and foreign people visiting the place in times when peace prevailed would access it from there. Both the Karida'in and the Hatahoko River that runs past Harunotsuji would have contained more water in the Yayoi Period than they do at present, and they would have been navigable. Also, the sea cut deeper into the coastlines than is the case today, providing hospitable bays near both sites. However, the importance of the harbour at Karakami would have been particularly great in times when the outstandingly fast current of the Hatahoko River at Harunotsuji would hamper landing at the larger settlement. It is therefore likely that diplomats arriving from the Korean Peninsula in Late Yayoi, such as we know from the Wei chronicle, would disembark at Karakami, and access Harunotsuji over land.

Karakami can be seen as the gateway to Iki in the Yayoi Period just like Kōrokan in present day Fukuoka City can be seen as the gateway to Dazaifu, outside Fukuoka City, in the Nara (710–794) and Heian (794–1192) Periods, says MIYAMOTO Kazuo, and whereas evidence of trade can be observed at Late Yayoi Harunotsuji, Karakami may have been a location of ritual activities. Although most of the foreign pottery discovered on Iki has been found at Harunotsuji, three to four complete vessels have been recovered at Karakami in trench 2 that was cut, as was trench 1, in 1952 in close proximity to the small peak where the Karakami shrine is now to be found. The vessels were modestly sized Lelang vessels; thus, it seems probable that they were brought to the place by foreign diplomats.

The location of these vessels at this high lying spot makes MIYAMOTO consider the likelihood of rituals having taken place on top of the hill peak in the Yayoi Period and likely to have been carried out here by the foreigners before the group resumed the travel and continued to Harunotsuji and later to Matsuro (Karatsu) on Kyūshū Island. Entrance rituals for travelers may thus have been part of the role of the settlement, and their location on or near the hilltop would be likely. Professor MIYAMOTO draws attention to the meaning of the name Karakami, used today as the name of the shrine on top of the hill peak, being that of "Chinese gods" or simply "foreign gods". This could very well refer to a past employment of the place as an altar used by travelers.

Given the peculiar topography for a moated settlement, Karakami may turn out eventually to have been a ritual location in general. In 1977, four deer scapulae for divination use were recovered from trench 7. Such oracle bones are peculiar to the Yayoi Period and were part of the cultural package that arrived from the Korean Peninsula at the beginning of the Yayoi Period.[11] As on the Peninsula, where the same type of scapulae have been found from the corresponding temporal horizon, deer grew to hold essential religious importance in Yayoi-period Japan.

The bronze mirror fragment that was recovered in 1926 was picked up at the lower lying ranges of the

[9] Whereas Late Yayoi graves in Kyūshū hold whole bronze mirrors, sites in the Kinki region from this phase have given fragments of these only. Thus, fragments equipped with two holes for suspension were abandoned at settlements, whereas fragments without holes were buried in graves in Kinki (TSUJITA Jun'ichirō, personal communication, 21 September 2006).

[10] The Chinese emperor's bestowal in CE 57 of a golden seal upon the king of the country Na, recognized as the region of and around present day's Fukuoka City in northern Kyūshū, is recorded in a chronicle of the Later Han Dynasty (CE 25–220) (TSUNODA and CARRINGTON GOODRICH 1951: 2).

[11] One of these oracle bones plus additional finds from Karakami, Harunotsuji and other sites at Iki can be observed at Kyūshū National Historical Museum in Dazaifu, outside Fukuoka City, which opened in October 2005. Many finds from Harunotsuji, however, can be observed at the on-site museum.

site. Such fragments of bronze mirrors have been found in Late Yayoi context at other sites as well—they are particularly predominant in the Kinki area in Late Yayoi context (see note 10). Breaking and depositing of bronze mirrors and bells were part of the ritual life in Late Yayoi, says TSUJITA Jun'ichirō; he continued to state that the mirror fragments were often provided with two holes just wide enough to let a string pass through. They are therefore assumed to have been used as pendants (see Chapter 15 herein).

The domestic material culture on Iki was part of a larger cultural sphere that also included the Itoshima Peninsula northwest of present-day Fukuoka City. As mentioned earlier, this place has been identified as the one of Ito-koku (country of Ito), as it is described in the Wei chronicle; Late Yayoi it it is said to have held more than 1,000 households and was ruled by a hereditary king (TSUNODA and CARRINGTON GOODRICH 1951: 9). In Middle Yayoi, contact between Iki and groups located further away even within the archipelago seems to have been scarce, although we do see a small degree of imports on Iki from eastern Kyūshū. However, pottery produced locally at Iki is identical to that produced in Itoshima, says Dr. TSUJITA. Thus, the two countries of Iki and Ito apparently shared their material culture (and perhaps their ruler) already in Middle Yayoi.

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Finally, I want to thank every single member of the excavation team for bearing with me when taking countless photos of them during their work, and to express my respect for the seriousness and the professionalism with which they all approached their work in the field as well as outside it.

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CHAPTER 10

PREHISTORIC INTERACTION BETWEEN THE KOREAN PENINSULA AND THE JAPANESE ARCHIPELAGO THROUGH TSUSHIMA AND IKI ISLANDS

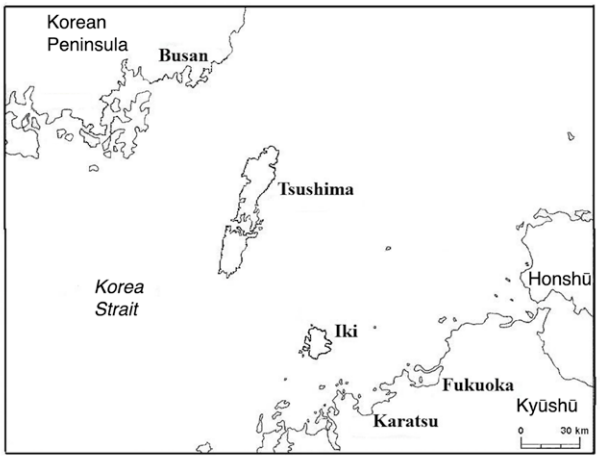
MIYAMOTO KAZUO 宮本一夫

In the Jōmon Period, Chŭlmun pottery of the southern Korean Peninsula and Jōmon pottery of Kyūshū Island simultaneously appeared on Tsushima Island. This interaction firstly comprised people moving in search for fishing grounds and then changed to the trading of raw materials between the two areas. In the Yayoi Period, the trading system through Tsushima and Iki Islands developed further and covered an increasingly wider area. In the latter half of the Yayoi Period, not only southern Korean pottery but also Lelang pottery of the Han Dynasty was extant on Iki Island and northern Kyūshū, thus reflecting the development of a long-distance trading. This chapter focuses the change of interaction between the two areas especially through the results of the excavation at Karakami Site on Iki Island.

Keywords: Japanese archaeology, Korean archaeology, island archaeology, Tsushima Island, Iki Island, Lelang, interaction, pottery, Yayoi, Proto-Three Kingdoms, Samhan, cross-cultural relations, subsistence

Introduction

Tsushima and Iki Islands are situated along the main route of prehistoric interaction between southern Korea and northern Kyūshū. According to the Chinese historical record (C.) *Weizhi*, the diplomats of Wei country in the 3rd century CE reached northern Kyūshū through these islands from the Korean Peninsula by ship. In this chapter, I will elaborate on the changing process of prehistoric interaction between the southern Korean Peninsula and northern Kyūshū by using archaeological material from Tsushima and Iki Islands, especially the results of the excavation at Karakami Site, Iki Island.



Map 10.1 Locations of Iki and Tsushima Islands in the Korea Strait

Interaction in the Neolithic Age

Following the Ice Age, southern Korea and northern Kyūshū were separated from each other by a sea channel. From the end of the early Jōmon Period (5000 BCE), however, the pottery of the two areas reflects increased interaction between peninsular and island populations. Korean Neolithic pottery becomes prominent at Tsushima sites from the early to the middle Jōmon Period. Raised linear design pottery stemming from Korea was found at Koshidaka and Koshidaka-ozaki Sites, Tsushima (MIYAMOTO 1990: 37-42; TANI 2004: 4) and at the Nokubi Site (Ojika Island, Gotō archipelago). On the other hand, a few pieces of Jōmon Period Todoroki B type pottery had been found at Dongsam-dong and Yondae-do Sites in Korea (MIYAMOTO 1990: 37-42; YI 1998: 62-95).

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The influence of Korean pottery on Japanese types was relatively strong (Figure 10.1). In the first half of the Middle Jōmon Period, the situation was still the same: middle Neolithic pottery was found at Meotoiwa Site, Tsushima; and a piece of Jōmon-type Funamoto pottery was found at Dongsam-dong Site in Korea. Interaction between the two areas probably was related to the search for large fish and sea animals in the Korean Straits. Further evidence for such interaction is the composite fish hooks and saw-shaped stone implements (harpoons), originating from Korea, found in Kyūshū during this period (see WATANABE 1985; TAKAKURA 1995: 39-43).

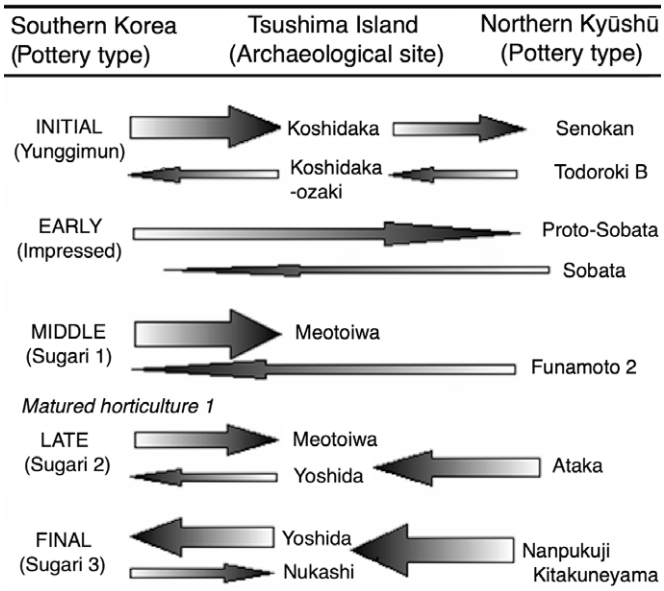


Figure 10.1 Reciprocal influences of pottery types between the southern Korean Neolithic and northern Kyūshū Jōmon via Tsushima Island

The movement of pottery increased even more from the end of the Middle Jōmon to the beginning of Late Jōmon, ca. 2000 BCE. Pottery of the late Neolithic of Korea was found at Yoshida and Nukashi sites, Tsushima (MIYAMOTO ed. 2004: 14-19; KANEGAE and MITSUJI 2004; TANI 2004: 4; SAKATA 1978: 82-88), whereas the Nanpukuji and Kitakuneyama types of Late Jōmon pottery, which date to the same period as the Final Neolithic of Korea, were found at Dongsam-dong Site in Korea. At the Yoshida Site, chipped obsidian raw materials have been unearthed (MIYAMOTO ed. 2004), similar to those from the Koshidake Site in Saga Prefecture, northern Kyūshū. As the same kind of obsidian products were, moreover, found at several sites in southern Korea, obsidian obviously was traded to the Korean Peninsula by Jōmon people.

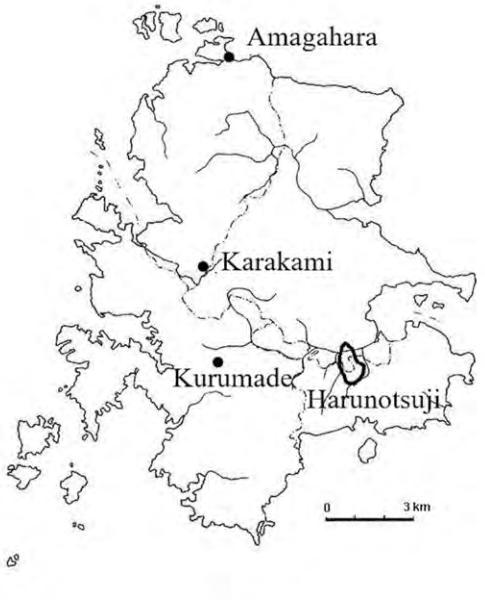
Interaction in the Bronze Age

After the Neolithic during the ensuing (K.) Mumun (coarse plain) pottery culture of Korea, polished stone tools begun to be used, while the import of chipped obsidian tools from northern Kyūshū came to an end. Mutual trading between the two areas ceased during this period. In Japanese reckoning, this applies to the latter half of the Late Jōmon and Final Jōmon Periods.

Instead, immigrations from the southern Korean Peninsula to northern Kyūshū triggered the emergence of the Yayoi culture, which is characterized by irrigated agriculture and which shows influences of middle phase Mumun pottery culture (MIYAMOTO 2016). Initial Yayoi dates from the 9th to the 8th century BCE (MIYAMOTO 2018), and some archaeological evidence of this period is apparent for Tsushima and Iki Islands. It is also the time that the Japonic language reached the Japanese Islands from its homeland in Northeast Asia via the Korean Peninsula (MIYAMOTO 2016).

The next stage of interaction between southern Korea and northern Kyūshū was reached when bronze weapons began to be exported to Kyūshū from the end of Early Yayoi to the beginning of the Middle Yayoi Period (ca. 300 BCE). This timing corresponds to the late Mumun pottery culture. Several early

bronze weapons were found at Harunotsuji Site on Iki Island. Late Mumun pottery was also found there. The distribution of Mumun pottery is limited to a certain area of the Harunotsuji Site. This indicates that immigrants from Korea inhabited only limited parts of settlements, separated from domestic Yayoi people. These immigrants may have been traders bringing bronzes to northern Kyūshū. In northern Kyūshū as well, some sites show similar structures. At the Yoshinogari or Habu Sites in Saga Prefecture, Mumun pottery finds also concentrate in certain parts of the settlement. This situation supports the assumption that immigrants resided there. These immigrants may be seen in relation to bronze production in northern Kyūshū, as early molds of bronzes had been found only at this kind of site (Kitakyūshū Shiritsu Kōko Hakubutsukan 1997: 17).



Map 10.2 Location of the main Yayoi sites on Iki Island

Interaction in the Early Iron Age

Settlement activity at Karakami Site began during the late phase of Middle Yayoi, as is obvious from Sugu II type pottery finds, and it continued until the end of the Yayoi Period. We have carried out excavations at this site during six seasons (MIYAMOTO ed. 2013; see also OKSBJERG 2007 and Chapter 9 herein). The site consists of a moated settlement less than 200 m in diameter. It is one of two Yayoi-period moated settlements on Iki Island. Another larger moated settlement has been excavated at Harunotsuji, a site which was continuously inhabited from early Yayoi to the early Kofun Period. Karakami Site is located in the northwestern part of Iki Island, a mountainous area (see OKSBJERG Chapter 9 herein). Harunotsuji, on the other hand, is located in the southeastern part of the island, where plains suitable for rice cultivation exist. Accordingly, Harunotsuji Site is supposed to be the center of the southeastern part of Yayoi-period Iki Island, while Karakami might have existed at the same time independently as a center of the island's northwestern part.

A hill forms the central part of the Karakami site, nowadays the location of Karakami shrine. The surrounding moat runs along the foot of the hill with a diameter of ca. 200 m in the north-south axis and ca. 100 m east-west. Yayoi-period structures continue far beyond the moat. In 1952, the Society for the Archaeology of East Asia in Japan (J. Tō-A Kōkogakkai) conducted an excavation at Karakami site. Two areas were examined. Excavation area No. 1 was located inside the moat on a gentle slope of the Karakami shrine hill. Excavation area No. 2 was located on the eastern slope of the hill near the moat (MIYAMOTO 2008b). This area yielded some pottery from Korea (Figure 10.2), while the excavation area No. 1 produced only a few fragments (MIYAMOTO 2008a: 8-10; TAKESUE 1991; OKSBJERG 2007: 11-13; see also Iki-shi Kyōiku Iinkai 2014).

One example found at the excavation area No.2 is a small pot fired by high temperature (Figure 10.2: center). The small pot probably came from the Chinese Lelang commandery, which was located in the Pyeongyang area of northern Korea (TANI and SAIKI 2008: 75). After comparing the specimen with other Lelang pottery, I came to believe that this piece dates from the 1st century BCE. It is contemporary with the Sugu II pottery type, which belongs to the late phase of the Middle Yayoi Period.

Figure 10.2 Lelang and Samhan pottery

A piece of gray pottery (Figure 10.2: right) also seems to come from the southern Korean Peninsula. This type is called Samhan pottery in Korea. According to my chronological estimates (MIYAMOTO 2023: 219-234), it dates from the 1st century CE. The origin of the red pot (Figure 10.2: left) is difficult to identify. There is no similar example from a Yayoi context. Petrological analysis indicates parallels to Korean pottery instead, so this specimen might also have come from Korea in the final Yayoi Period (TANI and SAIKI 2008: 75; MIYAMOTO 2008b: 93; KANEGAE and MITSUJI 2008). It is inferred that this specimen came from the Chinese Daifang commandery, which was founded south of the Chinese Lelang commandery at around 200 CE.

Besides Korean pottery, much Itoshima-style Sugu-type pottery has been found, coming from the Itoshima area (the old Ito-koku), a peninsula lying north-west of Fukuoka City, as well as pottery in a style typical for the eastern part of the Onga River basin in Fukuoka Prefecture. This result was proved by the petrologic analysis of pottery found in Karakami site (ISHIDA et al. 2011). This means that the Karakami excavations produced a lot of pottery brought in from outside of Iki Island. Interaction of the Karakami people, therefore, was not only on-going with the Korean Peninsula but also with northern Kyūshū, especially with Itoshima and the eastern part of Onga River basin. This situation is also seen at Harunotsuji Site. But Harunotsuji Site has found much Fukuoka Plain style of Sugu-type pottery from the Na-koku area, as well as Korean pottery. Both settlements were important locations with regard to the interaction between the Korea Peninsula and northern Kyūshū.

The results of flotation carried out during our excavation at Karakami Site indicated the existence of many wheat grains and a few rice grains (see TAKAMIYA 2008: 114-119). This situation is very rare in Yayoi sites of western Japan, where the staple food was rice. The fact that there was much wheat rather than rice indicates that subsistence activities of Karakami site was very similar to that of Korean Peninsula at the same time.

Many bone tools, used for collecting ear shells (abalone), have been found at Karakami and Harunotsuji Sites. Such tools are also known from Neuk-do Site, located on a small island at the coast of southern

Korea. Neuk-do is supposed to have been a key settlement for the interaction between the Korean Peninsula and the Japanese Islands. The site yielded a small amount Lelang pottery and a substantial amount of Yayoi pottery or modified Yayoi pottery. The shell midden at Karakami site produced many fish bones, indicating that fishing comprised part of the subsistence activity of the inhabitants. The people of Karakami Site are believed to have been fishermen, navigating their boats to the Korean Peninsula or to northern Kyūshū.

Karakami Iron Furnaces

We discovered the first ever iron furnaces that had been constructed on the ground surface with clay walls and bellows during excavations at Karakami Site, conducted since 2008 by the Department of Archaeology, Kyūshū University (MIYAMOTO ed. 2013, MIYAMOTO 2023) and Iki City Educational Committee [J. Iki-shi Kyōiku Iinkai]. This new type of furnace was found in concentration only on the southern slope of the moated village at Karakami Site.

Two furnaces were found with a clay wall and bellows on the floor of pit-houses dating to the end of the Middle Yayoi Period, around the 1st century BCE. This new type of furnace is different from usual *forging* furnaces in the Yayoi Period, which have a shallow pit without bellows or a clay wall.

Figure 10.3 Pit house No. 1 at Karakami Site

Figure 10.4 Furnace No. 3 at Karakami Site

Two furnaces were also found in Pit House No. 1 (Figure 10.3). One was constructed with a clay wall on the floor of the pit-house dating to the early phase of the Late Yayoi Period, around the 1st century CE. Another was constructed with a clay wall in the fifth layer during the latter phase of the Late Yayoi Period after the abandonment of Pit-House No. 1, around the 2nd century CE. Furnace No. 3 was also constructed with a clay wall on the surface during the Late Yayoi layer, around the 1st to 2nd centuries CE (Figure 10.4). We also found a bellows tube (Figure 10.5: no. 521) near this type of furnace on the surface of the layer dating to the Late Yayoi Period.

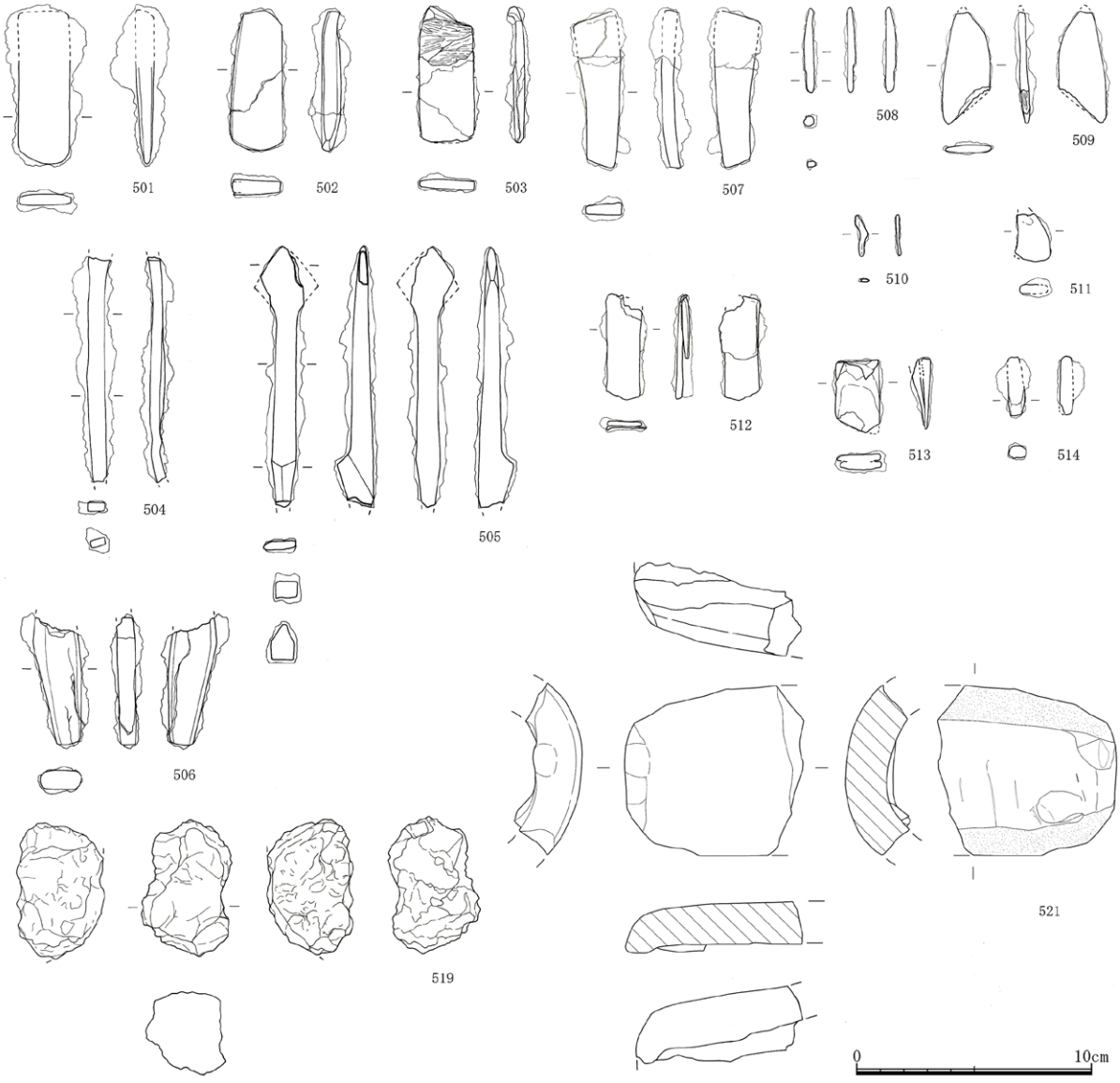


Figure 10.5 Iron ingots and artifacts from iron furnace

At Karakami, flat pieces of iron (Figure 10.5: nos. 501~503) and fragments of cast iron were also found along with a large quantity of stone tools (KAMIJO et al. 2008; MORI 2011) related to the production of iron tools. In addition, we also found iron bars (Figure 10.5: nos. 504~506) and a piece of furnace clay wall (Figure 10.5: no. 519) near the furnace at this site.

From Cast Iron to Wrought Iron

It is supposed that flat iron pieces and bars at Karakami were the raw materials for iron *forging* to produce iron tools and weapons. Given the different structure of the furnace on the surface, with the bellows along with the lack of iron slag and cut iron fragments, it is probable that this type of furnace was used for the production of wrought iron by *decarbonizing* cast iron. This decarbonizing technique of making wrought iron from cast iron has been successfully demonstrated through experimental

archaeology (SAITŌ 2012). Figure 10.6 shows a reconstruction of the furnace on the surface with a clay wall and with a tuyere inserted for the bellows. Experimental archaeology shows that this type of furnace is able to produce raw material for wrought iron on the bottom after putting cast iron on the top of the furnace. This type of furnace can also be used to decarbonize cast iron by sending in air and producing wrought iron. It is conjectured that flat iron and iron bars of wrought iron were produced using this type of furnace constructed on the surface with a clay wall and bellows. It is thought that flat iron originates from iron ingots used during the Yayoi Period at *forging* furnaces to produce iron tools and iron weapons. Flat iron (Figure 10.5: nos. 501~503) was made from wrought iron ingots produced by *decarbonizing* furnaces such as these at Karakami.

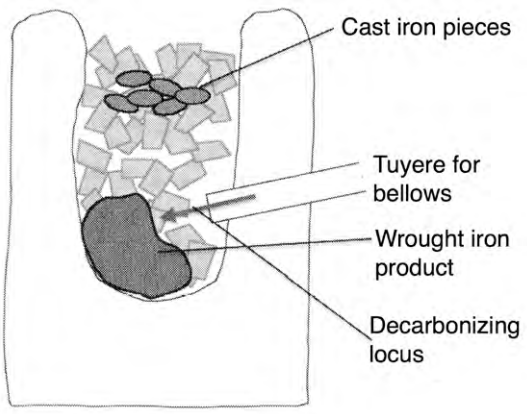


Figure 10.6 Experiment in low-temperature technique for decarbonizing cast iron

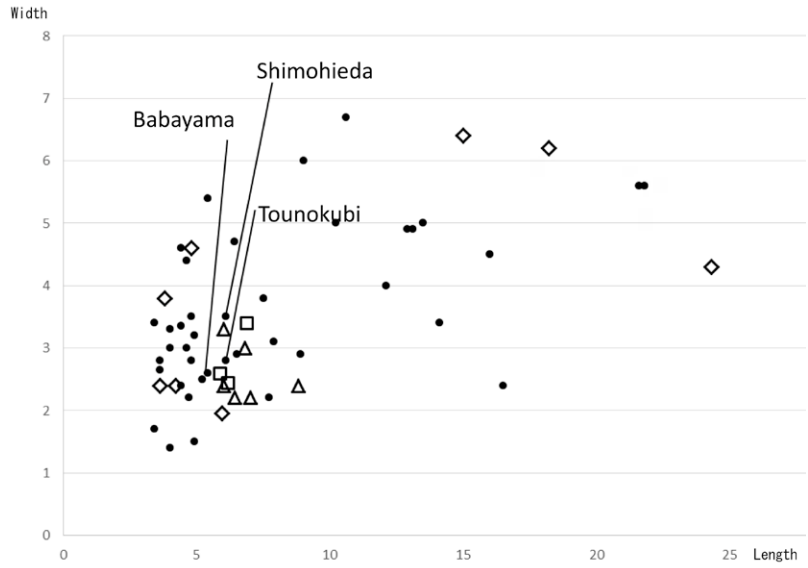


Figure 10.7 Comparing length and width of flat irons

□ Karakami Site, △ Itoshima area, ◇ Fukuoka Plains

Figure 10.7 shows the relationships between the length and width of flat iron pieces found in the northern Kyūshū area. When comparing the forms of flat iron found in northern Kyūshū during the Yayoi Period, the same form of flat iron as that found at Karakami site is only found in the Itoshima area or the eastern part of Onga River basin—but not on the Fukuoka Plains. The form of flat iron from Shimohieda Site and Babayama Site in the eastern part of the Onga River basin is very similar to that at Karakami Site, as shown in Figure 10.7. In addition, pottery from the Itoshima area and the eastern part of Onga River basin of the Middle Yayoi Period is found at Karakami Site, although pottery from the Fukuoka Plains has not been found at this site through petrographic analysis (ISHIDA et al. 2013). Therefore, it is believed that flat iron from wrought iron ingots, produced by decarbonizing cast iron in furnaces on the surface, was exported from Karakami Site to the Itoshima area or the eastern part of Onga River basin.

On the other hand, there was no trading of wrought iron ingots between Karakami Site on Iki Island and the Na-koku area of the Fukuoka Plains. This means different trading networks existed between the Itoshima area and Fukuoka Plains during the Yayoi Period, despite the two areas being adjacent to

each other. In addition, Karakami site played a role as an intermediate trading spot between the Korean Peninsula, containing the Lelang administration office, and northern Kyūshū encompassing the Itoshima area and the eastern part of Onga River region. This is the reason why Lelang pottery from northern Korea and Saman pottery from southern Korea has been found at Karakami Site. The existence of pottery jars from Itoshima and the eastern part of Onga River basin at Karakami Site also suggests trading took place between Karakami Site and those areas of northern Kyūshū.

Conclusion

Karakami Site is a very unique site dating from the end of the Middle Yayoi Period (1st century BCE) to the end of the Late Yayoi and the early Kofun Period (3rd to 4th centuries CE). Much of the pottery unearthed at Karakami was made in, or influenced from, other areas such as Lelang, the three Han (K. Samhan), Itoshima, or the eastern part of the Onga River area. Therefore, we suggest that Karakami was a prominent place of interaction between Korea and northern Kyūshū. In addition, it is possible that Karakami inhabitants manufactured iron tools, or remade iron materials imported from the Korean peninsula, for export to northern Kyūshū or areas further away on the Japanese archipelago.

We had two hypotheses regarding the nature of the iron production system during the Yayoi Period: one is full-scale iron production which includes the above three steps of iron production (wrought iron ingots > flats and bars > forging of iron utensils), while the other is a capability limited to the forging of iron utensils from flats and bars. After the discovery of a furnace constructed on the surface with a clay wall and bellows at Karakami Site, it is probable that both hypotheses are possible (MIYAMOTO 2023). That is, flat iron made of wrought iron was produced by decarbonizing cast iron through a new type of furnace constructed on the surface with a clay wall and bellows at Karakami Site. And iron tools and weapons were produced in western Japan at forging furnaces using iron raw materials imported from the Korean Peninsula or using flat iron from Karakami Site. Karakami Site in the latter half of the Yayoi Period served as an intermediate trading spot between the Korean Peninsula and northern Kyūshū. This means that long-distance trading started from the end of the Middle Yayoi Period in northern Kyūshū at the same time as the establishment of the Lelang administration office, in the 1st century BCE (Figure 10.8).

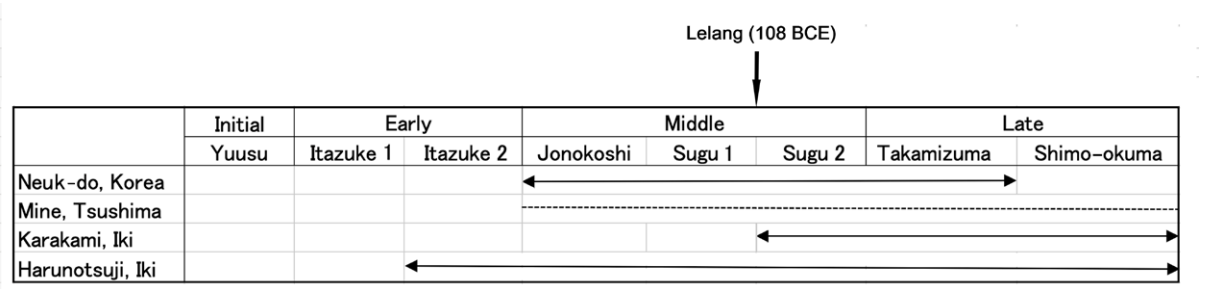


Figure 10.8 Duration of trading center sites across Yayoi-period phases and pottery types

This trading network via the intermediate trading spot of Karakami Site encompassed the Itoshima area and the eastern part of the Onga River basin. On the other hand, it is likely that the Fukuoka Plain had another trading network which was different from the trading network of Karakami Site—that is, the trading network operated via Harunotsuji Site on Iki Island.

Karakami apparently was an intermediate trading center for iron materials or tools as well as cereals such as wheat and rice, and it seems likely that the fishermen of Karakami conducted the intermediate trading. Possibly historically significant is the fact that the beginning of this site coincides with the establishment of Lelang. Moreover, it is important to note that the dating of Karakami Site is relatively later than the Neuk-do Site in Korea, which also was a trading center and yielded a lot of Sugu-type pottery (Figure 10.8). After Lelang was established and the Neuk-do settlement had vanished, the intermediate trading between the Korean Peninsula and northern Kyūshū started to be carried out through Karakami Site. Karakami, as well as Harunotsuji, played an important role regarding the north- and southbound trading that connected northern Kyūshū with Samhan-period Korea. This is an important phase within the progress of interaction, even before direct trading started between Yamato and Gimhae in the first half of the Kofun Period. After state formation processes started, the interaction between the two areas was administered officially through the executive bodies of the ancient countries.

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CHAPTER 11

TSUSHIMA AS 'BOUNDARY'

TAWARA Kanji 俵寛司

Translated by Barbara SEYOCK

Examining the internal and external history of the channel that separates Japan and Korea, Tsushima Island (Japan) holds a distinctive position. After almost 140 years have passed since the formation of nation states in modern East Asia, Tsushima still seems to be recognized as 'boundary'. However, recent publications stress that, in spite of the changed appearance of Tsushima in modern ages and despite the paradigms of Japanese archaeology, from a social and economic history perspective there has been a close relationship between peninsular and archipelagic cultures. Based upon specific archaeological data, therefore, the 'boundary' nature of Tsushima has to be reconsidered.

Keywords: Japanese archaeology, Yayoi Period, excavation, island archaeology, Tsushima, border region, pottery, iron, iron-working, bronze, maritime trade, exchange

Introduction

Tsushima is a 'boundary' island of Japan, constituting the Japanese territory lying nearest to the Korean Peninsula (Figure 11.1). It is a well-known fact that the island had played a very important role in the history of East Asia. The distance to Fukuoka City (Kyūshū, Japan) is ca. 120–160 km, but to Busan City (Korea) it is only about 49.5 km. Tsushima Island (Tsushima City, Nagasaki Prefecture) is about 82 km long; 90% is covered by deep forests and steep mountains. Only a few small areas are suitable for farming and paddy fields, but the island is rich in mineral resources, such as silver and precious stones. The extensive coastlines and countless bays allow exploiting marine resources and, moreover, provide a means of contact around the island and beyond.

This paper aims to contribute to an alternative history of the cultural interaction between Korea and Japan based on new archaeological data from Tsushima Island. The first part of this paper offers a brief history of Tsushima archaeology from the 19th to 20th centuries; the second summarizes two excavations in Miné Town, Miné Ward: at the Miné and Idé Sites, located in the northwestern part of Tsushima Island. They are recently discovered settlement sites connected not only to the Yayoi culture of Japan, but also to Bronze Age and early Iron Age cultures of the Korean Peninsula (late 1st millennium BCE to mid-3rd century CE). The third part of this paper attempts to show how Tsushima had played an autonomous role in the cultural interaction between Korea and Japan

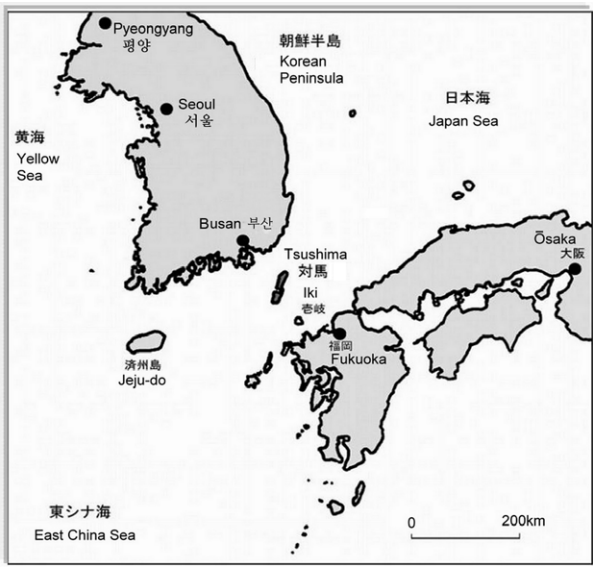

Figure 11.1 Location of Tsushima Island

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during the period under discussion, based on an analysis of archaeological data. Topics to be addresses are the research history, settlements, and site clusters of Miné Ward, ceramic production and exchange system, the beginning of iron forging and associated exchange between the Peninsula and the Archipelago, and a consideration of the nature of social complexity in Tsushima as a 'boundary' area.

A Brief History of Tsushima Archaeology

Prior to World War II: from 1867 to 1945

After the end of the Edo Period (1603–1868) and the beginning of the modern state of Japan (Meiji Period, 1868–1912), the formerly prosperous Tsushima Island was reshaped into a major fortress aiming at controlling the Korea Strait (Figure 11.2). In 1872, military forces of the Japanese Empire took over the command of the island in order to strengthen the border defenses against foreign states (such as Russia). Such domination prevented Tsushima from any development towards modernization for more than seventy years.

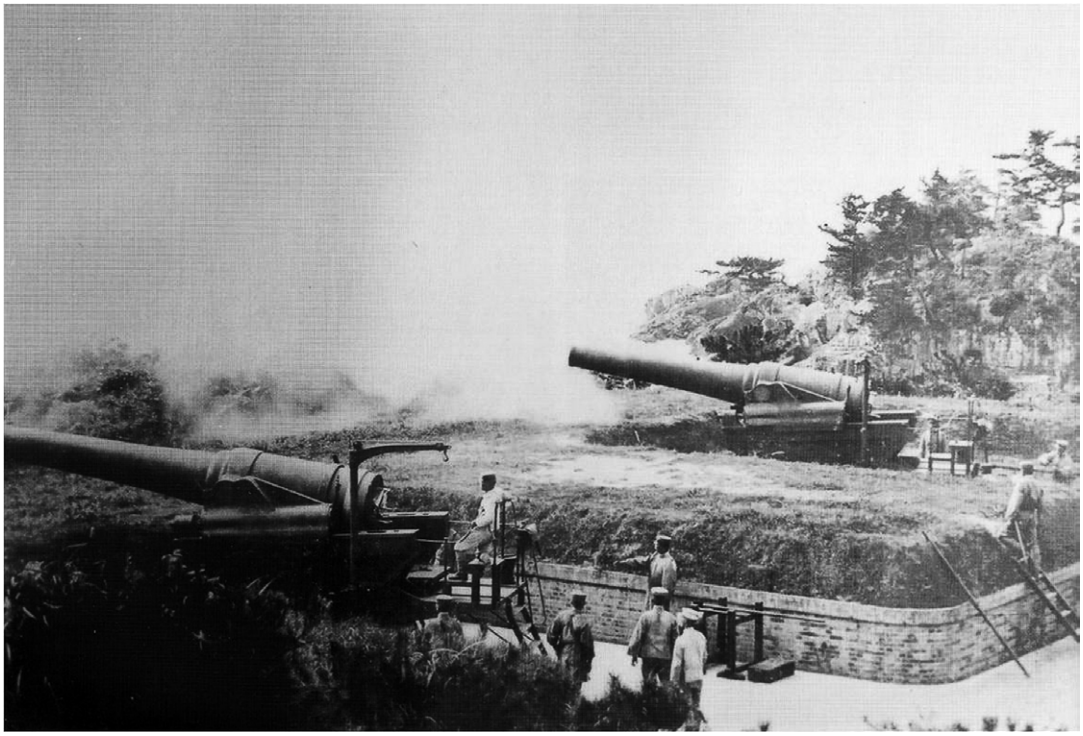

Figure 11.2 Tsushima fortress, early 20th century

Meanwhile, archaeology in a European fashion entered Japan in the late 19th century (see Part III, this volume). From the beginning of the 20th century, the new generation of Japanese archaeologists expanded their research interests beyond the Japanese Archipelago towards Korea, China, and Southeast Asia, paralleling the political and economic expansion of imperialistic Japan until the end of World War II.

Following WWII: from 1945 to the 1950s

Japanese archaeologists lost access to their continental fields of survey in China and Korea after the end of World War II. In 1948, members of the Far-Eastern Archaeological Society (*Tō-A Kōkogakkai*) surveyed many archaeological sites and cultural relics on Tsushima Island (MIZUNO 1953). Despite the growing

interest in the island, Tsushima was considered a culturally backward area, due to the limited materials. In 1950 to 1951, the 9th Academic Society Union carried out several interdisciplinary campaigns (area studies) on Tsushima Island (e.g., Kyū-gakkai Rengō 1954). These campaigns were also related to the activities of the Committee of Social Science and Humanities (Nihon Jinbun Kagaku-kai 1951), which was installed by the Japanese Government under the General Headquarters (GHQ) of the US. Members of the Society for Japanese Archaeology (*Nihon Kōkogakkai*) as well as of the Far-Eastern Archaeological Society, moreover, participated in this project and excavated several archaeological sites. These activities contributed to establish the perception of Tsushima as a national boundary between Korea and Japan after World War II, going beyond the cultural-historical paradigms of Japanese archaeology. Academic considerations were generally omitted within the pressing political and territorial agendas of Japan in 1945 to 1950 (see TAWARA 2008).

The Era of Economic Growth: from the 1960s to the 1980s

From the 1960s, archaeological investigations in the island were carried out mainly by academic archaeologists from mainland Japan. University staff used to cooperate with the prefectural board of education in the respective region. Japan was in the middle of a high economic growth phase, and archaeological research was restructured and designed into a management system for cultural heritage, incorporating many local governmental archaeologists. These circumstances influenced the study of the materials from Tsushima Island. There were still large gaps between mainland Japan and the island concerning economy and political power, and this is reflected in archaeological interpretation. National politics and local ethnocentrism resulted in discussing the relationship between the two nations 'Japan' and 'Korea'. Even though Japanese scholars cooperated with Korean scholars in this period, there was no space for considering that Tsushima Island played an independent role and followed its own path through a unique history.

Since the 1990s (after the Cold War)

Archaeological activities suffer from cultural-political agendas in a post-colonial situation of globalization vs. localism and colonialism vs. nationalism. We need to reconsider our interpretations and use our archaeological knowledge appropriately within the specific socio-historical contexts. Aimed at contributing to such agendas and achieving an alternative history of the Tsushima-Korea straits area, I will now analyze new findings and use scientific methods to prepare the path for a future 'Tsushima archaeology'.

Recent Discovery of Settlement Sites in Tsushima Island

Miné Site

The Miné Site (also called Yanbe by the local people, Figure 11.3: 14) is located in Miné Ward in the north-western part of Tsushima Island (Miné Town, Tsushima City, Nagasaki Prefecture). Situated on a low plateau beside the upper Miné River and enclosed to the other side by a horseshoe-shaped mountain-foot, the site covers most of the area of a former small agricultural hamlet. The length of the hill is about 160 m, the width is about 60 m, and the height is 8 to 25 m above sea level. The northern part of this area covers the former paddy fields of the hamlet; a small shrine is situated nearby, the Hachiryū-den (Eight Dragon Shrine), dedicated to the spirits of the water.

Since the discovery of this site in 1995, several archaeological excavations were carried out around this area by the Miné Town Board of Education (Figure 11.4). As a result of the November 1999 to March 2001 campaign, many important archaeological features and relics were revealed, such as huge

amounts of pottery of both Japanese and Korean types (Figure 11.5)—as well as iron artifacts, stone tools, and glass beads—and dwellings and pits (Figure 11.6). These materials mainly belong to the pre- and proto-historical ages, paralleling the Yayoi to Kofun Periods in Japan, and giving evidence of what was thought to be a central place of the 'country of Tsushima' described in the Chinese historical text *Weizhi* in the mid-3rd century CE.

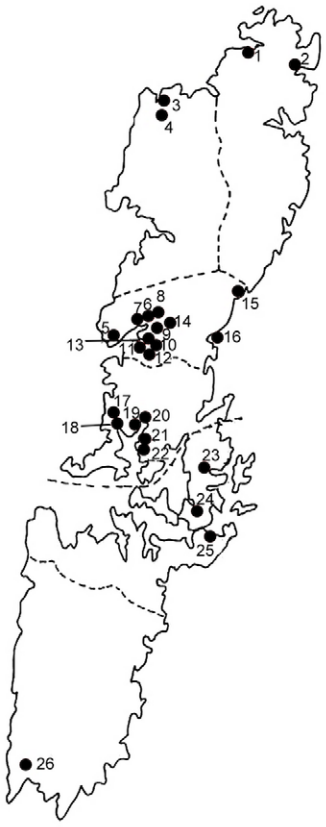

Figure 11.3 Map locating Yayoi period sites in Tsushima

1 Kyonokuma, 2 Tōnokubi,
3 Kubiru, 4 Shiratake, 5 Kisaka,
6 Kami-gayanoki, 7 Shimogaya-noki, 8 Sakadō, 9 Takamatsu-nodan, 10 Mōkozuka, 11 Ōtawara,
12 Ōtawara-yamoto, 13 Ebisu-yama, **14 Yanbe**, 15 Shiinoura,
16 Koshōjima, 17 Shigenodan,
18 Karasaki, 19 Kurokibana,
20 Saboura-akasaki, 21 Nukano-hama, 22 Higashinohama,
23 Yoshigaura Cave,
24 Tamatsuke-hanatenbo,
25 Kagaribana, 26 Otekata

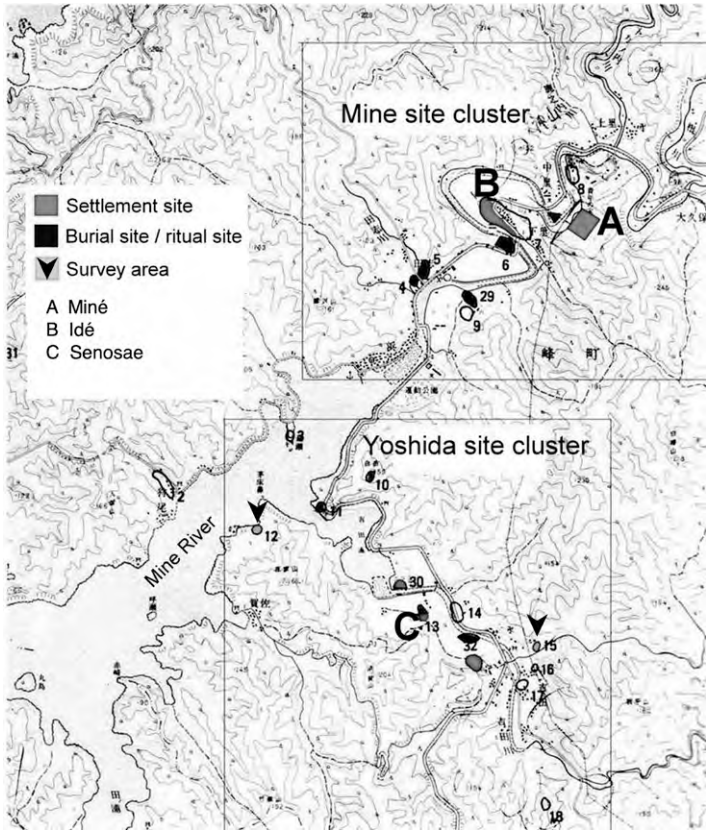

Figure 11.4 Map showing the site distribution of phase I-II

A: Yanbe Ward, 1999–2003 campaign
B: 2002 campaign
C: 2003 campaign

Miné site cluster and Yoshida site cluster locations:
1 Kisaka, 2 Kario, 3 Nagase, 4 Shimo-gayanoki,
5 Kami-gayanoki, 6 Sakadō, 7 Ide, 8 Mine Public Hall,
9 Shiotsubo, 10 Shiratake, 11 Chigonohana,
12 Shiraboshi, 13 Tōtogo-yama, 14 Yoshida,
15 Amano-moroha Shrine ruins, 16 Yoshida-hōkyō'intō,
17 Yoshida-yakata ruins, 18 Tominosae, 29 Takamatsu-nodan, 30 Ebisuyama, 31 Kisaka Kaijin Shrine, 32 Ōtabaru-yamoto

(Cf. Mine-chō Kyōiku Iinkai (ed.) 1990, 1993, 1995, 1998, 2003a, 2003b)

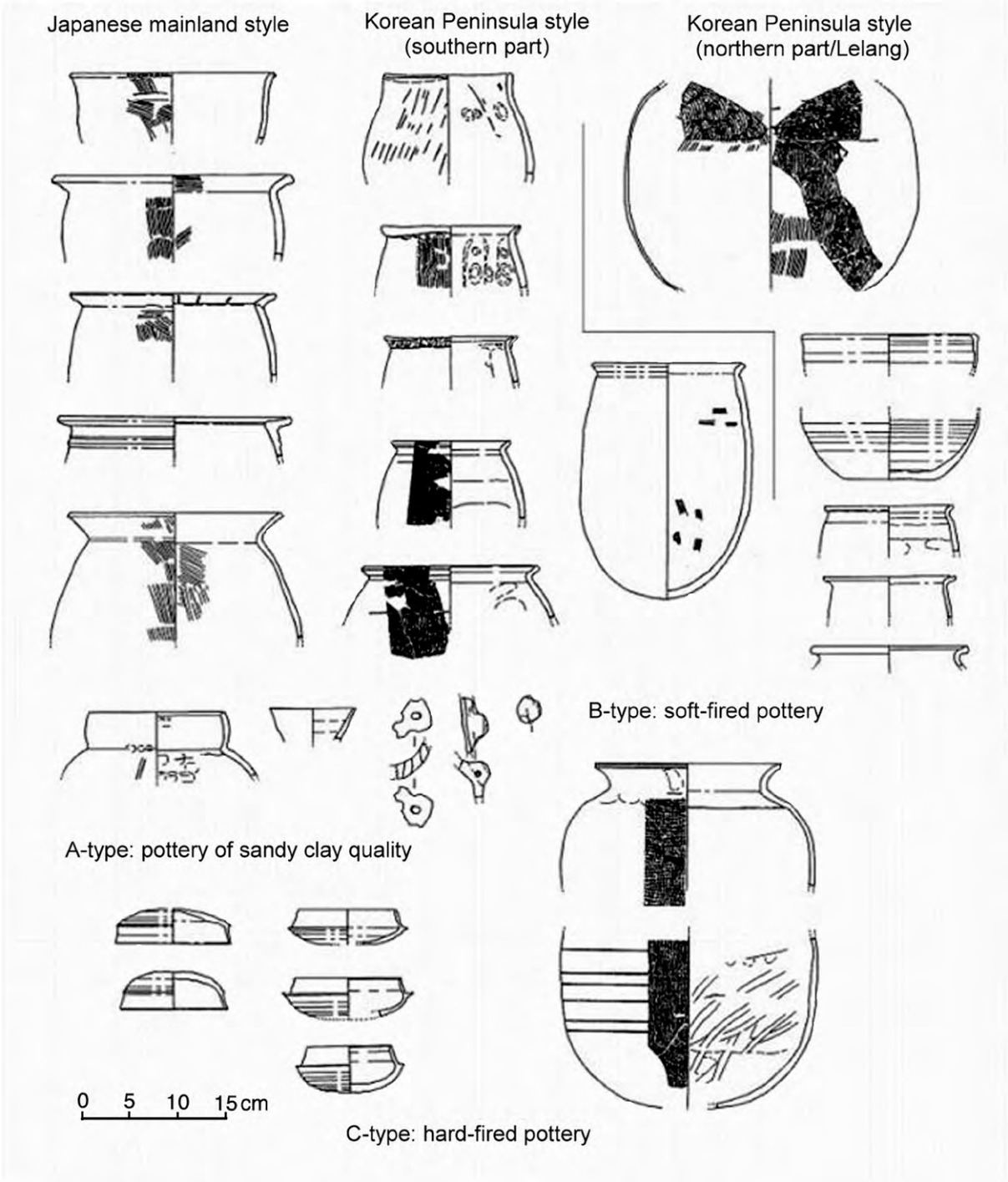

Figure 11.5 Pottery and stoneware from the Miné Site

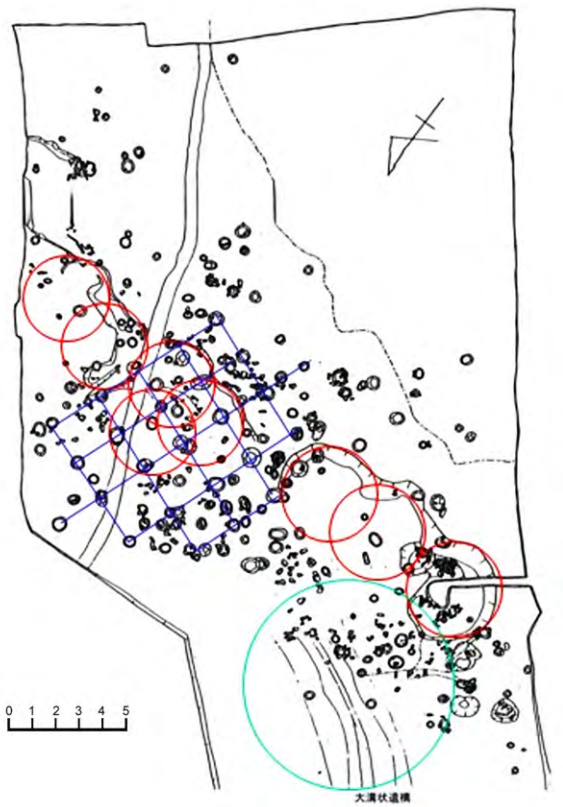

Figure 11.6 Features of location No. 6, Miné Site (Yanbe). The circles indicate the likely location of house pits. The larger circle indicates the distribution area of artifacts probably coming from the ditch. The gridded post holes indicate a larger storage facility.

Idé Site

Not far away from the Miné Site, the Idé Site is located on a low platform between paddy fields and a hill (Figure 11.7). In the mid-1950s, many pieces of Yayoi pottery were found by local people. Later, ABIRU Yoshihiro and NAGATOME Hisae carried out the first archaeological excavation in 1959 (MANO 1974), with ABIRU publishing a synthesis in 2001.

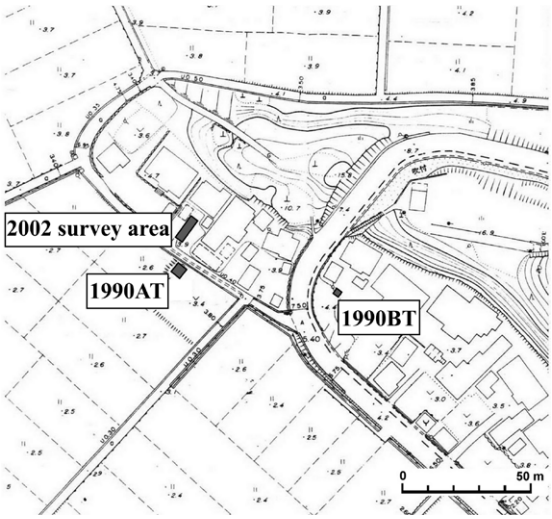

Figure 11.7 Investigated locations at the Idé Site

In 1990, the Miné Town Board of Education and the Ehime University (SHIMOJŌ Nobuyuki) carried out the 2nd archaeological excavation at Idé in order to shed light on the pottery in its archaeological context and to examine the early farming culture (Mine-chō Kyōiku Iinkai 1990). At Loc. 1990AT, many pieces of Yayoi pottery were recovered from the Layers 4 to 11. It is of special importance that Early Yayoi pottery from Japan (Itazuke type I and II) and early Mumun pottery from Korea were revealed together in Layers 7 and 8 (Figure 11.8).

In 2002, the Miné Town Board of Education carried out the 3rd archaeological excavation here in international project cooperation with the Dong-A University, Busan, Korea (Mine-chō Kyōiku Iinkai 2002, 2003). The variety of pottery excavated from layers 1 to 8 can be summarized as follows:

Cluster I (Layers 6-8): Final Jōmon/Earliest Yayoi (Japan) (Figure 11.8: 1~5, 9, 10), and early Mid-Mumun (Korea) (pre-Songuk-ri type (Figure 11.8: 6, 7).
Cluster II (Layers 6-7): Early Yayoi (Japan), and early half of Late Mumun (Korea) (Figure 11.8: 11)
Cluster III (Layers 5-6): Middle Yayoi (Japan) and latter half of Late Mumun, *wajil* (soft-fired) pottery of the Proto-Three Kingdom Period (Korea).
Cluster IV (Layers 5-7): Early Kofun (Japan) and Three Kingdoms (Korea).
Cluster V (Layers 1-4): Middle Age and Early Modern Period (ceramics made in Korea, China, and Japan).

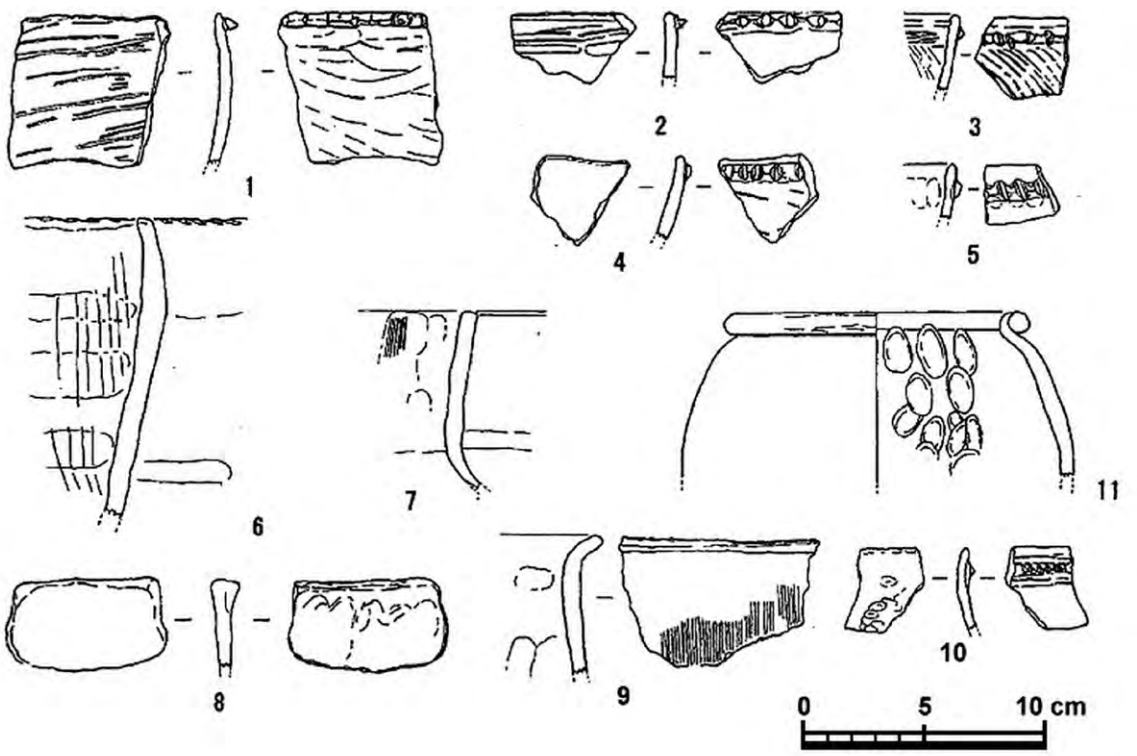

Figure 11.8 Pottery from the Idé Site

1~8: from Layer 8; 9~10: from structural remains; 11: from Layer 7

Pottery Chronology of Tsushima Island

Summarizing the results of excavations at settlement sites such as Idé and Miné, where both Japanese and Korean specimens have been found, the pottery chronology of Tsushima Island during the pre- and proto-historical age (the Yayoi Period in the Japanese system, Figure 11.9) can be classified into five phases, correlated to the mainland Japan archaeological scheme:

- Phase I: Final Jōmon/Earliest Yayoi to the Early Yayoi Period: 1st millennium BCE.
- Phase II: Early to late Middle Yayoi Period: 3rd to the early half of the 1st centuries BCE.
- Phase III: Final Middle Yayoi to beginning of Late Yayoi Period: early half of 1st century BCE to mid-1st century CE.
- Phase IV: Early to late Late Yayoi Period: late 1st century CE to early 2nd century CE.
- Phase V: Final Yayoi to beginning of Kofun Period: late 2nd century CE to the mid-3rd century CE.

This chronology is based on cross-dating of pottery in Tsushima Island, the material coming mainly from burial sites; material corresponding to phases I and II, however, is mainly from settlement sites. Especially the Korean middle Mumun pottery (Songuk-ri type) from Miné Site (see Figure 11.6) fits well into a gap between the Idé Site's clusters I and II, so these types should be included into phase I. It is possible to further divide this early phase into two sub-phases, Ia (Yamanotera/Yu'usu type and Itazuke-I type) and Ib (Itazuke-II type). Even earlier sub-phases are suggested by the archaeological complex of Idé Site, relating to the early Mumun pottery finds from the 1990 campaign and with regard to the Late Jōmon or final Neolithic pottery from Korea as seen in Layer 8 (e.g., Figure 11.8: 8).

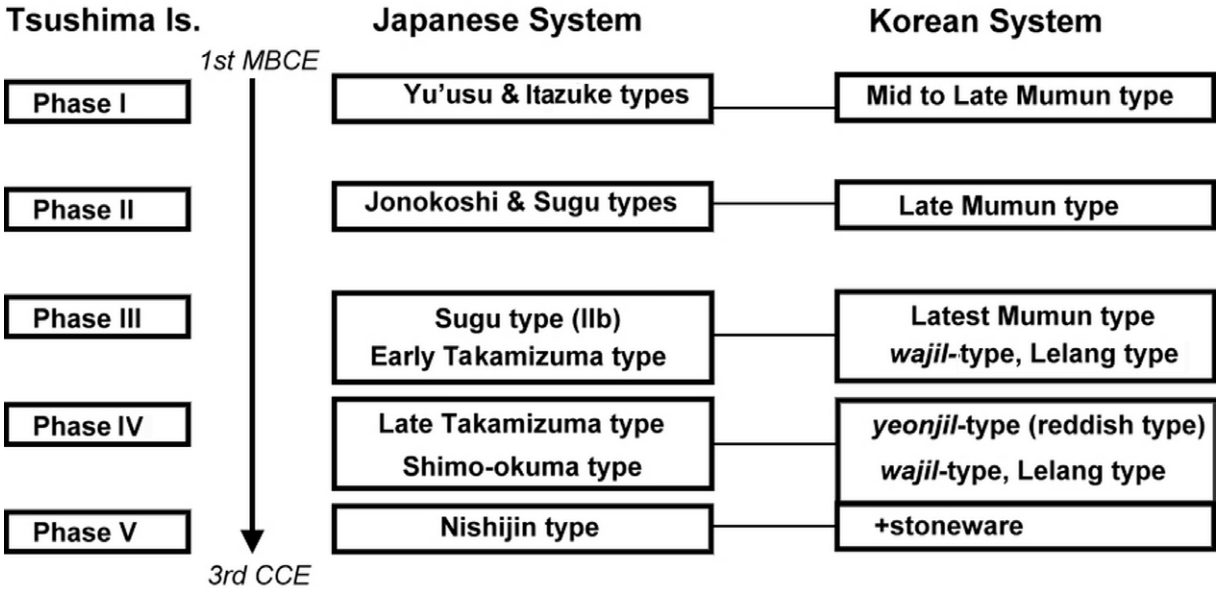

Figure 11.9 Pottery chronology of Tsushima Island from the 1st millennium BCE to the 3rd century CE

Modelling the Settlement Patterns of Tsushima Island

In order to clarify the settlement patterns of Tsushima Island we can make use of the archaeological sites in the Miné Bay area at the southwestern coast of the island, which include two districts, Miné Ward (in the north) and Yoshida Ward (in the south). This area was densely populated in pre- and proto-historic ages. The site distribution by phases can be summarized as follows (letters and numbers correlated with Figures 11.4, 11.10, 11.11; Phase is abbreviated as P below, as it includes both Yayoi and Korean potteries):

Phase I–II: Settlement sites are usually located along the upper courses of rivers. In Miné Ward, the Miné (A) and Idé settlements (B) sprang up along the Miné River. In Yoshida Ward, along the Yoshida River, the Yoshida settlement (14) continued through from the Jōmon Period, and the Otabaru (32) and the Senosae settlements (C) came into being. On the other hand, there are only a few burial sites, such as the Otabaru-oka Site close to the Otabaru settlement site.

Phase III–V: Settlement sites can be found in the same locations as in phase I–II. Numerous burial sites are spread in the vicinity of the settlement sites near Miné Bay. A strong burial site cluster is extant in Miné Ward, including the Kami-gayanoki Site (5) with a stratified cemetery, Shimo-gayanoki (4), Takamatsunodan (29), and Sakadō Sites (6). Miné (A) and Idé Sites (B) are thought to be the respective settlements. For this period, Yoshida Ward also has rich burials such as the Tōtogoyama (13), the Ebisuyama (30), and the Chigonohana Sites (13). The Yamoto (32) and Senosae Sites (C) are thought to be the respective settlements of these latter sites.

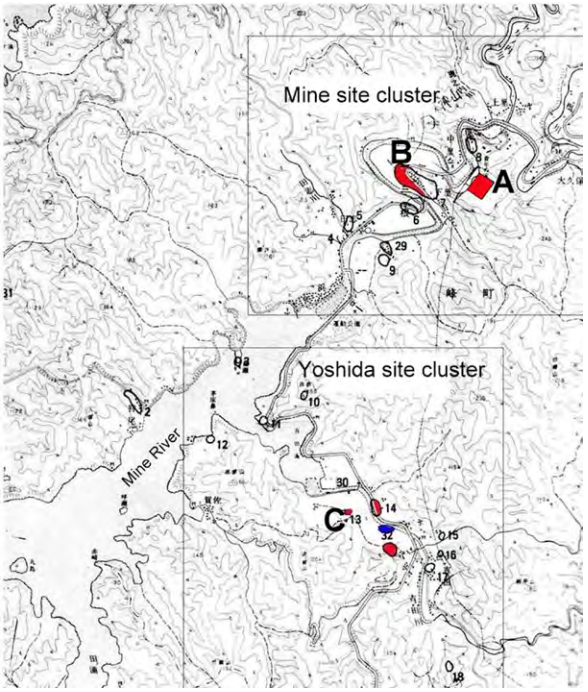

Figure 11.10 Phase I-II site distributions

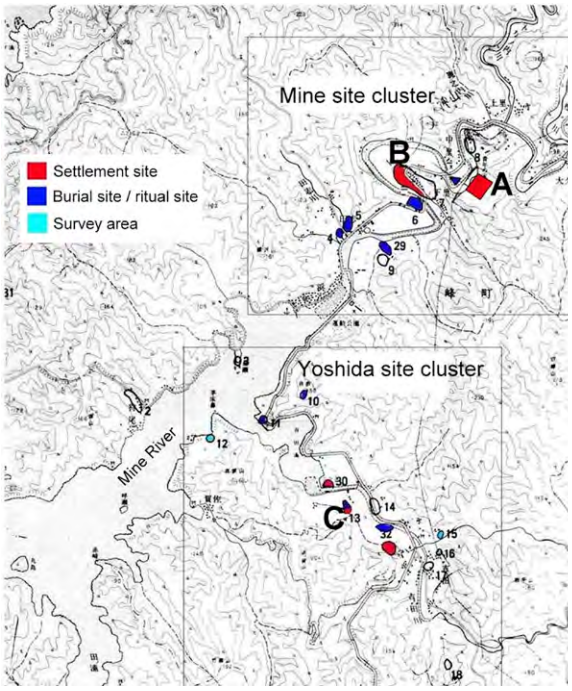

Figure 11.11 Phase III-IV site distributions

Numbered sites named in Figure 11.4. Note the increase in cemeteries in Phase III-IV.

The topographical situation of Tsushima Island is very restricted. The settlement cluster of the Miné Bay area (Figure 11.12), therefore, is considered a main factor for the interpretation of the pre- and proto-historic society of Tsushima Island. Does the settlement cluster indicate a small-scale community in Tsushima Island, due to limited space for agriculture and subsistence? How does this add up with the fact that huge amounts of artifacts had been discovered, imported into the Miné Bay area and other parts of the island during these periods, such as bronze artifacts from Korea—used as burial goods—and ceremonial bronze weapons from mainland Japan? The archaeological situation indicates that the various settlements along the river and in the bay area were not separated from each other, but that they shared the same cultural perception with regard to ceremony or mortuary ritual.

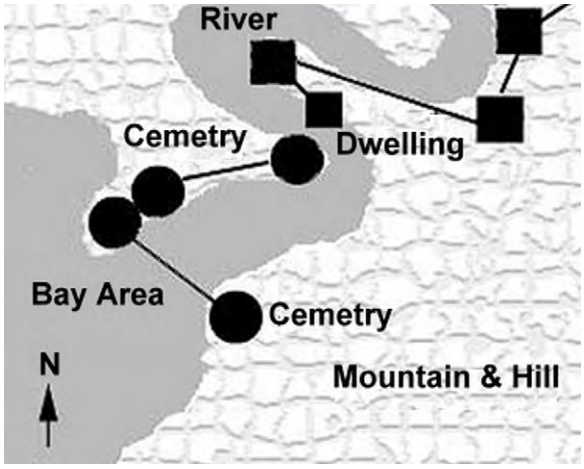

Figure 11.12 Spatial pattern of sites in northern Tsushima Island, Miné River area

Notice separation of dwelling and cemetery areas.

Significance of Artifacts from Settlement Sites in Tsushima Island

We can grasp the significance of the artifacts from settlement sites in Tsushima Island by using a statistical approach. The following analysis of items from Miné Site includes Kofun Period material (Figures 11.13~15); the Kofun Period is chronologically divided into phase KI (Early Kofun, late 3rd to

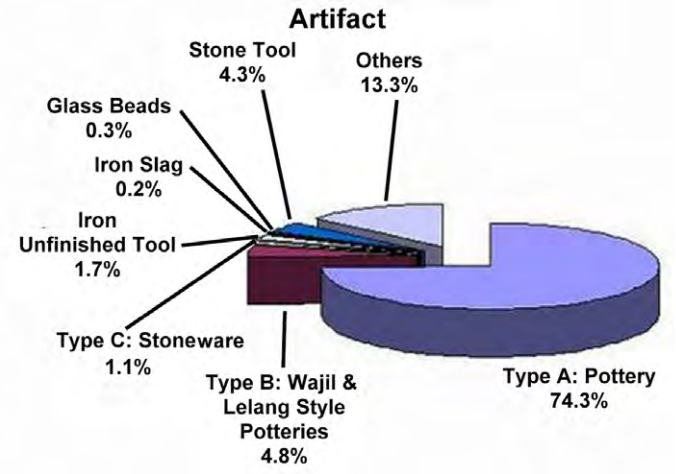

Figure 11.13 Proportions of different artifacts from the Miné Site

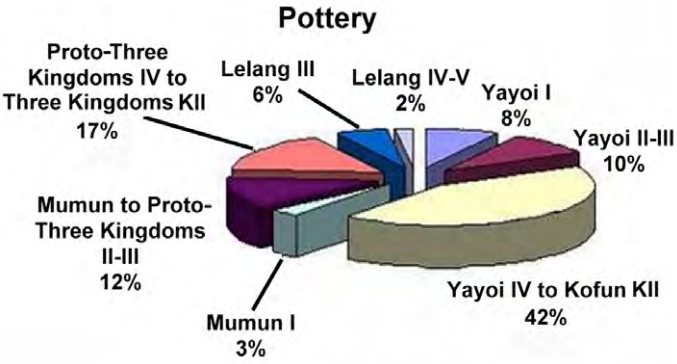

Figure 11.14 Proportions of pottery types

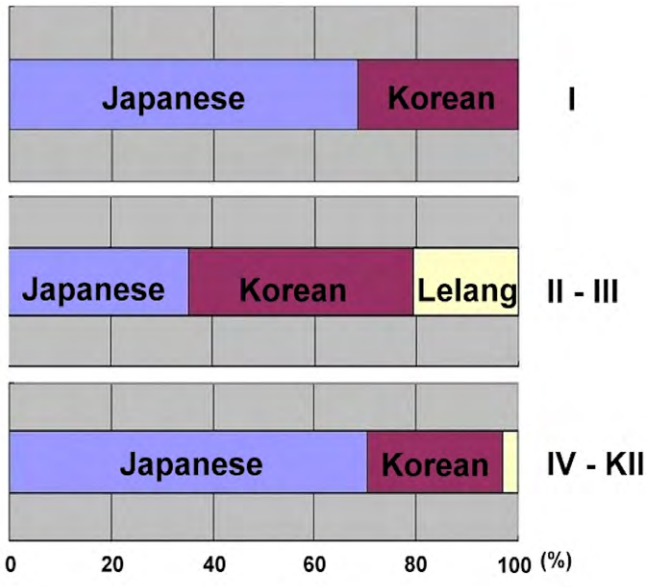

Figure 11.15 Distribution of pottery styles by phase (Loc. Nos. 6 and 7, Miné Site)

4th century CE), phase KII (Middle Kofun, 5th century), phase KIII (Late Kofun, 6th century), and phase KIV (Final Kofun, 7th century).

Considering the proportional share of different materials (Figure 11.13) it becomes clear that the most frequent item is the reddish to yellowish open-fired pottery (type A: 74.3%), which belongs in phases PI–V and the Kofun Period (KI–IV). It consists of both Japanese and Korean style pottery and is of a mixed style (KANEGAE 2007). The grey kiln-fired pottery is relatively rare (5.9%), consisting of *wajil* and Lelang-style pottery (type B: 4.8%) and stoneware (type C: 1.1%), all of which belong in phases PIII–V and the Kofun Period. Iron artifacts also need mentioning—including unfinished tools (1.7%) and iron slag (0.2%)—as well as stone tools (4.3%), including those for iron working. No bronzes have been reported from this dwelling site.

Focussing on the pottery types extant in Miné site (Figure 11.14), the statistics show that the majority of items belongs to Japanese-style pottery of phase PI (8%), phase PII to III (10%) and phase PIV to KII (42%), all in all 60% of the whole assemblage. The remaining 40% consist of Korean-style pottery. Arranged according to phases (Figure 11.15), the following tendencies in pottery usage emerge:

Phase I: Japanese Yayoi-style pottery (type A) makes up about 68 %; the rest is Korean Mumun-style pottery (type A).

Phases II-III: Korean Mumun-style and Proto-Three- Kingdoms-style (types A and B: 42%) and Lelang-style (type B: 21%) together make up the majority; Japanese Yayoi-style pottery (type A) makes up 37 %.

Phases IV-KII: Japanese Yayoi-style and Kofun-style pottery makes up a strong majority of about 70% (mostly type A); the rest is comprised of Korean Proto-Three-Kingdoms and Three-Kingdoms-style pottery (types A and C) and Lelang-style pottery (type B).

Conclusion: the Early Iron Age Society of Tsushima Island

Before the discovery of the settlement sites in Miné Ward, the interpretation of the pre- and proto-history of Tsushima Island was difficult for several reasons. The Yayoi culture model of wet paddy-field agricultural societies does not fit the environment of Tsushima; therefore, there was a tendency to underestimate the degree of social and cultural developments on the island, compared to mainland Japan. The possibility of local iron-working is still hardly ever discussed among Japanese and Korean archaeologists.[1]

For the Japanese Archipelago, archaeological materials indicate that in a first stage (trad. Early Yayoi, ca. 4th to 3rd centuries BCE), few iron implements were imported, paralleling the overall development of Japanese Yayoi societies which were originally inspired by the introduction of wet-paddy-field agriculture from the continent. During the second stage (trad. Middle to beginning of Late Yayoi, ca. 2nd century BCE to 1st century CE), the demand for iron gradually increased. The productivity of agriculture grew steadily, and the cultural interaction between Korea and Japan intensified.[2] As a result, Yayoi society moved towards social complexity and cultural integration. The third stage of development (middle of Late Yayoi to the end of Yayoi Period, ca. 2nd to 3rd century CE) witnessed a rapidly increasing degree of iron-working in the whole of Japan, and original (Japanese) style iron items came to exist. Especially the development of an exchange system for iron (ingots and tools) and the competitive interaction between the various polities in East Asia inspired the re-organization and integration of Yayoi culture and led to a stage of early state formation in Japan.

Figure 11.16 Iron tools and unfinished tools (ingots)

In conclusion, some general ideas about the society of pre- and proto-historic Tsushima Island and their impact on the perception of Yayoi Japan shall be postulated. Although agricultural tools and fishing implements make out the bulk of iron artifacts in Yayoi-period Tsushima sites, the finds of tools connected to iron-working (Figure 11.16) indicate some stratified level of social life. There are no bronze artifacts from settlement sites, but the numerous bronze artifacts from burial sites around Miné Town carry some special meaning connected to funeral rituals for select persons. Iron-working on Tsushima Island might have started by the 1st century BCE at the same time as in mainland Japan. Tsushima people probably imported iron ingots and metallurgy directly from the south of Gyeongsang region in Korea and transmitted their commodities and knowledge further to Japan (Figure 11.17).

We may thus develop a model of social complexity for Tsushima Island. The settlement sites of Miné Ward testify to a production system for iron tools and an autonomous exchange system, compensating

[1] But see MIYAMOTO Kazuo (Chapter 10, this volume) on iron-working on Iki Island.
[2] On the cultural interaction between Korea and Japan see also Barbara SEYOCK (Chapter 12 this volume).

for a situation where agricultural activity was not sufficient for the subsistence of pre- and proto-historic people. The paradigm of an inevitable parallelism of wet paddy-field agriculture and the advent of Yayoi society may thus be re-examined in the light of Tsushima Island archaeology.

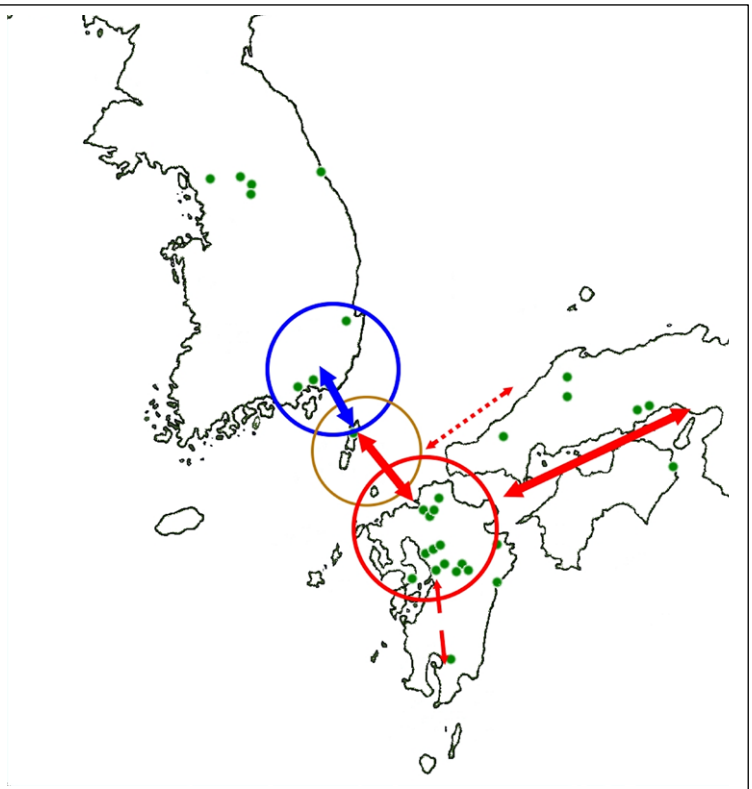

Figure 11.17 Map illustrating the exchange of iron from the Korean Peninsula to the Japanese Islands through Tsushima (in gold ring)

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CHAPTER 12

JEJU ISLAND AS A CASE STUDY IN ANCIENT ISLAND-MAINLAND INTERACTION

Barbara SEYOCK

Owing to its remote location off the South Korean coast, Jeju Island appears cut off from the main streams of cultural progress in prehistoric East Asia. Iron Age archaeological sites nevertheless reveal not only characteristic local features, unseen in peninsular complexes, but elements from abroad. These echo an exchange network that reaches as far as the Japanese archipelago and the Chinese mainland. Jeju Island thus opens a means of understanding the selectiveness and the distinctive development of peripheral island culture and thus functions as a case study in ancient island-mainland interaction here.

Keywords: Japanese archaeology, Korean archaeology, island archaeology, trade, transfer, intercultural relations, interaction, Yayoi, Proto-Three Kingdoms, Han, Wa, cross-cultural relations, isolation, seascapes, maritime habitation.

Introduction

Jeju Island lies west of where the Korea Strait joins into the East China Sea, and about 85 km south of South Jeolla Province (12.1). It is highly praised for its natural beauty and distinct culture, and the picturesque waterfalls of the volcanic island draw flocks of honeymoon couples flying in from the Korean peninsula and elsewhere. The island is of oval shape, measuring ca. 64 km from east to west and 26 km from north to south. In the center of Jeju Island, mount Halla—the highest peak of South Korea—rises up to 1,950 meters. While nowadays tourism wins an increasing share of the income of the approximately half-million people, the traditional economic sectors comprise pasturage, horse-breeding, fishery, aquaculture and fruit growing—especially tangerines.

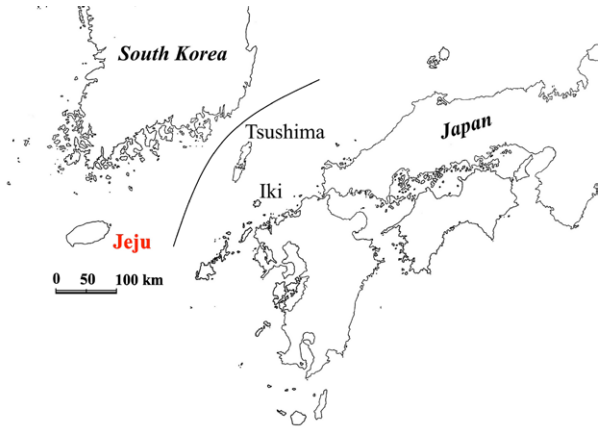

Figure 12.1 Location of Jeju Island

In historical perspective, the cultural developments of Jeju Island seem to have always been determined by its relatively remote location. Contrary to other islands in the vicinity of the Japanese and Korean coasts, such as the Izu Islands off the Izu peninsula, or Tsushima in the Korea Strait, Jeju neither had natural resources of any interest for prehistoric people, nor did it function as a passage area, owing to its geographic position. Instead, Jeju developed its own cultural characteristics from ancient times on and appears cut off from the main streams of cultural and political progress in East Asia. It was only in the early Goryeo Period (918–1392) that Jeju, or Tamna, as it

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was known then, officially became a part of the Korean Kingdom. Jeju was used after the Mongol invasion as a pasture place for horses, and as a place of exile for disagreeable subjects during the Joseon dynasty, making the remoteness of Jeju Island seem even stronger.

The following study searches to question the concept of remoteness and distinctiveness of Jeju culture with a focus on the material from the protohistoric ages in the Korea Strait area. The early centuries CE saw a sudden rush in socio-cultural achievements in the south of the Korean peninsula and in the western Japanese archipelago. The knowledge of wet rice agriculture had already initiated a significant population growth and the associated necessities of rural economic organization along with new impulses from the Chinese mainland resulted in the advent of small principalities throughout the Korea Strait region.

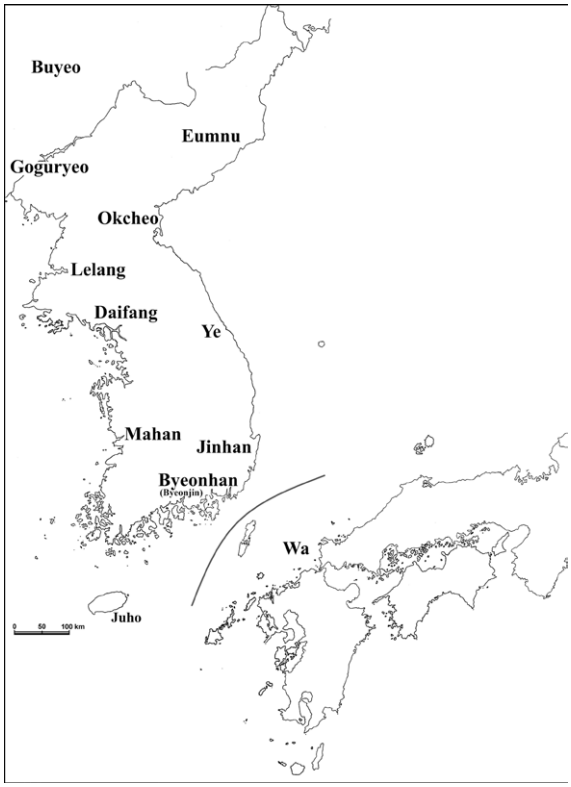

Figure 12.2 Geography of the Eastern Barbarians

Chinese documentary sources for the first time paid broader attention to the situation of the so-called Han (K.) 韓 communities in the Korean South and the (J.) Wa 倭, living in the Japanese Islands (Figure 12.2). Archaeological sources from this period reveal a closely connected cultural sphere in this region, with a lively trade going on across the Korea Strait. Jeju's position within—or beyond—this Han-Wa 韓倭 cultural sphere at the eastern edge of the East China Sea will be the focus of attention.

The Early Cultures around the Korea Strait

In earlier studies on the interrelationship between metal age cultures in western Japan and in southern Korea, I have characterized the Korea Strait as the "the most important connecting road" within a joint cultural sphere spread throughout the Korean south and the north of Kyūshū (SEYOCK 2003: 75, 2004: 230-231). While trade and travel across the Korea Strait is detectable from an archaeological perspective even from earlier cultural stages, the period between the late 2nd and 1st century BCE to the 3rd century CE is of special significance. It is at the beginning of this period that the establishment of the Chinese commanderies, first and foremost Lelang, in the northwest of the Korean peninsula, initiated not only a rush in the technological and social development of a civilization that already carried both indigenous and foreign elements. It moreover is due to the presence and the interest of the Middle Kingdom in the 'barbarian' people beyond the borders of Chinese culture that information and news from the Peninsula and the archipelago were compiled by historiographers, resulting in a first comprehensive 'handbook' of the so-called Eastern Barbarians in the 3rd century CE, the (C.) *Weizhi Dongyi Zhuan* (Figure 12.3).

Figure 12.3 Extract from the *Weizhi Dongyi zhuan, Han-zhuan* (Zhou-hu/Juho boxed)

An analysis of the text, which is composed of information from different time strata, revealed that refugees of late Warring States Period China—from the north of the Korean peninsula, as well as fromthe territories of the Chinese commanderies—had been relocating to the Korean south, especially in the southeast, at various stages in protohistoric times, and apparently in differing ethnic compositions. This development took place over a period of several centuries. Accordingly, the 'new' cultures in the Korean south, which are clearly detectable from an archaeological perspective, carried elements from different geographic origins and from various cultural layers and affiliations. Spreading from an early core center in the Korean southeast westwards and southwards across the Korea Strait and to the north of Kyūshū, these *impeti* led to a remarkable cultural sphere characterized by hierarchically structured societies on their way towards a chiefdom stage, with a subsistence based on rice agriculture, maritime resources, metal production, and far distance trade during the 1st century BCE to the 3rd century CE (Figure 12.4). For this period, I identified three or four different traditions contributing to the advent of what I designated the 'Han and Wa culture'.

In the following text, these traditions, the Han Chinese tradition, the nomadic heritage, as well as the peninsular and island traditions, will be briefly summarized—as they constitute the cultural background for an analysis of the characteristics of the cultural development of Jeju Island.

The Han Chinese Tradition

Cultural elements of Han 漢[1] Chinese tradition spread throughout the (Korean) Han-Wa cultural sphere after the establishment of the Chinese commanderies in the north of the Korean peninsula. One of the main complexes concerns horse-and-carriage equipment (Figure 12.5). Single-axle two-horse carriages were common within Han-Chinese elite culture. Bronze fittings and ornaments, like umbrella rib points (Figure 12.5a), which were in use for fixing the roof of a carriage, iron bridles (Figure 12.5b) or horse bells (Figure 12.5c), have been found at various sites of the Samhan or Proto-Three Kingdoms Period[2]

[1] It should be noted that "Han" is a homophone that in English can refer to both the Chinese Han 漢 culture and the Korean Han 韓 culture. The Chinese characters are different, of course. The English text here attempts to prevent misunderstandings through respective extensions: C. or K., "Han Chinese" or "Korean Han", etc.

[2] "Samhan" and "Proto-Three Kingdoms" refer to the same cultural stratum. Both terms emphasize the body of sources, namely a historical perspective from the outside on a non-literate culture, thus creating a protohistoric setting. The term "Proto-Three Kingdoms" emphasizes a strong structural relation with the advent of the Three Kingdoms in later centuries, whereas "Samhan culture" relates to the perception of strong, independent cultural entities revealing distinct structures as well as far reaching trade networks and relations.

in the Korean South, and at sites of the Middle and Late Yayoi Period (here: 100 BCE–CE 250) in the Japanese archipelago respectively.[3]

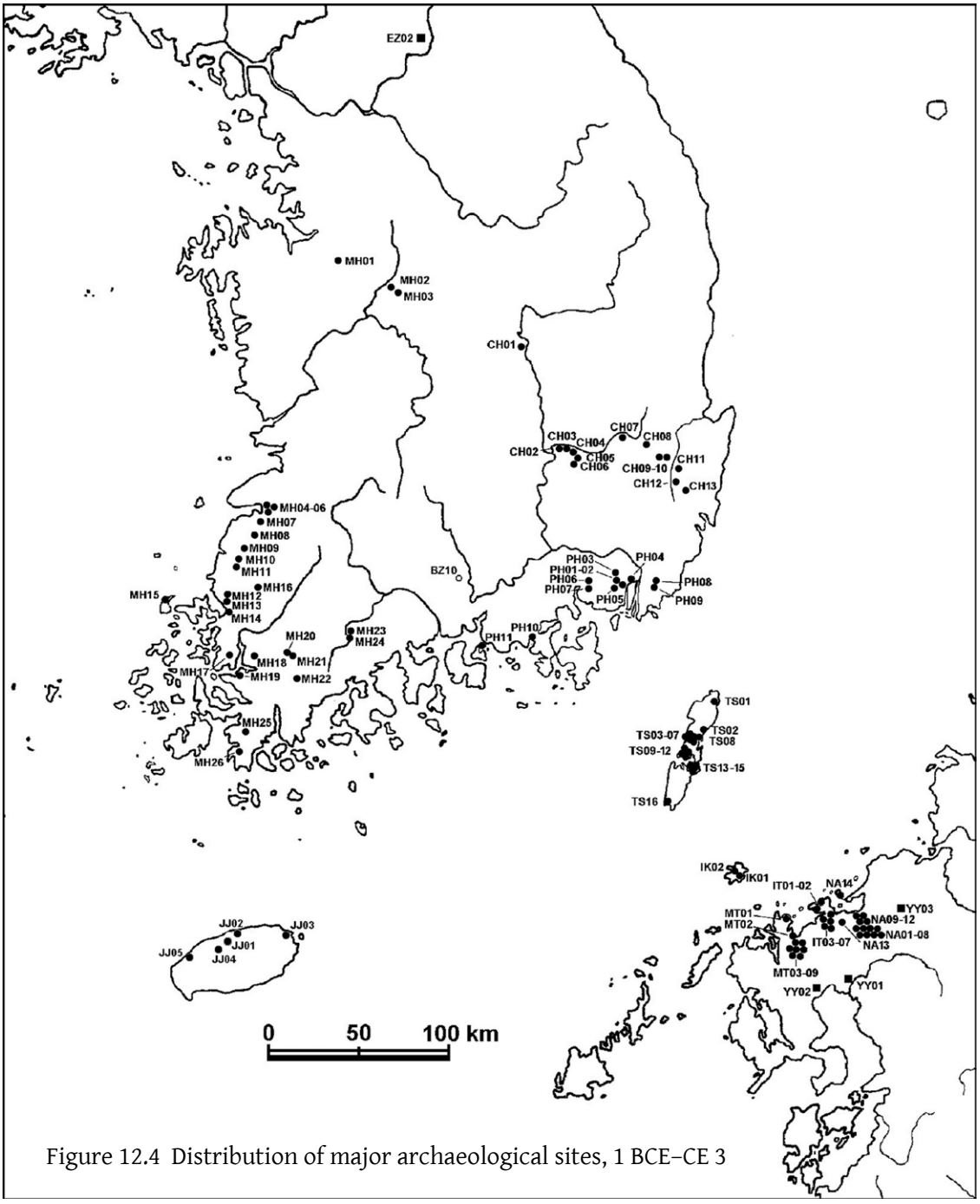

Figure 12.4 Distribution of major archaeological sites, 1 BCE–CE 3

[3] A full set of bronze umbrella roof fittings and ornaments, for example, was unearthed from the Nakdong-ri [CH01] site (*abbreviations refer to maps*) in the middle Nakdong River plain, as well as from the Kisaka [TS06] and Tōzaki [TS11] sites on Tsushima Island in the Korea Strait. Single finds come, for example, from Shimo-gayanoki [TS05] on Tsushima, and Bisan-dong [CH03] and Daho-ri [PH06] in the Korean southeast. Iron bridles are known from the Pyeongni-dong site [CH02] in Daegu City or from Sara-ri [CH08], while small bronze bells are spread widely with the exception of the region which is assigned to have been Mahan territory in the Korean southwest (see Figure 12.5).

Table 12.1 Key (for all maps) to sites mentioned in the text

(for other sites see SEYOCK 2004: 243-244)

CH01 Nakdong-ri	JJ02 Samyang-dong	PH08 Nopo-dong
CH02 Pyeongni-dong	JJ03 Jongdal-ri	TS03 Sakadō
CH03 Bisan-dong	JJ04 Yongdam-dong	TS04 Takamatsunodan
CH06 Jisan-dong	KF03 Sakakiyama	TS05 Shimo-gayanoki
CH07 Eoeun-dong	MH02 Songdae-ri	TS06 Kisaka
CH08 Sara-ri	MH03 Bongmyeong-dong	TS09 Shigenodan
CH10 Hwangseong-dong	MH10 Gundong-ra	TS11 Tōzaki
CH11 Joyang-dong	MT02 Sakuranobaba	YY01 Yoshinogari
CH12 Ipsil-ri	MT09 Kashiwazaki	YY03 Tate'iwa
IK01 Harunotsuji	PH03 Daeseong-dong	YY11 Asakawabata
IK02 Karakami	PH05 Yangdong-ri	YY16 Kuwamizu
IT03 Mikumo-minami-dong	PH05 Yangdong-ri	YY17 Dōzō
IT06 Hirabaru	PH06 Daho-ri	
JJ01 Sanjihang	PH07 Samdong-dong	

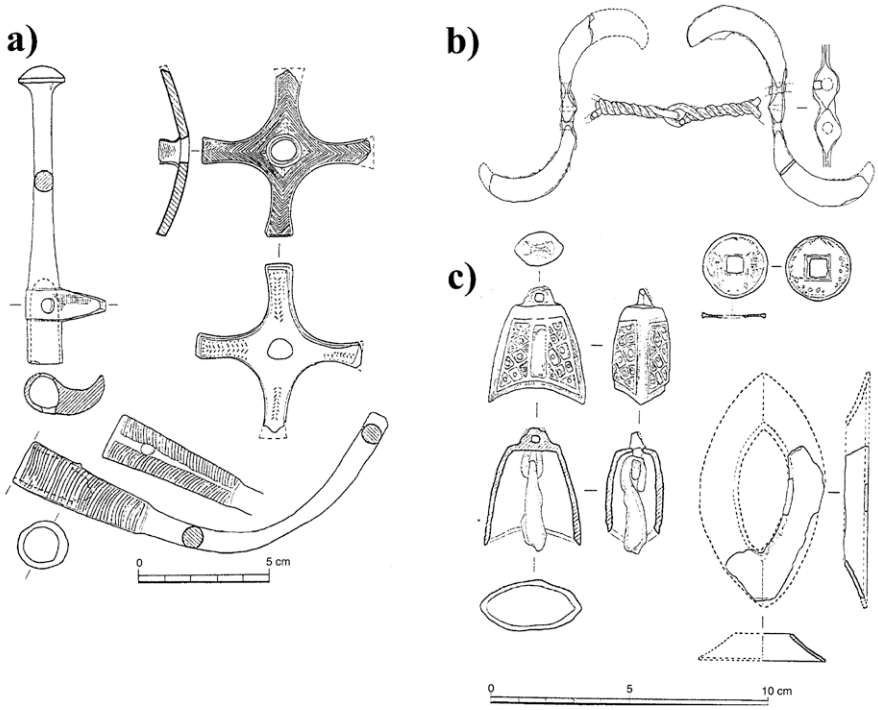

Figure 12.5 The Han-Chinese tradition

a) bronze umbrella rib points and ornaments (from Tōzaki), b) iron horse bridle (from Pyeongni-dong), c) bronze bell (from Shigenodan)

The Chinese bronze mirror (Figure 12.5d) is a significant find showing the trade activity between the Chinese commanderies and the Han-Korean and Wa areas, and moreover, illustrating the esteem for this kind of commodity. Especially, early Han mirrors with continuous arc design and mirrors with four buckle and snake designs were in great demand in the early phase of the Korean-Han and Wa cultures. For the latter phase, the 2nd and early 3rd centuries CE, the Late (C.) Han Dynasty TLV mirror came first. To satisfy the demand for this highly valued status symbol, mirror copies of minor size and quality were manufactured on both sides of the Straits, substituting for the Chinese prototypes in places where the original commodity could not be obtained.

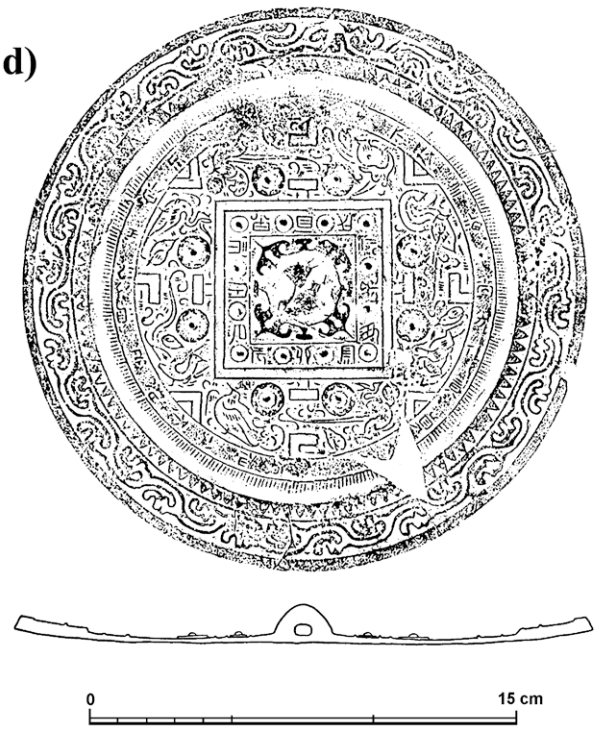

Figure 12.5 The Han-Chinese tradition (cont')
d) a TLV bronze mirror (from Yangdong-ri)

Bronze mirrors were in use as burial goods in elite burials. Regularly one or two mirrors turn up in elite burial excavations. For example, they have been discovered in Bisan-dong [CH03], Yangdong-ri [PH05], Kisaka [TS06] and Sakuranobaba [MT02]. In rare cases, a multitude of pieces have been found, such as at Eoeun-dong [CH07], where most of the pieces are mirror copies, or in Hirabaru [IT06] and Mikumo-minami-shōi [IT03]. At the latter site, the deposit of up to 36 bronze mirrors points to the existence of a strong local power, which is, moreover, noticeable from the *Weizhi Dongyi Zhuan* description of the 'small principality' of Ito (C. Idu) (SEYOCK 2004: 187-198).

Additional finds from the Chinese cultural sphere are square-holed bronze coins (Figure 12.5c). They are important for the dating of archaeological complexes and are widespread at sites in the Korean south and in Kyūshū.

The Nomadic Heritage

Another cultural tradition which affected the advent of Proto Three Kingdom culture to a great extent, and later on strongly influenced the cultures of Han and Wa, stems from origins and time strata even beyond the Chinese commanderies. This Scytho-Siberian tradition comprises finds associated with an epi-nomadic heritage (Figure 12.6), which is closely connected in time to the spread of both Han Chinese tradition and the techniques of iron production, all of which are detectable in the archaeological record from the late 2nd to early 1st century BCE onward.

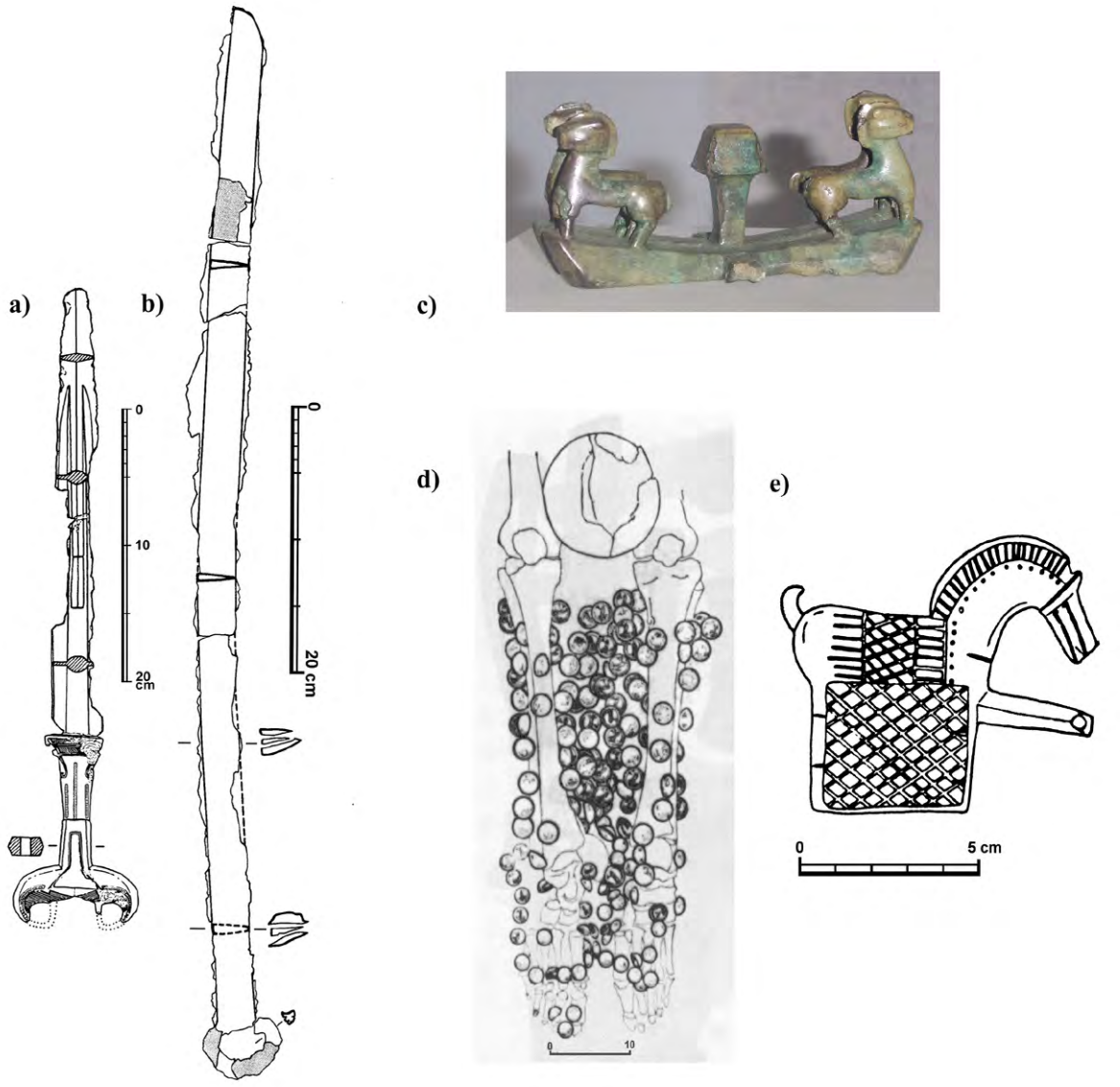

Figure 12.6 The nomadic heritage

a) bronze antenna dagger (Kashiwazaki), b) iron ring pommel sword (Hirabaru), c) bronze pommel ornament (Yangdong-ri), d) bronze buttons in situ (Eoeun-dong), e) bronze belt hook

A main element of this originally nomadic tradition is found in animal style bronzes as they are familiar from the Ordos region and from the Karasuk and Tagar cultures in the Siberian steppes, for example bronze antenna daggers (stabbing swords) (Figure 12.6a) or pommel ornaments with symmetrical decorations in the shapes of animals (Figure 12.6c).[4]

[4] Bronze antenna daggers or their respective pommel ornaments have been excavated for example from the Bisan-dong (CH03) and Jisan-dong [CH06] sites in Daegu, from the Takamatsu-nodan [TS04] and Sakadō [TS03] sites on Tsushima Island, and from Kashiwazaki [MT09] in the Karatsu plain. Two pieces of bronze pommels

Also appearing in assemblages from both the Korean south and the north of Kyūshū are ring pommel iron knives and swords (Figure 12.6b)—later in their chronological setting but linking to the same animal style tradition.[5] A common element of the tradition from the Siberian steppes, moreover, is a hemispherical bronze button decorated with lines arranged in spirals or geometric fields, or similar pieces without any decorations.[6] A burial find at Eoeun-dong [CH07] exemplifies how bronze buttons were apparently in use as boot ornaments (see Figure 12.6d), at least in this case, while the boots themselves—as their existence is obvious from the findings—offer additional evidence for a culture carrying the knowledge of horse-riding.

Similarly successful in the geographical range of their appearance, but much less frequent than bronze buttons, are bronze belt hooks in the shapes of either horses (Figure 12.6e) or tigers. These items as well have a strong linkage to nomadic culture, although the specific kind of shaping seems peculiar for the Korean Southeast (see GANG 2004).[7]

Bird-shaped ceramics as well may link to a nomadic heritage. They have been mainly found in the Korean southwest and do not show on the Japanese side from the same period—except one example from the north of Kyūshū from a very early Kofun site, which is of the same type as the pieces from Proto Three Kingdom sites (mainly) in the Korean Southwest. This cultural tradition actually did not cross the Strait until much later, in the Sué stoneware tradition.

The Peninsular and Island Traditions

At the time Han Chinese and epi-nomadic traditions entered the Korean peninsula and the Japanese Islands, these regions, of course, had not been blank but had developed their own respective traditions contributing in different ways to the later developments (Figure 12.7). The Korean peninsula had a strong Bronze Age tradition, especially in the region of the Geum River, with a set of bronze weapons—

ornaments with symmetrical decorations in the shapes of animals—four standing horses and two ducks, or possibly the upper parts of horses, respectively—come from the Yangdong-ri (PH05) site in the Nakdong delta and Shigenodan [TS09] site on Tsushima (see Figure 13.7). There are other bronze pommel types with a specific cross-shaped base, having in parts millet-like decoration as well as additional dagger fittings. These appear in the same complexes and are widely spread on both sides of the Korea Strait (SEYOCK 2004: Figures 11, 30, 55, 57 and tables I and III).

[5] Ring-pommel iron knives and swords have been excavated, for example, from Nopo-dong [PH08] in Busan; from Tsushima Island sites; from the Itoshima peninsula (Hirabaru) [IT06] and from the Fukuoka plain (Tate'iwa) [YY03] (SEYOCK 2004: tables I and II).

[6] Bronze buttons are among the earliest complexes classified as belonging to the Proto-Three Kingdoms culture, such as from Dasong-ri [MH33] in North Jeolla Province or Ipsil-ri [CH12] near Gyeongju City. Items like these continue through to the late Yayoi complexes from Tsushima Island (Takamatsunodan [TS04], Tōzaki [TS11]), the north Kyūshū plains (Dōzō [YY17]), and they spread even further south to Kumamoto Prefecture (Kuwamizu [YY16]) and east to central Japan (see Figure 13.7).

[7] Early examples of animal-shaped belt hooks are known from the Bisan-dong [CH03] and Eoeun-dong [CH07] sites in the Daegu area or from Tsushima Island (in a fragment from Sakadō [TS03]). Later examples have been found at Joyang-dong [CH11], Sara-ri [CH08] and Daeseong-dong [PH03], again in the southeast, while items belonging towards the end of the Han and Wa Period show in complexes of Chungcheong Province (Cheongdang-dong [MH01], Songdae-ri [MH02], Bongmyeong-dong [MH03]), and moreover in central Japan (Sakakiyama [KF03], Asakawabata [YY11]). Interestingly, the finds from younger assemblages comprise a much higher number of pieces, thus leading either to the assumption that social changes gave rise to a more and more unequal society, or to the perception that the tradition of using animal style belt hooks as prestige objects already was declining, so that only singular groups in geographical peripheries still collected and kept the belt hooks, which were, moreover, then easier to obtain.

dagger, halberd and socketed spear (Figure 12.7a)—or later ritual objects. These developed into one of the major finds also of the Proto-Three Kingdoms Period and the Middle and Late Yayoi Period on the western Japanese archipelago. The *mumun* or undecorated pottery, which is typical for the Bronze Age, can also still be found in Korean-Han and Wa sites up to the 3rd century CE. So-called *wajil* pottery (Figure 12.7b) of the Proto-Three Kingdoms, moreover, turned up at north Kyūshū sites, while Yayoi pottery from a north Kyūshū tradition was found at the Korean coasts.

In the Japanese archipelago, the late Jōmon and early Yayoi Period jar burial (Figure 12.7d) grew into a strong tradition that spread on both sides on the Korea Strait and later even developed into the main feature of the elite burials of the Baekje Kingdom in the Korean southwest.

Another interesting find that may be placed within an early Yayoi tradition is the oracle bone (Figure 12.7c), which actually is mentioned in the *Weizhi* section entitled the *Dongyi Zhuan* concerning the Wa/Wae people. Most of the numerous finds of oracle bones come from sites in western Japan, but there are also several finds from the Korean side, again exemplifying how close the cultures around the Korean Straits were in the centuries between the 1st century BCE and the 3rd century CE. Not only commodities reached the opposite coasts but also entire sets of cultural traditions (SEYOCK 2004: 227-228, EUN 1999).

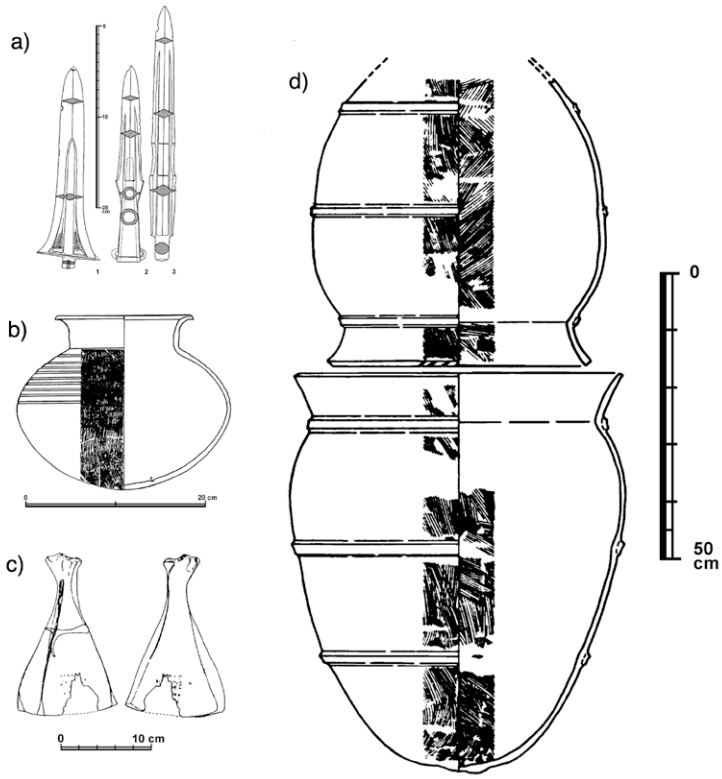

Figure 12.7 Peninsula and island traditions
a) bronze weapons (Mizuki, Kuhara), b) *wajil* vessel (Karakami), c) oracle bone (Gun'gong-ri), d) double jar coffin (Harunotsuji)

Jeju's Position in the Han-Wa Cultural Sphere

After reviewing the different traditions of the early cultures around the Korean Straits, their interrelations, concurrences and local differences, and after emphasizing the impact of the establishment of the Chinese commanderies at the end of the 2nd century BCE, the question arises to what extent Jeju Island, the second largest island in the waters between the Korean and Japanese coasts, took part in the development of this vivid and closely connected Korean-Han and Wa/Wae cultural sphere.

Much can be learned from a 3rd-century Chinese text, the *Weizhi Dongyi Zhuan*, which provides the cultures discussed here with a surprisingly detailed historical dimension. The chapters on the Han communities in the Korean South, and the comprehensive chapter on the Wa people on the Japanese

Islands, contain various information on the geographic position of the specific community, on their subsistence and their social life, on their conflicts, on their trade and diplomatic relations, and so forth. Jeju as well is mentioned in the *Dongyi Zhuan* accounts (cf. Figure 12.3). The last phrases of the Chinese-Han chapter refer to an island called (C.) Zhou-hu (K. Juho), a passage commonly interpreted as being the oldest reference to Jeju Island. From a Chinese point of view, Zhou-hu, or Jeju, does not belong to the Samhan (Mahan, Jinhan, Byeonhan), which comprise the three major territorial and/or political units in the south of the Peninsula. Jeju is instead located beyond the border of the Korean-Han cultures. The Chinese text in the *Sanguo Zhi, Weizhi Dongyi Zhuan, Han-chuan* runs as follows (translation after SEYOCK 2004: 48):

> Furthermore, there is [the land of] Zhou-hu. It is situated on a large island in the sea west of Mahan. The inhabitants are of small stature. Their language is not like [the language of] Mahan. They all shave their head like the Xianbei. Their clothing is all made of leather. They like to raise cattle and pigs. Their clothing has upper parts, but no lower parts, almost as if they were naked. Going back and forth by boat they buy and sell in the Han [area].

According to the Chinese documents the inhabitants of Jeju had no rice agriculture, no proper clothing, and were in language (and stature) different from the rest of the Korean Han. Jeju is moreover not even listed as one of the about 80 Han communities in the *Dongyi Zhuan* accounts. It is therefore necessary to now include the material heritage of Jeju Island into the discussion and compare the archaeological finds from Jeju sites to the different layers of the Korean-Han and Wa cultures in Proto-Three Kingdoms Korea and Yayoi-period Japan.

The last decade has seen interesting new discoveries of archaeological sites on Jeju Island, which may shed new light upon the situation of early cultures within—or beyond—the Han and Wa cultural sphere. First of all, it is the Samyang-dong site [JJ02] that has received a lot of attention due to the size of the site and the excavated material.

Samyang-dong has been excavated in the years 1997 to 1999 (after trial surveys in 1996–1997) and was revealed to be the largest dwelling site yet found in Korea—and up to that time, the only one on Jeju Island (Jeju-si Jeju Saehakgyo Bangmulgwan 2002: 346).[8] Parts of the site, which is situated at the coast in the east of Jeju City, have been reconstructed for public access (Figure 12.8), and the neighboring Samyang-dong Prehistoric Museum opened soon after. 155 house pits have been fully excavated; another 81 confirmed during the first survey. Most of the pits show circular ground plans with small oval pits in the middle and supporting postholes on either side of it (Figure 12.9).

Figure 12.8 Samyang-dong house reconstructions

[8] The dwelling site of Yongdam-dong was excavated later in the year 1999 (Jeju-si Jeju Daehakgyo Bangmulgwan 2003).

Figure 12.9 Samyang-dong house pits

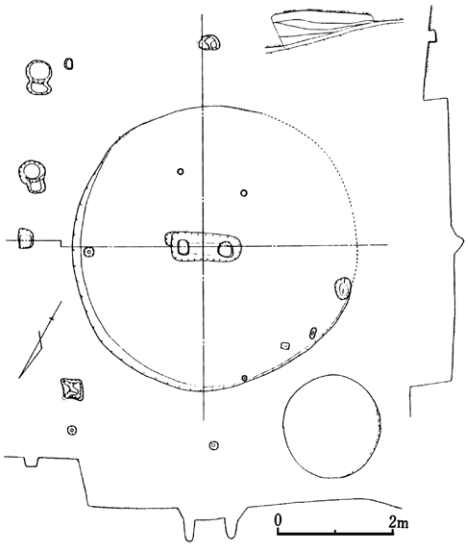

Figure 12.10 Seongguk-ri house pit

These peculiar features are also seen at Bronze Age sites in the Honam region, first and foremost at Songguk-ri (Figure 12.10), a type-site of the Bronze Age dating from around the 5th century BCE. This fact points out an early connection between Jeju and the Peninsula, or even suggests an immigration route, as the house pits correspond to the Songguk-ri type rather precisely.

Other features of the dwelling site comprise 28 above ground houses, eight of them apparently storehouses, small storage facilities, a production place for pottery, stone alignments dividing the settlement, drainage facilities, a dumping place (shell midden), and dolmen burials in the vicinity. Important for a reconstruction of the subsistence of the Samyang-dong inhabitants were carbon-ized grain finds (barley, beans) from several house pits. Rice is also extant (Jeju-si Jeju Daehakgyo Bangmulgwan 2001: 106-108, 2002: 346), therefore disproving the *Dongyi* accounts. The house sites, their shapes, and their arrangement around a central square, as well as the general features of the complex, recall a typical late Bronze Age village, especially that of the Songguk-ri site (see NELSON 1993: 142-143, YI 1991: 249) in South Chungcheong Province. Finds from both sites comprise a polished stone dagger, stone arrowheads, spindle whorls, whetstones, grooved stone adzes, and bronze objects.

The bronze finds from Samyang-dong, however, are different from the Songguk-ri specimen, as they not only set the complex in a younger time stratum than the Songguk-ri settlement site, i.e., up to the beginning of the Proto-Three Kingdoms Period. Moreover, they show that there are actual archaeological traces of an interrelationship with the (K.) Han and Wa areas. Only two small bronze fragments have been found at Samyang-dong, one clearly belonging to a slender bronze dagger of the so-called Korean-style type (Figure 12.11 top), which is—as has been elaborated above—a main find from the Proto-Three Kingdoms and Middle and Late Yayoi sites. An almost complete specimen (Figure 12.12 middle) has moreover been excavated at Jongdal-ri [JJ03], east of Jeju Island (Jeju-si 2002: 77), while a bronze dagger fitting (Figure 12.13 lower) comes from the Sanjihang [JJ01] site in central Jeju.

Direct influences of a Han Chinese or epi-nomadic quality are not detectable at the Samyang-dong site. Up to the present day, there actually is no site on Jeju Island that revealed finds of an epi-nomadic kind,

such as animal style belt hooks or bronze buttons. Han Chinese horse-and-carriage utensils are moreover completely missing from the archaeological record, whereas other Chinese artifacts—bronze coins and two small mirrors—one being only a fragment—were discovered at the Sanjihang [JJ01] site (Figure 13.12) (Jeju-si 2002: 73-75).

Figure 12.11 Nomadic-style Bronze artifacts from various sites

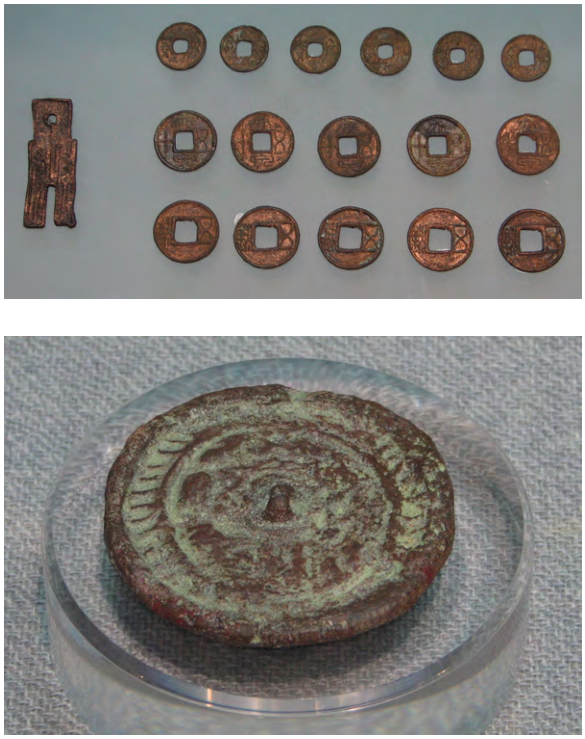

Figure 12.12 Chinese coins and bronze mirror from Sanjihang

However, one interesting artifact found at Samyang-dong [JJ02] suggests looking into a different geographic direction. Among the other finds, most of which come from the central parts of the village, the fragment of a jade ornament, possibly a pendant, with hexagonal cross-section was uncovered during the excavation (Figure 12.13: left). A possible counterpart for this specimen is a cobalt-blue glass bracelet with hexagonal section (Figure 12.13: right) from the Tango Peninsula (Ōburo-minami Site) in central Japan, although the bracelet is both larger in size and found in a younger complex (see Ōsaka Furitsu Yayoi Bunka Hakubutsukan 2002: 21-22). The piece in question comes from a Late Yayoi mound burial, which moreover produced a very rich assemblage of burial goods. There are, all in all, only three such ornament finds known from the Japanese Islands, another from Kyōto Prefecture (Ōmiya-machi) and one from the Itoshima Peninsula in Fukuoka (Futazuka site, see SHIRASU 1999: 34-35). It is not quite clear where these items were actually produced, but at least their owners seem to have shared a particular cultural tradition or satisfied a similar taste.

A site from a period a few hundred years later than the Samyang-dong dwelling site may further enlighten the extent of contact between Jeju and the surrounding areas. The mound burial site of Yongdam-dong (JJ04) (Jeju City) was already excavated in 1984 (Gungrip Jeju Bangmulgwan 2001: 82-85). It yielded small-sized jar coffins (Figure 12.14) and several burials with stone alignments. Jar coffins,

as elaborated above, are typical burials from the Han and Wa cultural sphere; stone alignments can especially be seen in the Korean southeast.

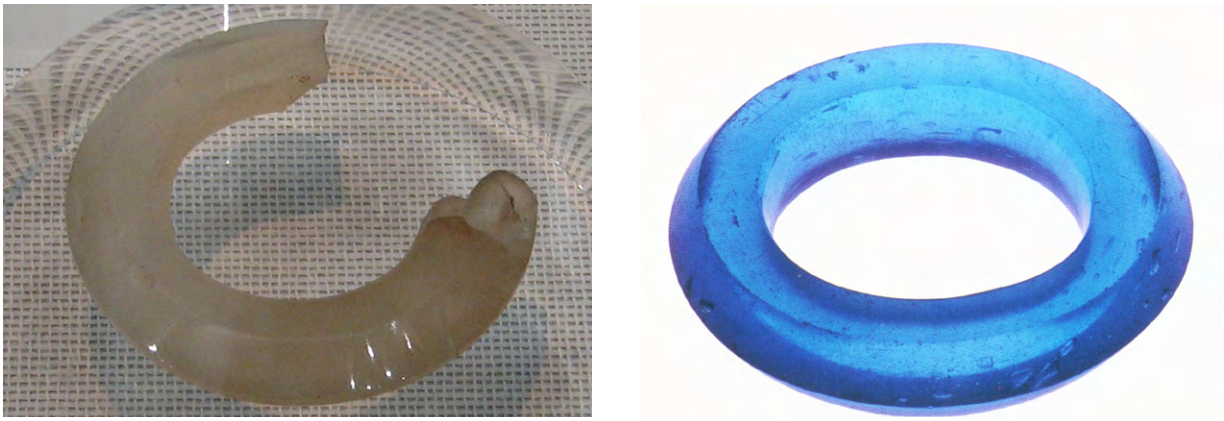

Figure 12.13 Bracelets made of jade (left) and glass (right)

Figure 12.14 Jar coffin from Yongdam-dong Site

Burial goods from Yongdam-dong comprise two iron swords and a dagger, stemless iron arrowheads, socketed iron spearheads, and socketed iron adzes. All of these items have their counterparts in the latter or end phase of the Han-Wa culture (Figure 12.15). Comparable iron swords come from the Yangdong-ri [PH05] site near Busan, from Tsushima Island (Shimo-gayanoki [TS05]), and from the North Kyūshū plains (Tate'iwa [YY03], Suku-okamoto [NA01]). Iron spearheads have been found again at Yangdong-ri [PH05], as well as at Tate'iwa [YY03] site in northern Kyūshū.

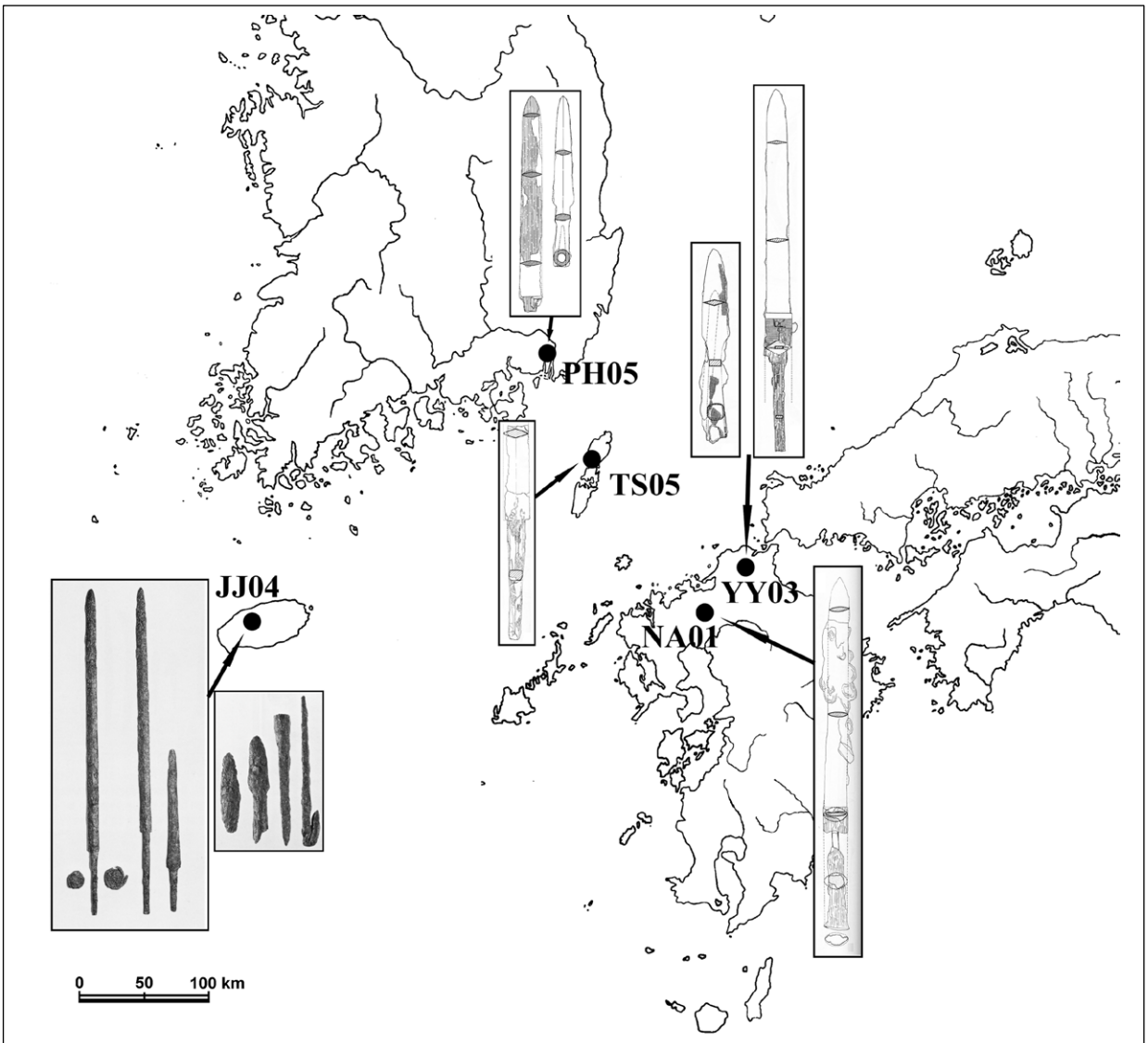

Figure 12.15 Iron swords and spearheads in the Han and Wa sphere

Stemless iron arrowheads, such as those discovered at Yongdam-dong, are spread widely throughout the Han and Wa cultural sphere (Figure 12.16). They are extant in archaeological complexes from the areas of Jinhan (Hwangseong-dong [CH10]), Byeonhan (Samdong-dong [PH07], Nopo-dong [PH08]), and Mahan (Daegong-ri [MH24]), from Tsushima Island (Shigenodan [TS09]), Iki Island (Karakami [IK02], Harunotsuji [IK01]), and from different parts of Kyūshū (see Kitakyūshū Shiritsu Kōko Hakubutsukan 1995). The socketed iron adze from Yongdam-dong, on the other hand, matches a piece found at a site in Hiroshima Prefecture. A Yoshinogari [YY01] find (Saga Prefecture) comes also very close in shape, as well as a piece from the Honam region (Gundong-ra [MH10]). However, the Yongdam-dong site, with its assemblage from the 2nd to 3rd century CE, just like the 1st century BCE Samyang-dong site before, does not show any find belonging to the epi-nomadic or Han Chinese tradition.

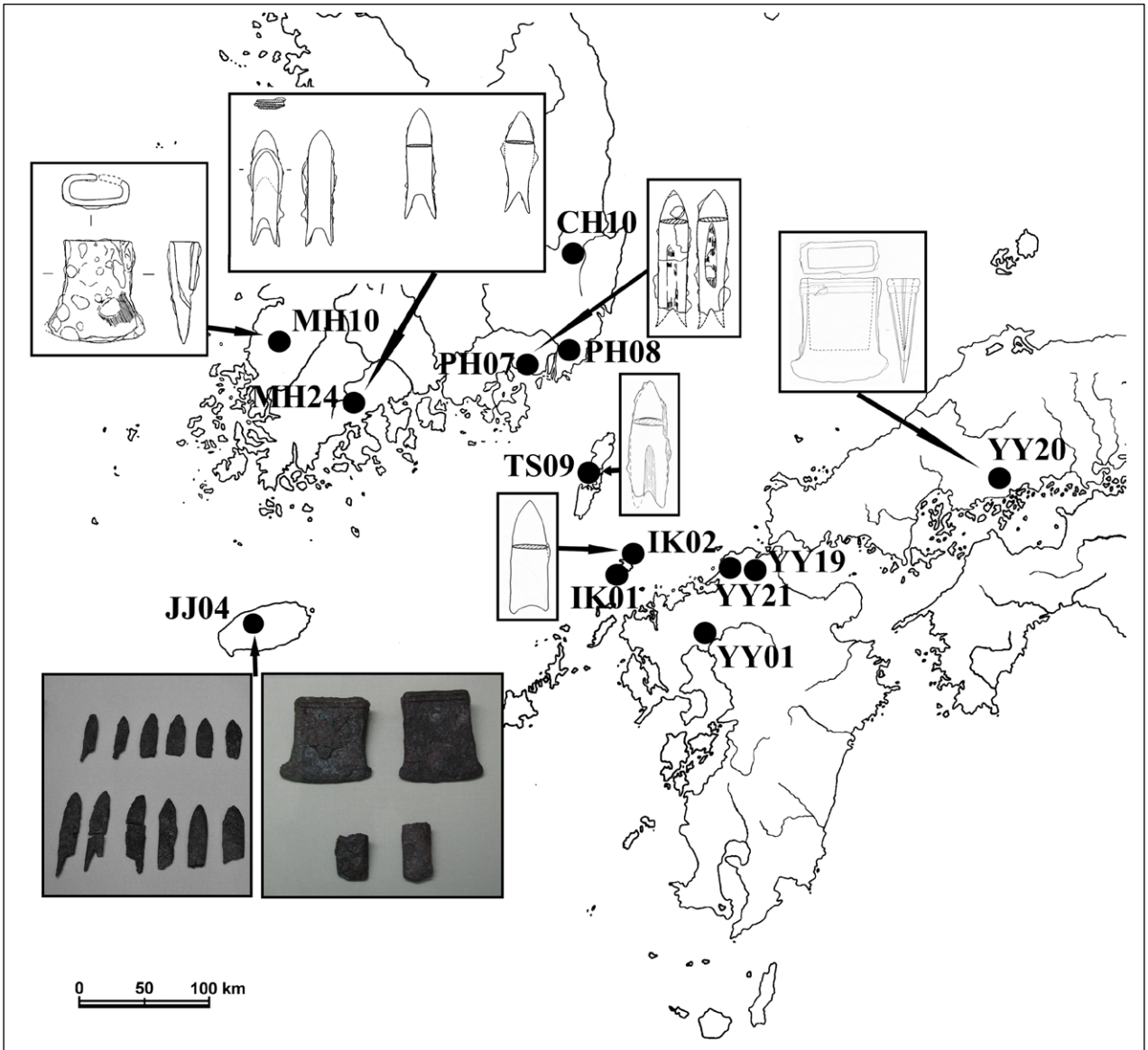

Figure 12.16 Iron arrowheads and socketed adzes in the Han and Wa sphere

Contact and Exclusivity off the Korean Coast

For the period under discussion, which means the 1st century BCE to the 3rd century CE, the archaeological heritage of Jeju Island—up to this stage of research—consists of a remarkably large settlement in Late Bronze Age tradition, a burial site with some jar coffins and four burials with stone alignments, which have apparently been furnished with several iron burial goods each, as well as a few finds of Han Chinese bronze coins as well as two small bronze mirrors.

The point of departure for this study was to question the concept of remoteness and distinctiveness of the Jeju culture with a focus on the archaeological material. After having compared the Jeju finds to the archaeological record from the Korean Peninsula and from the western Japanese archipelago, the

general impression actually *is* that of a peripheral region, contrary to recent attempts to set Jeju culture into the general Iron Age developments of the Korean Peninsula (see Jeju eui Yeoksa wa Munhwa 2001). Finds that are rare or even singular on Jeju Island are abundant and widespread in the southern part of the Korean Peninsula and in western Japan. Parts of the archaeological complex typical for the (K.) Han and Wa cultural sphere, such as finds from the Chinese Han or the epi-nomadic tradition, are sparse or do not even show in Jeju complexes (Figure 12.17).

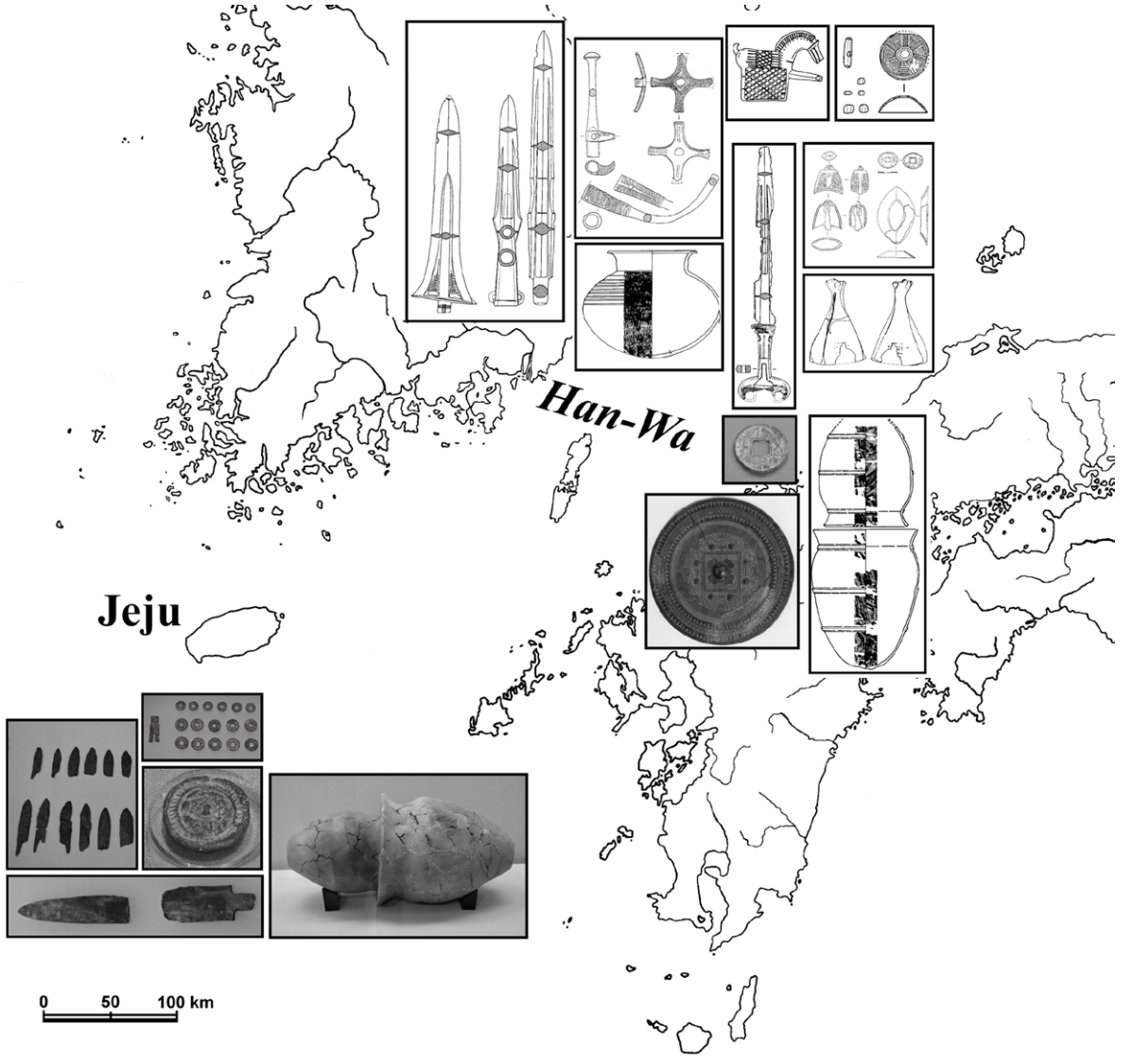

Figure 12.17 Type finds from Jeju Island and the Han and Wa sphere

However, Jeju was never completely isolated. The historical document informed us about Jeju boats going to and from the Korean-Han coasts. The Jeju people apparently were trading with the Korean Han area, as some elements of (K.) Han and Wa culture which are typical trade objects, namely bronze daggers and iron weapons, are extant in the archaeological record of Jeju Island. Even the tradition of

using jars for burials—apparently Japanese in its origins—reached this island, although the Jeju examples are of a rather small size.

The jade ornament, in this context, is a singularly exceptional find. This ornament, together with the stone alignments separating the Samyang-dong settlement, along with the burials of Yongdam-dong, suggest a certain kind of hierarchical structuring of an early Jeju society. Elite burials, however, or complex settlement structures and workshops comparable to the Proto-Three Kingdoms sites in the Korean southeast or the sites on the Kyūshū plains are not extant on Jeju Island for the time under discussion. Jeju, unlike Tsushima Island in the Korea Strait, was no trade center or passage area (see TAWARA Kanji, Chapter 11, this volume). Neither was it important as a place for collecting resource materials such as the Izu islands (see SUGIYAMA Cohe, Chapter 13, this volume). For the time being, therefore, it does not seem appropriate to include Jeju Island into the general concept of a Han and Wa cultural sphere, which I identified for the South of the Korean Peninsula and the western Japanese archipelago. Jeju culture instead developed exclusive features, such as specific pottery types, and it may be fruitful for future research to address the early cultures of Jeju Island independently.

Relating to the specific framework of the panel on island archaeology, where this paper had been originally presented, I would like to postulate that comparing Jeju with other East Asian islands suggests that the archaeology of islands needs to generally distinguish between passage areas, consumption areas, and areas of partial contact towards the respective mainland region. On the other hand, the smaller (inhabited) islands of Japan and Korea cannot be underestimated concerning their role within the general cultural development of peninsular and insular East Asia.

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CHAPTER 13

CHANGES IN THE SPATIAL DISTRIBUTION OF OBSIDIAN FROM KŌZUSHIMA (JAPAN) IN THE YAYOI PERIOD

SUGIYAMA Cohe 杉山浩平

In the volcanic islands of Izu (Japan), prehistoric settlements are closely related to the acquisition and circulation of obsidian, a material crucial for the production of chipped stone tools not only during the Jōmon Period, but also in the subsequent Yayoi Period. Especially the Miyakejima site examples mirror the monopolistic position held by Middle Yayoi communities in this area. The significance of these local production and distribution centers, as well as their development and shifts during the Yayoi Period are the focus of this paper. (eds.)

Keywords: Japanese archaeology, Yayoi, obsidian, trade, maritime trade, island archaeology

Introduction

This report sums up the research I have conducted in the Izu Islands, which are located off the coast of Honshū in the south-eastern part of Japan (Figure 13.1). My study focuses on the communities that lived on the islands and the distribution of obsidian during the Yayoi Period. Obsidian has not only been used as a material for chipped stone tools in the Paleolithic and Jōmon Periods, but also in the Yayoi Period, concurrent with iron usage.

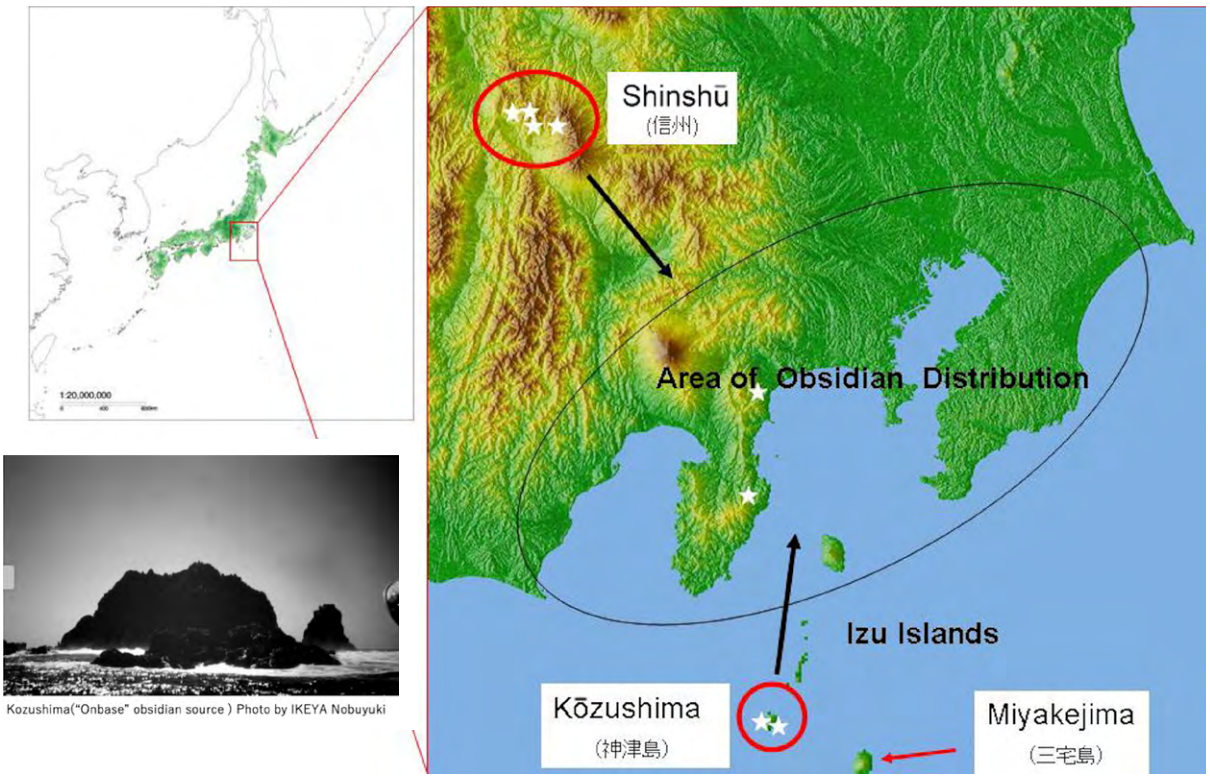

Figure 13.1 Obsidian from Shinshū and Kōzushima in the Kantō and Tōkai regions

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The Izu Islands lie in the Japan Current of the Pacific Ocean, about 100 kilometers from Tōkyō. They consist of seven islands, including Kōzushima, which was an obsidian production area. Obsidian from Kōzushima was in use as far back as in the Paleolithic Period, which suggests that already in that era groups of people with nautical skills lived here. We know that obsidian from Kōzushima was distributed in the Kantō and Tōkai regions of mainland Japan during the Paleolithic, Jōmon, and Yayoi Periods. Moreover, we know that obsidian from the Shinshū region north-west of Kantō was also distributed in these regions. My report will concentrate on Yayoi-era settlements on Miyakejima, an island to the east of Kōzushima. I believe that Miyakejima served as a distribution center for obsidian during the Yayoi Period, and that it was instrumental in distributing the resources found in the Izu Islands to the Kantō and Tōkai regions. We also found that settlement patterns in the region changed with alterations to the distribution of obsidian (Figure 13.2).

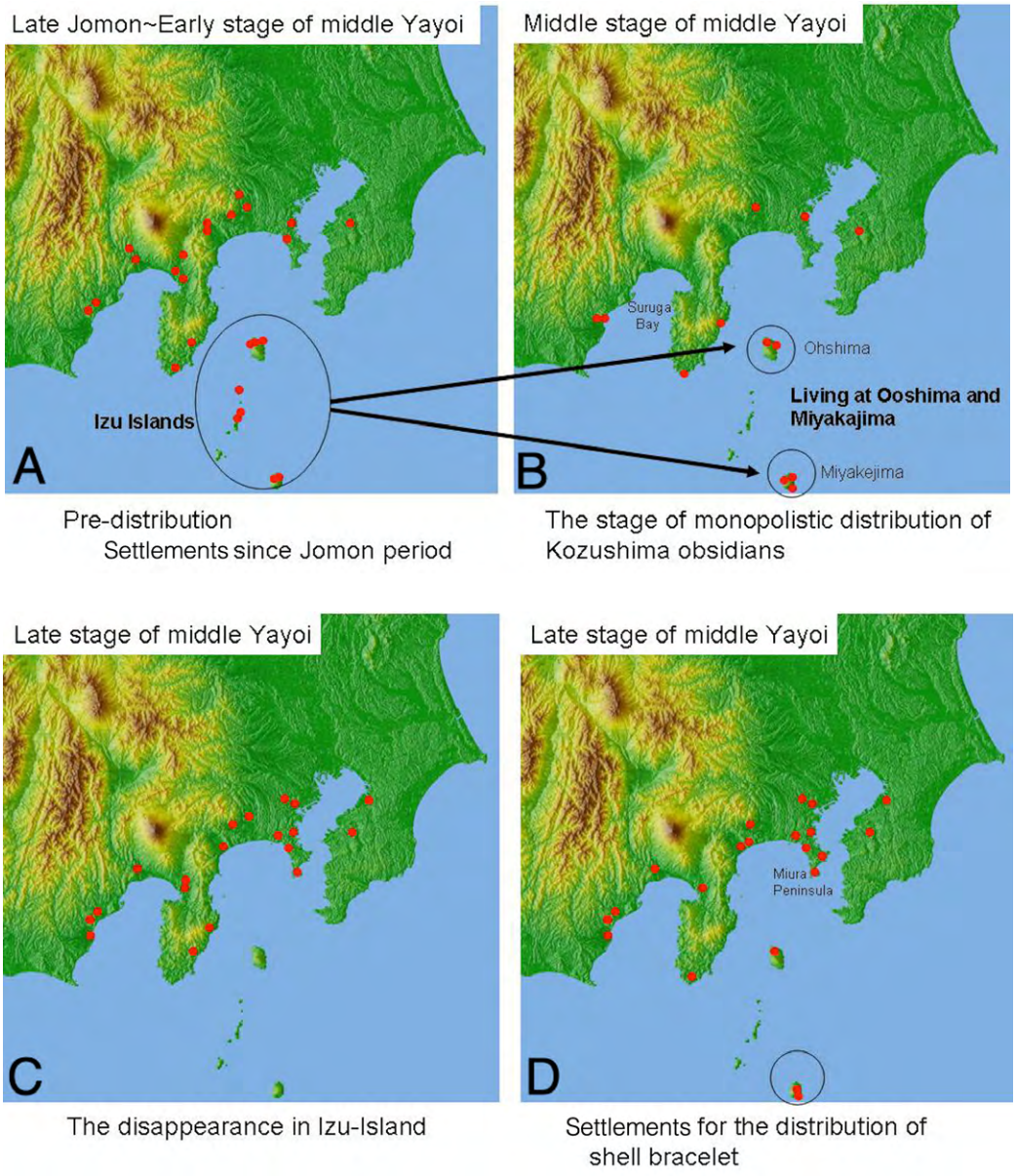

Figure 13.2 Changing distribution of villages in the Izu Islands and adjacent Honshū coast

Obsidian Distribution and Settlement Patterns in the Izu Islands

The graph (Figure 13.3) shows the results of the X-ray analysis determining the localities of some 2,300 specimens of obsidian unearthed at archaeological sites in the Kantō and Tōkai regions and dating from the late Jōmon through the Yayoi Period (SUGIYAMA and IKEYA 2006). In the figure, site names are indicated on the left and corresponding periods are noted on the right. A drastic change in distribution occurred in the middle stage of the middle Yayoi Period with almost all obsidian production shifting to Kōzushima. Kōzushima's obsidian was taken to the Kantō and Tōkai regions before being worked. It was distributed in the form of subbreccia or sub-pebbles, or as flakes. The weight of obsidian unearthed at the Kawai Site in Shizuoka and the Sunadadai Site in Kanagawa is about 1~1.5 kg (Figure 13.4), illustrating the scale of the obsidian goods traded.

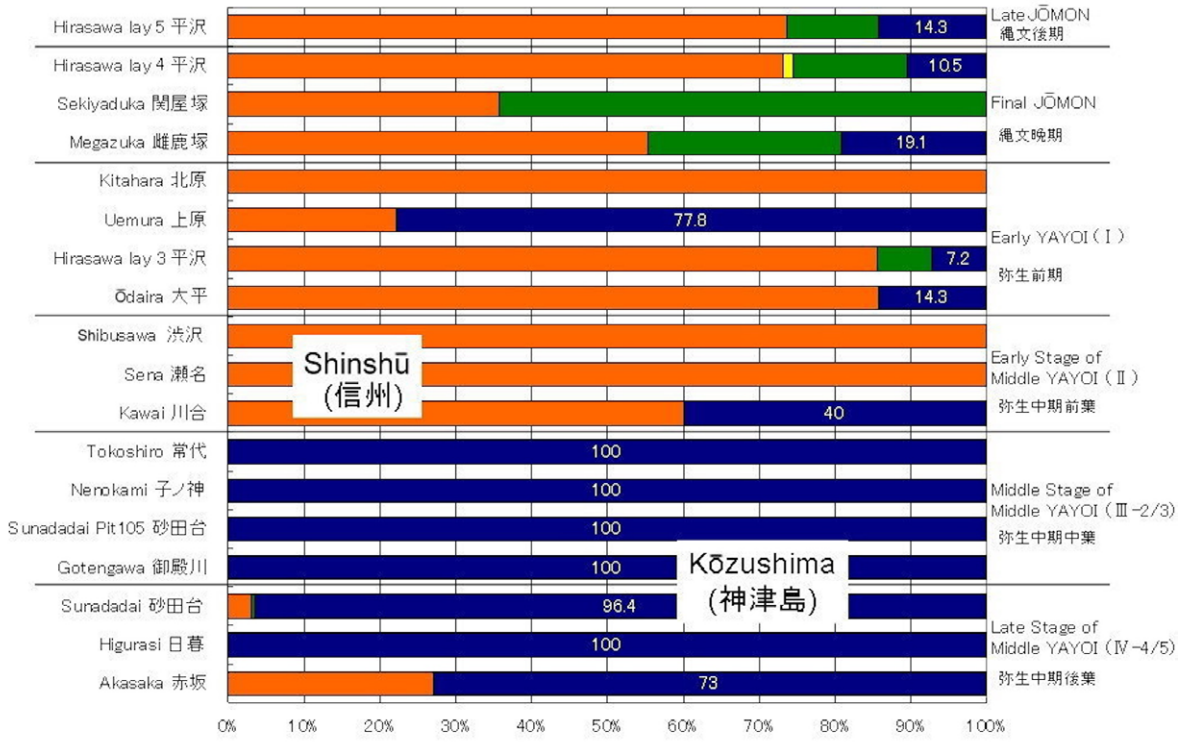

Figure 13.3 Changes in obsidian distribution from Late Jōmon through Middle Yayoi

The distribution structure of obsidian seems to correlate with changes in settlement distribution in the Izu Islands. Map A (Figure 13.2) shows the locations of villages from the late Jōmon Period through the early stage of the middle Yayoi Period, thus covering a particularly long period of time. Settlements were apparently scattered in various locations in the Izu Islands. Even if we employ finer temporal partitions, communities seem to have existed continuously on most of the islands during this period. However, in the middle stage of the middle Yayoi Period, just at the time that an eminent change occurred in obsidian distribution patterns, village distribution on the islands changed significantly as well. Map B (Figure 13.2) shows that settlements of this phase concentrated on Ōshima and Miyakejima, with no confirmed sites on the other islands. The sites marked for Ōshima have not yet been excavated, so no details are known. On the island of Miyakejima, however, several sites have been excavated (SUGIHARA 1934; ŌTSUKA 1965, 1958; SERIZAWA 1958; HASHIGUCHI 1975, 1983; AOKI et al. 1996). For example, more than 10,000 obsidian flakes have been excavated at Ozato Site. Obsidian cores and flakes excavated at Ozato Site are bigger than those excavated at sites in the Kantō region (Figure 13.5). We have found large amounts of obsidian at Ozato and other sites, as well as pottery transmitted from various regions in Kantō and Tōkai, leading to the conclusion that Miyakejima virtually had the monopoly on the

distribution of obsidian originating from Kōzushima.

Following this phase, a change in the distribution of villages occurred. As Map C (Figure 13.2) indicates, Miyakejima and the rest of the Izu Islands became uninhabited after the Ozato and Bōta Sites were abandoned. While it is certainly possible that sites were buried by ash and lava generated by volcanic activity affecting all of the islands, the fact remains that, at least to date, we have no examples of Yayoi pottery from this period in question. This hiatus stretches to the end of the middle Yayoi Period. Artifacts stemming from various sites of that period confirm that people had returned to both Ōshima and Miyakejima. Subsequently, although not shown on these maps, evidence of human habitation disappears again from all islands in the middle phase of the late Yayoi Period and does not reappear until the Kofun Period.

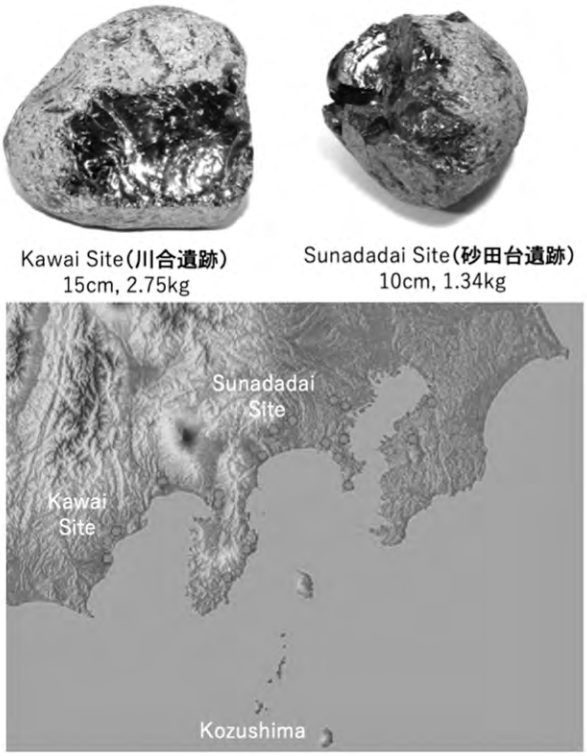

Figure 13.4 Obsidian cobbles found in the Kantō and Tōkai regions in the Yayoi Period

Sites on Miyakejima

There are numerous settlement sites on Miyakejima. Almost all of them lie in the northwest or southeast, an area of gentle slopes extending from the volcano in the center of the island. Stone hoes and other tools have been

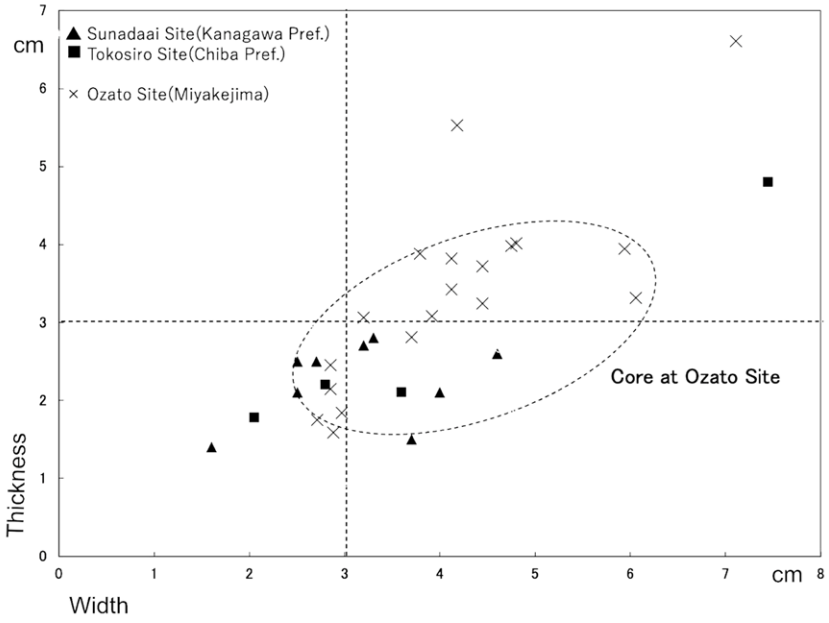

Figure 13.5 Sizes of obsidian cores on Honshū and Miyakejima

found at Osato and Bota Sites. This suggests that the inhabitants also practiced agriculture in the island.

Three sites will now be specifically highlighted, Ozato, Bōta, and Kokoma (Figure 13.6). As mentioned above, we found a large number of obsidian specimens at the Ozato Site. The Bōta Site dates a little later, but we have found obsidian there as well, though in lesser quantities. People living in Ozato and Bōta were apparently engaged in the distribution of obsidian. Both sites also yielded large amounts of pottery. Most of the pottery is similar to specimens found in the coastal area of Suruga Bay and the western coast of Sagami Bay, suggesting that the people who settled on Miyakejima came from these areas in search of obsidian.

The Kokoma Site, dating back to the Middle and Late Yayoi Period, is situated beneath a cliff on the shore, with strata containing pottery fragments and animal bones. Our excavations have shown that the site was primarily a production centre for shell bracelets (SUGIYAMA et al. 2008; OSHIZAWA 2008). The excavation area was just 0.35 square meters, and only a small number of shell bracelet pieces (31 pieces) were excavated. The bracelet is made of *P. (P.) optima (PILSBRY)*, a mollusk native to Miyakejima and Mikurajima in the south and elsewhere. None of the bracelets were completely perforated; all were fragments of bracelets that had been damaged during the production process in the Yayoi Period. Kokoma Site is thus considered a production site. The completed bracelets were apparently taken off the island and only the scrap parts remain. Such bracelets have been used since the Jōmon Period. They were taken to the Kantō and Tōkai areas from Izu islands through long-distance trade and were considered valuable in the Jōmon and Yayoi Periods.

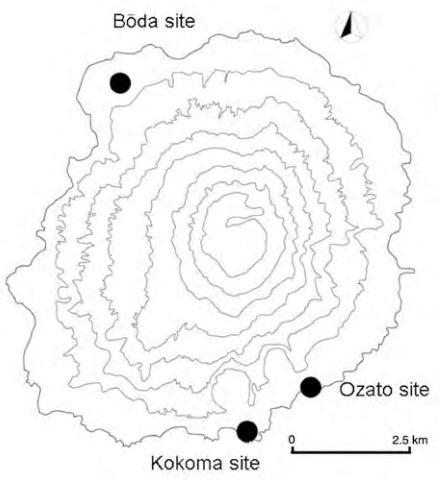

Figure 13.6 Yayoi villages on Miyakejima

The Yayoi pottery unearthed at the Kokoma Site is similar in pattern, shape, and clay to specimens from the Miura Peninsula, at the eastern coast of Sagami Bay (IKEYA et al. 2008). There obviously is a difference in pottery production between the middle and end phases of the Middle Yayoi Period. In other words, the groups that came to the island in the middle phase and the groups that came to the island in the end phase have different origins.

Villages and Volcanic Eruption

We are then left with the question of why communities disappeared not only from Bōta and Kokoma on Miyakejima but from the Izu Islands in general. A possible explanation is that volcanic activity influenced the living environment. There are many active volcanoes on the Izu Islands. Miyakejima is particularly active in this regard; the island is affected by eruptions or other volcanic events on average every twenty years. To test this hypothesis, we started a joint research project in year 2007, bringing together archaeologists and volcanologists.

Bōta Site was excavated in May 2008 (SUGIYAMA 2009). We found a pit that—after my analysis—was filled with pyroclastic flow and volcanic ash (Figure 13.7). Inside the pit, I discovered red discolorations, which probably were caused by the high heat of the pyroclastic flow. In other words, a volcano apparently erupted on Miyakejima when people were living in Bōta. The residents must have taken their intact pottery and stone vessels with them when they evacuated. This is why nothing but broken

pottery shards have been unearthed at the site.

We excavated Kokoma in 2007 (Figure 13.8). This site was also affected by a volcanic eruption. Above a stratum that contained pottery and other artifacts, we identified a stratum of mud flow. On top of that, measuring about 50 meters in height, lies an ash stratum created by a phreatic eruption (SUGIYAMA et al. 2008). This leads to the conclusion that both the Bōta and Kokoma Sites were affected by volcanic activity. The different origins of the settlement groups may have been influenced by these volcanic eruptions, which disrupted transport to the island.

Figure 13.7 Bōta Site in excavation 2008. Pit (red arrow) filled with volcanic debris (right)

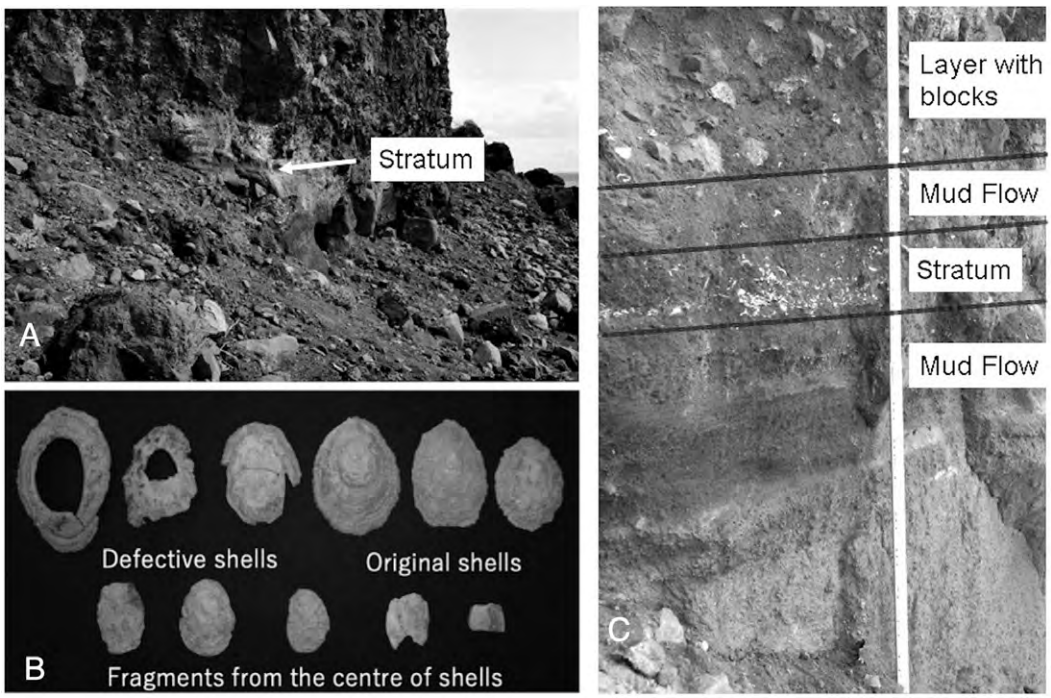

Figure 13.8 Kokoma Site details

A: location of cultural stratum in cliffside, B: excavated shell materials: shell bracelets (unfinished articles) made from *Patella* (*Scutellastra*) *optima*, C: stratigraphic section

Conclusion

After summarizing the results of our excavation project at Miyakejima, the question arises why people came to live on the island during the Middle Yayoi Period. First, it seems that they came to find local resources such as obsidian and shells. They collected these materials, processed them on the island, and then distributed them in the Kantō and Tōkai regions on the main island of Japan. However, people did not live on Miyakejima very long, as we can tell from the limited types of Yayoi pottery that can be found at archaeological sites there. In other words, the people who crossed the maritime space to Miyakejima in the mid-Yayoi Period actually set out to acquire obsidian and also mollusks to make bracelets, both products that were in-demand goods for the Honshū settlements. These people engaged in long-distance trade and were able to cross almost 100 kilometers of ocean. The distribution of obsidian for chipped stone tools and shell bracelets, which had been used since the Jōmon Period, continued during the Yayoi Period (SUGIYAMA 2014). The fact that the cultural activities of the previous generation continued even in the Yayoi Period, when agriculture began and society underwent major changes, and that long-distance trade was conducted by sea, indicates the diversity of the Yayoi culture, which was not limited to rice cultivation and metal vessels.

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CHAPTER 14

ARCHAEOLOGICAL RESEARCH IN SEMPORNA, SABAH, MALAYSIA

Stephen CHIA

This article presents an overview of the author's archaeological surveys in Semporna on the island of Borneo, carried out in the years 1994 to 2007. In search for evidence of human habitation, a wealth of finds shed light on human presence from late Palaeolithic to the early historic period and some suggest possible affinities with cultures in southern China and Taiwan. Sites from this area thus contribute significantly to understanding not only the archaeology of Sabah in Malaysia, but they also illuminate the structures and patterns of the ancient long-distance sea trading and exchange networks in Southeast Asia and the Pacific region. (eds.)

Keywords: Malaysian archaeology, excavation, long-distance trade, island archaeology, maritime trade

Introduction

This paper discusses the archaeological research undertaken in Semporna, Southeastern Sabah, Malaysian Borneo. Archaeological research in this region of island Southeast Asia has discovered interesting prehistoric sites and findings related to the archaeology of Southeast Asia, Melanesia, and South China. The archaeological sites of Bukit Tengkorak, Melanta Tutup, Bukit Kamiri, Bugaya, and other areas in Semporna, Sabah had yielded evidence for the presence of ancient human habitation during the Neolithic, Metal, and early historical periods. Amongst the archaeological discoveries dated by calibrated radiocarbon dates of between 1620 BCE and 1280 CE (CHIA 2008, 2016) were several human habitation and burial sites, including wood coffin burial sites associated with earthenware potshards, microliths, flake tools, stone adzes, animal and fish bones, beads, metal tools, and shell and stone ornaments.

The archaeological research in Semporna, Sabah from 1994–2007 was headed by the author from the Centre for Global Archaeological Research, Universiti Sains Malaysia, Penang, with technical assistance from staff of the Sabah Museum Department and the Mineral and Geoscience Department of Malaysia in Kota Kinabalu, Sabah, as well as assistance from local villagers from Semporna. Archaeological reconnaissance surveys were done in 1994–1995, 2002, 2003 and 2007 in order to locate prehistoric sites in the Semporna region.

The surveys were done to search for evidence of prehistoric human habitation, camp or burial sites in Semporna. The survey discovered clues to prehistoric human presence in the form of human teeth, stone tools, pottery sherds, and food remains at several archaeological sites. These sites include Bukit Tengkorak, Melanta Tutup, Bukit Kamiri, Bodgaya, Bukit Sakong, and Kampung Pokas (see Figure 14.1). At Bodgaya, two wood coffins, one belonging to an adult and the other a child, were discovered and radiocarbon-dated between 1050 and 1280 CE (CHIA 2008, 2016). Elsewhere, surface finds of potshards and flake tools were discovered at Kampung Pokas and Bukit Sakong. Three of the most potential archaeological sites, namely Bukit Tengkorak, Melanta Tutup, and Bukit Kamiri were excavated. The excavations had uncovered evidence of ancient human habitation and burials in the Semporna region from the Neolithic, Metal and early historical periods. Radiocarbon dating analyses carried out at some of these sites placed them to range from about 1620 BCE to 1280 CE. The following discusses in more

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detail the archaeological surveys, excavations, findings, and interpretations of these three main archaeological sites in Semporna, Sabah.

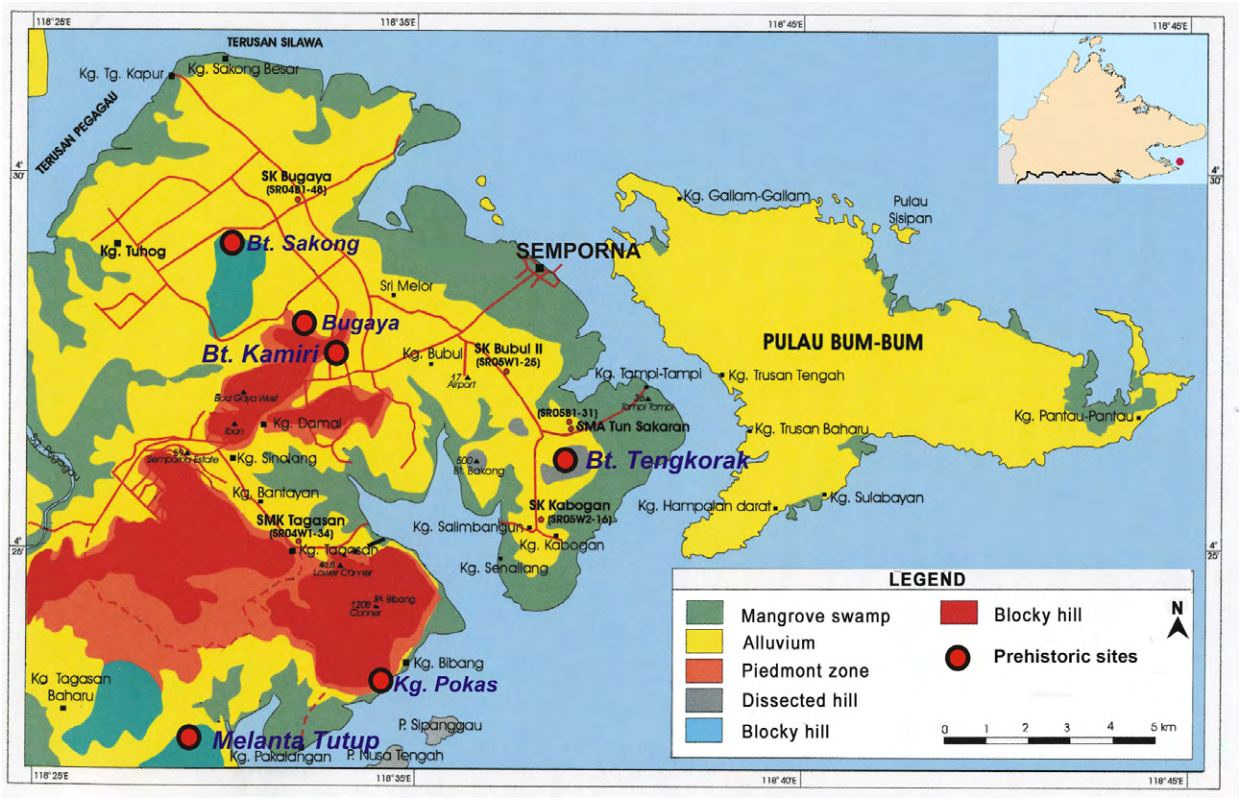

Figure 14.1 Location of archaeological sites in Semporna, Sabah, Malaysia

Bukit Tengkorak

The site of Bukit Tengkorak was first investigated archaeologically in 1987 by BELLWOOD. His brief survey and test excavations at Bukit Tengkorak revealed findings of Neolithic assemblages which include pottery, agate and chert blade and drills, stone adzes, obsidian artifacts, and shell ornaments as well as marine and terrestrial fauna remains (BELLWOOD 1989). The early phase of the occupation is characterized by plain and red-slipped pottery dated to the about 300 BCE (BELLWOOD and KOON 1989).

Following this, the Center for Global Archaeological Research, Universiti Sains Malaysia and Sabah Museum Department undertook several detailed archaeological surveys and excavations at Bukit Tengkorak. From 1994 to 2016, the author, with the cooperation of the Sabah Museum Department, had conducted research at the Bukit Tengkorak, Semporna and other archaeological sites in Sabah. This archaeological research had proven that Bukit Tengkorak in Semporna is a very important prehistoric site in Southeast Asia with significant contributions to the understanding of the archaeology of not only Sabah in Malaysia but also in Southeast Asia and the Pacific islands (CHIA 1997, 2001, 2003a, 2003b, 2003c, 2005, 2008, 2015a, 2016).

The first archaeological survey and excavation at Bukit Tengkorak was carried out by the author for his PhD research at Universiti Sains Malaysia with the assistance from the Sabah Museum Department from 1994–1995 (CHIA 1997). Fieldwork at Bukit Tengkorak between 1994 and 1995 spanned over two seasons.

The first season of fieldwork was conducted over two weeks between June and July 1994, whereas the second was over three weeks in April 1995.

Archaeological surveys at Bukit Tengkorak in the first season were carried out in June 1994 to identify areas that had archaeological potential. Surveys in the volcanic rock shelter site at the summit of Bukit Tengkorak uncovered large amounts of earthenware fragments, stone tools, and remnants of fauna such as animal bones and shells on the shelter floor. Three trenches, labeled as G17, G19, and J19 at the main volcanic rock shelter site and three more trenches, R36, S37, and T38, close to the volcanic rock boulders were selected for archaeological excavations (CHIA 2001, 2003a). These were conducted using the spit system, whereby each spit represented a depth of five centimeters. Among the types of artifacts discovered during the excavations were earthenware, stone tools, obsidian, and remnants of fauna such as animal bones, fish bones, and shells (CHIA 2003a).

Archaeological surveys in the second season were carried out in April 1995. The surveys were carried out to identify the location of water sources, clays, and rock materials used to make the stone tools and pottery found in Bukit Tengkorak. In addition to the surveys, archaeological excavations were also undertaken during the second season of fieldwork. Digging was continued at all the trenches that were excavated during the first season. Excavations were continued through the last cultural layer, that is, to the level that did not contain any more artifacts.

In 2002–2003, further archaeological surveys and excavations were undertaken at Bukit Tengkorak. The first season was carried out for about two weeks between September and October 2002, while the second was done for three to four weeks in May 2003. The excavations were conducted at one of the archaeologically potential areas situated at the summit of Bukit Tengkorak. Two trenches were excavated using only trowels, brushes, and ice picks in arbitrary levels or spits of 10 cm. The excavated soil was sieved using 0.2 cm and 0.5 cm wire meshes in order to retrieve small pieces of artifacts. The in-situ positions of the associated artifacts were recorded using the standard established methods, and the excavations were carried out until the sterile layers or base rocks at a maximum depth of about 120 cm.

Samples of charcoal or shells were collected whenever possible at different levels during the excavations for radiocarbon-dating purposes. Soil samples were also collected from the different soil layers and were subjected to flotation at the base camp, but unfortunately no botanical remains were found. The excavations at Bukit Tengkorak had recovered a considerable amount of pottery sherds, stone tools, and faunal remains. The association of the stone cores, flake tools, and waste flakes suggested stone tool-making at the site. Radiocarbon-dating analyses of three organic samples (two charcoal and one shell samples) from the 30 to 45 cm levels dated the Bukit Tengkorak assemblages from 1620 to 910 BCE (CHIA 2005).

The excavated artifacts, which include pottery sherds, stone artifacts, and faunal remains were cleaned with water and air-dried at the base station in Semporna. These artifacts were labeled, packed, and transported to the Center for Global Archaeological Research in Universiti Sains Malaysia, Penang for further scientific analyses. In total, about 256,464 potshards, weighing approximately 183 kilograms, were recorded. The pottery sherds consisted of mainly body sherds, while the remainder consisted of fragments of pottery bases, handles, flanges, knobs, lids, and a pottery stove. A majority of the pottery was plain, while the rest of the sherds were decorated with impressed, incised, red-slipped, and perforated designs. Some 3,664 stone artifacts were also found during the excavations, comprising nine

main classes of stone types: core, hammerstone, borer, adze, utilized flake, flake, waste flake, and chunk. The stone artifacts were made from a variety of raw materials such as chert, agate, obsidian, andesite, sandstone, and slate. The faunal remains consist of animal and fish bones as well as shells. The fragmentary animal and fish bones recovered during the excavations weighed about 10.3 kilograms. Preliminary analyses suggested mostly marine fish bones—and animal bones belonging to various types of terrestrial mammals such as pigs, monkeys and other small mammals. The shell remains weighed approximately 6.3 kilograms and are mostly edible marine species.

Melanta Tutup

The volcanic rock shelter site of Melanta Tutup is located about 600 feet above sea level at the Tagasan Bay in Semporna (Figure 14.1). Our archaeological survey in 2002 and 2003 at this rock shelter site uncovered surface finds, which include an ancient log coffin with a carved buffalo head, and a considerable number of pottery sherds, animal bones, shells, and some stone tools. The ancient log coffin is believed to be that of an important person, perhaps an aristocrat or leader of a community. The lid of the coffin was carved in the shape of a buffalo head at one end and its tail at the other end. The coffin was disturbed, as no human skeletal remains or artifacts were found inside. Some of the human remains, and burial items—mostly teeth, some beads and metal objects which possibly belonged to the deceased—were found scattered on the shelter floor near the coffin. The coffin was radiocarbon-dated between 880 and 1110 CE (CHIA and KOON 2003). Our archaeological research and excavations at this site also revealed that it was used as a burial site from the Neolithic to the early historical period, about 1380 BCE to 1170 CE (CHIA et al. 2005). Three seasons of excavations were carried out at Melanta Tutup in 2003, 2004, and 2006.

First season

During the first season in 2003, a 2 x 1 meter test trench was excavated to determine the types of archaeological artifacts and depth of the cultural layers at the site. The test trench was excavated using standard established methods with trowels and brushes in arbitrary levels or spits of 10 cm. The excavated soil was sieved using 0.3 cm and 0.5 cm wire meshes in order to retrieve small artifacts such as beads and seeds. All the sieved soil was collected and subjected to flotation in order to collect botanical samples. The in-situ position and the association of the artifacts were recorded using the standard established methods. The excavation was carried out until the sterile layer at 150 cm and the soil profile of the excavations was recorded. Samples for radiocarbon-dating were collected whenever possible at different levels during the excavations.

The excavations produced many artifacts such as pottery sherds, stone tools, shells, seeds, beads, metal objects, and stoneware. In total, 4,036 pieces of potshards, weighing about 16.5 kilograms, were recovered. Preliminary analysis of the pottery sherds identified parts of the body, rim, base, handle, flange, knob, and fragments of a pottery stove. A majority of the pottery was plain, while the remaining sherds were decorated with impressed, incised, red-slipped, and perforated designs. There were also about 27 pieces of stoneware ceramics, weighing about 113 grams, found mostly at the top layers of the site. A total of about 32 stone artifacts were recorded, consisting of five main types: core, utilized flake, scraper, borer, and waste flakes. They were made from a variety of raw materials such as chert, agate, obsidian, andesite, and sandstone. The faunal remains consisted of animal and fish bones as well as edible shells. The animal and fish bones, weighing about 2.6 kilograms, were in small pieces with only a small number of the teeth. The shell remains recovered from the excavations weighed about 6.5 kilograms and consisted of mostly edible marine species. Ten pieces of metal objects, weighing about

102 grams, were found at the top layers in rather badly corroded conditions together with six small glass beads in various colours of yellow, red, and white.

Second season

The second season of fieldwork in 2004 revealed a long chronology of human habitation in Melanta Tutup. An additional trench, measuring 2 x 2 meters, was excavated using the standard established method down to the sterile basal layer, about 2.5 metres in maximum depth. The excavations uncovered many artifacts such as extended human burials, possible burial jars, stone tools, pottery sherds, metal objects, beads, food remains consisting of shells, fish and animal bones, and botanical remains. The findings and association of these artifacts from the first to the last cultural layers suggested that the site was used for a long period of time, from the Neolithic through the Metal and early historical periods. Radiocarbon-dating analyses carried out during the first and second season of fieldwork placed the Metal Period burials between 890 and 1170 CE and the Neolithic burials from 1380 to 550 BCE. However, the earliest human habitation at the site remains unknown although a piece of small chert flake of questionable context was found in the lower layer and had been radiocarbon-dated to around 10,370 to 9800 BCE (CHIA 2008).

The human burials discovered at the top 20–30 cm levels comprised several individuals buried with funerary items such as pottery, beads, metal artifacts, ornaments, shells, and stoneware. This mass burial had eight individuals consisting of four adults, two children, and two infants; they were radiocarbon-dated to the Metal Period, between 890 and 1170 CE (CHIA et al. 2005; CHIA and MATSUMURA 2007). Some of the burials were extended while some may have been jar burials as the skeletal remains were found associated with large pieces of pottery sherds, possibly from a large jar. The eight human skeletal remains from the mass burial in Melanta Tutup were further analysed and compared with known skeletal remains in Southeast Asia. The results suggested that the Melanta Tutup inhabitants did not resemble the Tasmanians and Tolai Melanesians but have close affinities with the Atayal Taiwanese and Hainan people in South China (CHIA and MATSUMURA 2007).

Third season

During the third season of excavations at Melanta Tutup in 2006, an additional 2 x 2 meter trench was excavated using the standard established method down to the sterile layer about 200 cm in maximum depth. The excavations produced a variety of potshards, flake tools made of agate and chert, obsidian flakes, and food remains in the form of animal and fish bones and shells (BUJENG and CHIA 2020). Radiocarbon-dating analyses have so far placed the Neolithic layers to dated about 1370 to 590 BCE (CHIA and MATSUMURA 2007).

Bukit Kamiri

Bukit Kamiri is a volcanic rock shelter site located about 3 km from the town of Semporna, Sabah (Figure 14.1). A systematic excavation was carried out at Bukit Kamiri, Semporna, Sabah for a period of about three weeks in April 2007. In total, five trenches were excavated using trowels, ice picks, and brushes in arbitrary levels or spits of 10 cm. The excavated soil was sieved using 0.3 cm and 0.5 cm wire meshes in order to retrieve small pieces of artifacts. The in-situ position and the association of artifacts were also recorded. In addition, dating samples such as charcoal and shells were collected from different levels whenever possible for radiocarbon-dating. The excavation at Bukit Kamiri was carried out to a maximum depth of 110 cm. The results of the archaeological research at Bukit Kamiri have revealed

evidence of a Metal Age burial and a Neolithic habitation site radiocarbon-dated ranging from about 1380 to 760 BCE. The excavation produced various findings such as stone tools, pottery, metal objects, beads, faunal remains, and a human burial. These artifacts were analysed at the Centre for Global Archaeological Research, Malaysia, Universiti Sains Malaysia, in order to classify, as well as to study, their function and manufacturing technology.

The 780 pieces of lithic artifacts found in Bukit Kamiri can be divided into three main categories: tool-making implements (hammerstones and cores), stone tools (borers, flake tools, adzes, and miscellaneous tools), and debitage. The lithics were made from various raw materials such as agate, obsidian, chert, slate, sandstone, flint, volcanic rock, and quartz. In total, 65,054 pieces of pottery sherds found at Bukit Kamiri were classified according to parts such as body sherds, rims, bases, stove parts, and unidentified sherds. Pottery decorations were mostly found on the body and rim parts. The majority (59,183 pieces) of the pottery sherds are undecorated. The remaining sherds are decorated with impressed, incised, red-slipped, and perforated designs. Also, faunal remains weighing 11,764.7 grams were found. The faunal remains consist of mammal bones, reptile bones, fish bones, and shell remains. The shell remains included gastropods and bivalves from marine, estuarine, mangrove, and freshwater environments (DEEJAY et al. 2017, 2020). The excavations at Bukit Kamiri also discovered a human burial with grave goods such as five metal machetes, beads, earthenware, and seashells (CHIA 2008). Examination and analyses of the burial revealed two skeletons of male adults, aged from 25 to 34 and 35 to 44 years old respectively (ENG and CHIA 2010).

Discussion and Conclusion

Archaeological research conducted by Universiti Sains Malaysia and the Sabah Museum Department at Bukit Tengkorak in Sabah, Malaysia has produced important findings on the prehistory of Southeast Asia. The research reveals a major ancient pottery-making site at Bukit Tengkorak and provides insights and hypothesis on ancient long-distance sea trading and exchange networks in Southeast Asia and the Pacific region (CHIA 2001, 2003a, 2003b, 2016; VANDIVER and CHIA 1997). The research also suggests the existence of early seafaring technology and movements of people in a westward direction from the Pacific to Southeast Asia during prehistoric times, 2,000–3,000 years before Captain James Cook explored the seaways of islands in Southeast Asia and the Pacific Ocean in 1768–1779. The evidence comes in the form of lapita pottery and obsidian artifacts found in Bukit Tengkorak, which have been morphologically or chemically traced to sources 3,500 km away in New Britian, Melanesia, at around 3,000 years ago (BELLWOOD and KOON 1989; TYKOT and CHIA 1997; CHIA 2003d, 2016).

The research in Semporna from 1994 to 2007 has provided new and significant data on the prehistory of Semporna in Southeast Asia. The archaeological survey has identified several new archaeological sites in the Semporna region. Archaeological excavations at some of these sites—Melanta Tutup, Bukit Kamiri, and new areas in Bukit Tengkorak—have so far uncovered many in-situ potshards, shells, fish and animal bones, stone tools, including obsidian artifacts needed for the research. Radiocarbon dates placed the pottery and obsidian artefacts at Bukit Tengkorak in the Semporna region to date about 1200 to 900 BCE (CHIA 2003a, 2003b). Archaeological and geological surveys conducted in 2003 with a geological team from the Mineral and Geoscience Department of Malaysia in Kota Kinabalu, Sabah, has discovered possible sources of agate and chert rock materials that were probably used to make the stone tools at Bukit Tengkorak, Melanta Tutup, and Bukit Kamiri. These in-situ agate and chert sources were found embedded in magma at the foothills of Melanta Tutup. A number of stone tools were also found at the agate and chert sources during the survey. However, no obsidian source was found during the survey although some of the obsidian artifacts at Bukit Tengkorak had been traced chemically to

sources in Melanesia (BELLWOOD and KOON 1989; TYKOT and CHIA 1997; CHIA 2003a, 2003b, 2003c).

One of the most significant archaeological finds thus far come from the site of Melanta Tutup which contained rich archaeological evidence, including the first evidence of human remains in Semporna, along with other artifacts such as a log coffin, stoneware, beads, metal artifacts, earthenware, stone tools, fish and animal bones, edible shellfish shells, and botanical remains. Melanta Tutup has provided important evidence and dates on ancient human habitation and burial in the Semporna region and its relationships or origins in Southeast Asia and the Pacific region. Radiocarbon-dating results from Melanta Tutup revealed a long chronology of human habitation from the early historical period to the Metal and Neolithic Periods, dated between ca. 1370 to 590 BCE in Semporna, Sabah. The faunal remains at Melanta Tutup, like those in Bukit Tengkorak and Bukit Kamiri, indicated a broad-spectrum economy with a predominantly maritime-based diet, focused on marine and forest environments (DEEJAY et al. 2022). A wide range of marine fish, molluscs, reptile, and crustaceans from the sea as well as animals from the forest were exploited by the inhabitants using various fishing, hunting, and gathering methods. Analyses of the dental and facial characteristics of the Melanta Tutup human remains from the Neolithic Period (ca. 1380 to 550 BCE) and from the late prehistoric period (890 to 1170 CE) and their comparisons with those of other ancient populations in Southeast Asia, China, Japan, Melanesia, and Australia suggested possible affinities with ancient populations in South China and Taiwan (CHIA et al. 2005; CHIA and MATSUMURA 2007)

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CHAPTER 15

THE CHANGE IN THE DISTRIBUTION SYSTEM OF BRONZE MIRRORS AT THE BEGINNING OF KOFUN-PERIOD JAPAN: AS SEEN FROM FRAGMENTED BRONZE MIRRORS

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Finds of fragmented bronze mirrors from latest Yayoi and Early Kofun environments raise questions, thus allowing assessment of changing bronze mirror distribution at the Beginning of Kofun Period Japan and its impact on the appearance of local elites in the Kinki region.

Keywords: Bronze mirrors, Kofun Period, fragmented bronze mirrors, social hierarchies, elite burials

The Problem

The term "fragmented bronze mirrors" designates pieces of mirrors that had been drilled or polished and date from Late Yayoi to Early Kofun Period (roughly 1st to 4th centuries CE) (Figures 15.1 to 15.3). The majority of the excavated pieces come from the Japanese archipelago, while some few examples have been found on the southern Korean Peninsula. Most of the specimens have originally been Chinese mirrors from the Eastern Han Dynasty; small numbers were made from Western Han mirrors or Japanese imitation mirrors.

The beginning of the Kofun Period in the mid-3rd century is important to consider later ancient state formation processes in the Japanese archipelago (cf. BARNES 2007; MIZOGUCHI 2002; TSUJITA 2006b). The purpose of this paper, therefore, is to introduce fragmented bronze mirror finds from the Late Yayoi to Early Kofun Periods and, moreover, to discuss the diverse meanings of bronze mirrors in ancient East Asia. In addition, the author intends to emphasize the change in the distribution system of mirrors and the underlying political correlations of that period by examining fragmented mirror finds.

In ancient China, bronze mirrors were in use as everyday commodities, and they were buried in small numbers in tombs as mortuary goods. Chinese tombs regularly contained only one or two mirrors per person. However, in the Japanese archipelago—a peripheral area to mainland East Asia—mirrors were treated as exotic luxury goods by the local elite. Especially from the 1st century BCE onward, bronze mirrors were intermittently imported from Lelang, an outpost of Han Dynasty China on the Korean Peninsula (OKAMURA 1999). Thereafter, placing several mirrors together into a single tomb developed into a general feature of elite burials in the Japanese archipelago. At Hirabaru Site, located in Maebaru City (Fukuoka Prefecture) in northern Kyūshū, mounded tomb No. 1, which was constructed in the latest Yayoi Period, yielded forty mirrors of Eastern Han style, including the largest mirrors yet found in East Asia (at 46.5 cm diameter). The Hirabaru Tomb, moreover, contained the largest number of mirrors from Late Yayoi to Early Kofun Periods found in a single burial. In the Early Kofun Period (mid-3rd to 4th centuries), mounded tumuli with more than ten mirrors became more regular, and they are not as outstanding as in a Late Yayoi context.

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Due to the unstable political situation during the Eastern Han Dynasty in China, the production of bronze mirrors decreased in the 2nd to early 3rd centuries (later Late to Terminal Yayoi), also in Lelang. The export of Han mirrors to the Japanese archipelago in consequence declined. Instead, the use of fragmented bronze mirrors increased in the Japanese archipelago.

Figure 15.1 Fragmented mirror (TLV design with saw-tooth edge, Type A1) with two holes, excavated from the Karakami site (from the Late Yayoi layer), Nagasaki Prefecture

How fragmented bronze mirrors were produced is a question difficult to answer. In the author's opinion, the shape of the fragmented mirrors and the way they were used are important, such as in the case of drilled specimens. Most of the drilled bronze mirrors are fragmented ones, but there are also a small number of complete mirrors with drilled holes, apparently allowing string to be put through for suspending them. With reference to the drilled holes and the wear traces on the surface of such mirrors, UMEHARA (1933) pointed out that drilled specimens had been inherited as heirlooms from generation to generation. Drilled fragmented mirrors thus might have been in use for a long time.

Eastern Han style mirrors have been excavated from Japanese keyhole-shaped tumuli, dating from the late 3rd to 4th centuries. It therefore is an eminent question when such Han style mirrors actually had been imported and how they were distributed. KOBAYASHI (1955, 1961) thought that Han style mirrors reached the Japanese archipelago in the 1st to 3rd centuries, and that they must have been passed on until the 4th century. The mirrors would have eventually been used as grave goods in Kofun-period keyhole-shaped tumuli together with newly imported and distributed triangular-rimmed mirrors with deity-beast design, which are assumed to have been produced mainly during the Wei Dynasty.

Figure 15.2 Fragmented mirror (dragon with double-headed design, Type B2), excavated from the Yamaga stone coffin No. 2 (Early Kofun), Fukuoka Prefecture

Figure 15.3 Fragmented mirror (inter-connected arc, Type B4) excavated from the Kamitokoroda Tomb (Late Yayoi), Fukuoka Prefecture

Although this is the general opinion, there are also different views. NAITO (1959), for example, pointed out that Han style mirrors excavated from later period sites may well have been imported together with Wei and Western Jin mirrors, which means only after the mid-3rd century (e.g., TAKAHASHI 1986). Other scholars have called attention to the wear traces on the surface of such "inherited mirrors", which might actually have resulted from problems related to the casting technique (e.g., HARADA 1960). It also seems necessary to find out where such "inherited mirrors" were in fact inherited. MORI Kōichi remarked that in ancient China there were also some examples of mirrors which have been inherited (MORI K. 1962).

The many problems related to the importation and distribution system of bronze mirrors also bear some impact on the question whether local elite appeared in the Kinki region already during Late Yayoi, or whether this region developed into a core area of inter-regional political relations only in the Kofun Period. In other words, the mirror finds raise fundamental questions regarding the process of the beginning of the Kofun Period and its widespread political organization.

The fragmented mirrors, in the author's opinion, play a very important role in this discussion, especially with regard to the change in the distribution system of bronze mirrors. In Late Yayoi, the number of complete mirrors and fragmented mirrors was almost balanced, and the main area of distribution was northern Kyūshū. In the Kofun Period, on the other hand, complete mirrors became common as mortuary goods and the center of distribution now was Kinki region. The analysis of the process of appearance and disappearance of fragmented mirrors in the Japanese archipelago, therefore, may contribute to solving problems related to the emergence of the political system of Kofun Period.

As has been said, there are many different opinions connected to the process of appearance and disappearance of fragmented mirrors from Late Yayoi to Early Kofun Period. Fragmented mirrors were mainly found at later Late, latest Yayoi, and earliest Kofun sites. By the end of the Early Kofun Period most fragmented mirrors seem to have disappeared (TSUJITA 2005). Two questions are eminent in this context: how did the usage of fragmented mirrors appear, and how and why did it disappear?

Three major hypotheses relate to the advent of fragmented bronze mirrors. Firstly, some scholars assume that Han mirrors were imported as complete specimens. The mirrors then apparently would have been broken and divided into many pieces to meet the shortage of (complete) Han mirrors. The fragmented mirrors would have been distributed by North Kyūshū elite groups to surrounding local chiefs to confirm the political confederacy between them (TAKAKURA 1976, 1986). TAKAKURA (1972, 1985) pointed out that small imitation mirrors, produced in the archipelago, were distributed along the same lines. Such mirrors were modeled after small Western Han mirrors in the Late Yayoi Period.

On the other hand, MORI Teijirō (1985) and TAKAHASHI (1992) thought that fragmented mirrors had been imported already in the form of fragmented pieces. In other words, Yayoi people would have demanded mirrors in such a form. Another problem relates to the Late Yayoi custom of sometimes intentionally breaking complete bronze mirrors during the mortuary ritual before burying the pieces with the dead (KAWANISHI 1989; KOYAMADA 1992).

FUJIMARU (1993) pointed out the possibility that fragmented mirrors actually originated from such broken and divided mirrors because there are cases of missing mirror pieces among those broken mirror finds. Moreover, it is intriguing that it is almost impossible to reunite some of the 'fragmented mirrors' to form a complete specimen or even a larger piece of it (FUJIMARU 2000; TSUJITA 2005).

Concerning the end of the usage of fragmented mirrors, MASAOKA (1979) analyzed pieces from Late Yayoi to Early Kofun Periods diachronically. He pointed out that the deceased, with whom fragmented mirrors had been buried, were not paramount chiefs but lower ranked persons with some kind of special skill, which might have been related to magical rites. Fragmented mirrors, according to MASAOKA, decreased in the Kofun Period; the way of the ritual use of mirrors changed.

As has been said, solving the riddle of the appearance and disappearance of fragmented mirrors in the Japanese archipelago involves many difficulties. Three points must be analyzed more precisely: 1) the circumstances in which fragmented mirrors appeared, 2) the meaning behind the shape and the holes of fragmented mirrors, and 3) the distribution system of fragmented mirrors and its relation to complete mirrors.

Appearance

The three main hypotheses relating to the advent of fragmented bronze mirrors have already been mentioned. 1) Complete mirrors might have been crushed and divided into fragments to meet the shortage of imported Han mirrors. 2) Mirror pieces might also have been picked from intentionally crushed mirrors in mortuary contexts. 3) It is possible also that originally fragmented pieces were imported and polished and/or drilled after importation.

It is an important fact that the cases where mirror fragments (fragmented mirrors) from different sites can be reunited are few. I therefore assume that none of the three possible explanations can be ruled out completely. However, I assume that importing originally fragmented pieces was most common because of the decrease of bronze mirror production and importation from Lelang in the later Eastern Han Period, the rarity of cases where reuniting fragments was possible, and the existence of fragments of bronze mirrors in Lelang (cf. JEONG 2001).

Some mirror pieces have been found in Middle Yayoi sites. However, as most were found in later Late Yayoi sites of North Kyūshū, I understand the advent of the usage of fragmented mirrors occurred around later Late Yayoi or slightly earlier in North Kyūshū.

Classification

Almost 170 fragmented mirrors with traces of crosswise cuts or drilled holes from the Late Yayoi to Early Kofun Periods have been confirmed (TSUJITA 2005, 2007b). In addition, there are many pieces of mirrors which do not have such clear indicators, so it is impossible to identify whether they are parts of originally complete mirrors or fragmented ones.

The shapes of fragmented mirrors are diverse. Some points must be considered for further discussion: 1) what types of mirrors were used, 2) whether they were drilled or not, and 3) what kind of mirror parts were used for fragmented mirrors.

Firstly, there are various types of mirrors that were used to produce fragmented mirrors, but the most common types can be limited to two Eastern Han mirrors: the TLV-type mirror and the interconnected arc-type mirror, which both were made from about the 1st to 2nd centuries CE. A small number of Japanese small imitation mirrors have also been used for fragmented mirrors.

Secondly, although there are many fragmented pieces with drilled holes, there are also a few complete mirrors with drilled holes. These specimens have broken central knobs. The holes therefore apparently were drilled to substitute the broken central knob, which originally had functioned as a means to pull

a string through and hang or hold the mirror. Interestingly, there are very few mirror fragments made of the central knob part (which has integral holes for a cord to pass through) that show additional drilled holes. The role of drilled holes of such fragmented mirrors presumably was mainly to hang it flat as a pendant.

There are, however, two exceptional examples with drilled holes and central knob. One is an originally complete mirror that was broken into two pieces. The pieces have four holes each. The other is a fragmented mirror with four holes. The holes appear to have been drilled with the purpose of uniting or repairing broken pieces. In addition, FUJIMARU (1993) pointed out that there are some complete mirrors with drilled holes that appear to have helped divide the mirror into pieces. The author recognizes traces of such holes on the fragmented triangle-rimmed mirror with deity-beast design from Rōji Tumulus, Fukuoka Prefecture (see TSUJITA 2005: fig. 1). So, the inferred functions of drilled holes were: 1) to reunite or repair to recreate the original form, 2) to hang, 3) to divide / create new forms.

Thirdly, various parts of mirrors have been used to make fragmented mirrors. Fragmented mirrors have, for example, been made from the rim part, the inner part, or the central knob part. The majority were made from the rim part. It is difficult to say whether the selection of the parts to make fragmented mirrors was intentional.

Since the shapes of the broken pieces of mirrors—e.g., in Hirabaru Tomb No. 1—are very diverse, it is important not to overestimate this element, although suggesting a meaning behind the shapes raises some interesting problems. Some examples of fragmented mirrors do show similar shapes, such as the sector or half-moon shape with drilled holes to be used as pendant. There also is one example with drilled holes to divide and reform for the sector form (see TSUJITA 2005: fig. 1).

It is possible therefore to classify the shapes of fragmented mirrors and distinguish between categories:

A (without central knob),
B (with central knob), as well as:
Type 1 (rim type)
Type 2 (from rim to inner part, less than 1/3 of a complete mirror in diameter)
Type 3 (from rim to inner part, more than 1/3 of a complete mirror in diameter) including the half-moon shape
Type 4 (inner part without rim) (see Figures 15.1 to 15.3 and Tsujita 2005)

Although the difference of the shape of fragmented mirrors should not be overvalued, it is important to recognize shapes as similar because—as was indicated by my analysis—there seems to have been a certain orientation towards similar shapes, such as the sector and half-moon shapes (A1, A3, and B3).

Distribution of Fragmented Mirrors, Complete Mirrors and the Change in Distribution

In the Late Yayoi Period, Eastern Han mirrors were imported mainly from Lelang into North Kyūshū. Many of those whole mirrors were buried in mound-burials as mortuary goods; on the other hand, fragmented Han mirrors were mostly used in ritual contexts and abandoned at settlements (e.g., Takahashi 1979). The number of complete Han mirrors from this period is very small; the majority of excavated bronze mirrors in Setouchi and Kinki regions and further eastward are these fragmented mirrors, spread by inter-regional exchange. In the latest Yayoi, some complete mirrors were newly imported from Lelang and Daifang (another outpost newly constructed at the beginning of the 3rd century). Most of such mirrors were originally complete but were nevertheless broken intentionally in the mortuary ritual. They have been buried in mounded tombs of North Kyūshū, Setouchi, eastern

Shikoku, Kinki, and Tōkai regions.

After the beginning of the Kofun Period, the Kinki region became the central area of (complete) Chinese bronze mirror distribution. In the Early Kofun Period, newly imported (complete) Chinese mirrors (Eastern Han, Wei, Western Jin and triangle-rimmed mirrors with deity-beast design) were buried in keyhole-shaped tumuli of the elite throughout the Japanese archipelago. The larger specimens of this period are concentrated in Kinki region. This trend in mirror distribution also applies to Japanese mirrors that were modeled after Chinese originals in the Kofun Period. Based on these archaeological phenomena, there must have been a drastic change in the distribution system of Chinese mirrors from Late Yayoi into the Early Kofun Period. Complete bronze mirrors now have turned into the main items of the Early Kofun prestige good system.[1]

Another intriguing problem connected to fragmented mirrors relates to the fact that in Late Yayoi, the quantity of fragmented mirror finds is almost the same in mounded-tomb, settlement, or ritual contexts. In Early Kofun, however, the number of fragmented mirrors in use as mortuary goods increased, and moreover, they appear to have been increasingly used in burials of persons of lower rank (cf. MASAOKA 1979).

Interestingly, the distribution patterns of fragmented mirrors and their original mirror types used in the Late Yayoi and Early Kofun Periods are very similar. Thus, we may suggest that the majority of the fragmented mirrors excavated from Early Kofun sites had already been spread in the preceding Late Yayoi to the various regions and were inherited as heirlooms until the Early Kofun Period. Fragmented mirrors then disappeared by the end of the Early Kofun Period (TSUJITA 2005).

Discussion

I have here presented a summary of the research I conducted in recent years on imported Chinese bronze mirrors (fragmented and complete) from the Late Yayoi to Early Kofun Periods.[2] In my opinion, the change in the distribution system and the process of importing Chinese mirrors are both very important to assess interregional relationships in the Early Kofun Period.

From the beginning of the Early Kofun Period onwards, complete bronze mirrors were embedded in a distribution system that was centered in the Kinki region, and that system maintained the supply of bronze mirrors to support its wide political confederacy. It was the local elite of each area in the Japanese archipelago who demanded bronze mirrors in order to join the wide-ranging political network and legitimize their power.

The concept of my "prestige good system" of the Early Kofun Period thus consists of two elements:

1. The acquisition, use, and consumption of these mirrors were limited to the local elite.
2. The cycle of acquisition, use, and consumption of these mirrors was inevitably embedded in the process of social reproduction.

It is possible that the new imports of many complete Chinese mirrors at the beginning of the Kofun Period relates to Queen Himiko's sending of ambassadors directly to the capital of the Wei Dynasty, not only to Lelang and Daifang (CE 239 and later). This change, from fragmented mirrors available in each region to complete mirrors distributed from Kinki region, signifies an epoch in which not only the system of bronze mirror distribution was reorganized but also in which interregional relations came to

[1] See FRIEDMAN and ROWLANDS 1978; KRISTIANSEN and ROWLANDS 1998; TSUJITA 2006, 2007b.
[2] See TSUJITA 2001, 2006a, 2006b, 2007a, 2007b.

be centered on the Kinki region.

This process of change also reveals that the meaning of fragmented mirrors changed in the Late Yayoi to Early Kofun Periods. In Late Yayoi, fragmented mirrors were exchanged, used, and consumed in various ritual contexts; they were polysemous objects. In Early Kofun, the use of the complete Chinese mirrors as mortuary goods became common, while fragmented mirrors became the secondary substitute of complete mirrors as mortuary goods.

This model challenges the general opinion that so-called "inherited mirrors" are complete Eastern Han mirrors excavated from keyhole-shaped tumuli of the Early Kofun Period. Instead, I propose that the inherited mirrors are fragmented mirrors created and passed on during the Late Yayoi into Early Kofun. The majority of the complete Eastern Han mirrors were, after my model, actually imported together with Wei and Western Jin mirrors at the beginning of the Kofun Period and later.

In summary, the complete mirrors (Chinese and Japanese) went out of use as mortuary goods during the later Early Kofun Period (ca. late 4th century). Iron weapons and armors replaced them and became the main mortuary goods at the end of Early Kofun and the beginning of the Middle Kofun Period. Fragmented mirrors disappeared during that process, losing their meanings by the end of the Early Kofun Period.

In conclusion, there apparently are three overlapping contexts pertaining to the use of bronze mirrors in the Early Kofun Period:

1. Complete mirrors in use as prestige goods distributed from the Yamato polity
2. Fragmented mirrors inherited since Late Yayoi
3. Small Japanese mirrors used in ritual context; these originate from the small Japanese imitation mirrors of Late Yayoi (pointed out by TAKAKURA 1999)

The process of change at the beginning of the Kofun Period (context 1) overlaid the older and continuing contexts (2 and 3). The persistent way in which mirrors from Late Yayoi were still in use and the resulting overlapping contexts, however, strongly influenced the meaning of bronze mirrors and the role they played from the beginning of the Kofun Period onward.

Concluding Remarks

This study highlights the characteristics of bronze mirror usage from the Late Yayoi to Early Kofun Periods and related issues, especially with regard to fragmented mirrors. Fragmented mirrors bear a wealth of information in view of the diversity of meanings of material culture as regards social and political processes. Fragmented mirrors were products within a process of long-term social interaction among many local societies in the Japanese archipelago, and also between these societies and the Chinese dynasties or their outposts in the peripheral area of ancient East Asia. Fragmented mirrors are closely connected to the process of the formation of wide-ranging political interactions and thus the beginning of the Kofun Period in the Japanese archipelago.

Some related issues, such as the typology and chronology of Chinese and Japanese bronze mirrors, the distribution and use of other items in the Early Kofun Period, and the analysis of the keyhole-shaped tumuli and the settlements, where these mirrors were used and consumed, hold eminent meaning in this context. They constitute the issues currently under discussion in archaeology of the Kofun Period.

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CHAPTER 16

THE 2007 EXCAVATION AT SHŌBUZAKO KOFUN

Jane OKSBJERG

A stimulating field report, this essay takes us to the ancient Kibi entity, one of the centers of Kofun culture in Okayama Prefecture on Honshū, the Japanese main island. The Kofun, or "tumuli" Period, ranges from the mid-3rd to the end of the 8th century CE. The impressive keyhole-shaped burial mounds—some of which reach lengths of up to several hundred meters—as well as the terracotta grave figures (J. haniwa) constitute key finds of the Kofun Period. They testify to increasing political centralization in the Japanese archipelago, particularly in the Nara (or Yamato) plain. The earliest Japanese written sources, the Kojiki *(712) and the* Nihongi *(or* Nihon Shoki*, 720), were compiled towards the end of the Kofun Period. They describe the struggle of several regional political powers including Kibi for supremacy, the emergence of the first state of Yamato, and Yamato's relationships with the early states on the Korean peninsula.*

Inventories from many excavated tombs confirm extensive trade connections with the Three Kingdoms on the Korean Peninsula. The distinction between the early, middle, late, and final phases of the Kofun Period is fundamentally based on the development of burial mound architecture and grave goods, but it is also related to social changes, alterations in the succession of leadership and in the settlement structure, as well as significant regional power shifts. In this context, the excavation results from Shōbuzako Kofun allow intriguing insight into the development of large-scale mounds in Kibi and the significance of the tomb for the perception of the emergence and shifts of political power and in the Late Kofun Period in this area. (eds.)

Keywords: Japanese archaeology, Kofun Period, excavation, mound burial, ancient Kibi, pottery, armor

Introduction

A group of students from Okayama University participated in an excavation season that began in the middle of February 2007. The excavation was one of the most exciting sites for any archaeologist: an unlooted grave inside a burial mound. The excavation of Shōbuzako Kofun (Figure 16.1), led by MATSUGI Takehiko from Okayama University, is part of a larger project throwing light on the late 5th- and early 6th-century burial mounds of Kibi, the ancient name of the region included by the Okayama Plain facing the Inland Sea and today the home of Okayama City. Kibi can be identified as a political center already in the Yayoi Period (800 BCE–CE 250) together with those of Kinai, Izumo, and northern Kyūshū.

Shōbuzako is situated on a plain in the Mabi area near Kurashiki City at the lower reaches of the Oda River where this flows into the Takahashi River (Figure 16.2: 3). It is located 600 m south of the Oda River, 500 m west of the conspicuously well-situated Tenguyama Kofun (Figure 16.2: 4), and only 200 m east of its nearest neighbouring mound, the Nima-Ōtsuka Kofun (Figure 16.2: 2). Several other mounds, individually and in clusters, are erected in the same area—the Nima section near the northern bank of the river. Also, on the northern side of the Oda River, a multitude of mounds were erected in the Kofun Period (250–538 CE), although here they are further away from the stream. The larger Takahashi River, whose current changes its direction eastwards in the vicinity of Shōbuzako and its neighbouring

This article was first published online in BSEAA, Vol. 1 (2007) and has received editorial adjustments for this edition. More images of the excavation can be found there.

mounds, separates the Mabi Plain from the Sōja Plain to its east, the latter housing other mounds and mound clusters, including the largest mounds in Kibi.

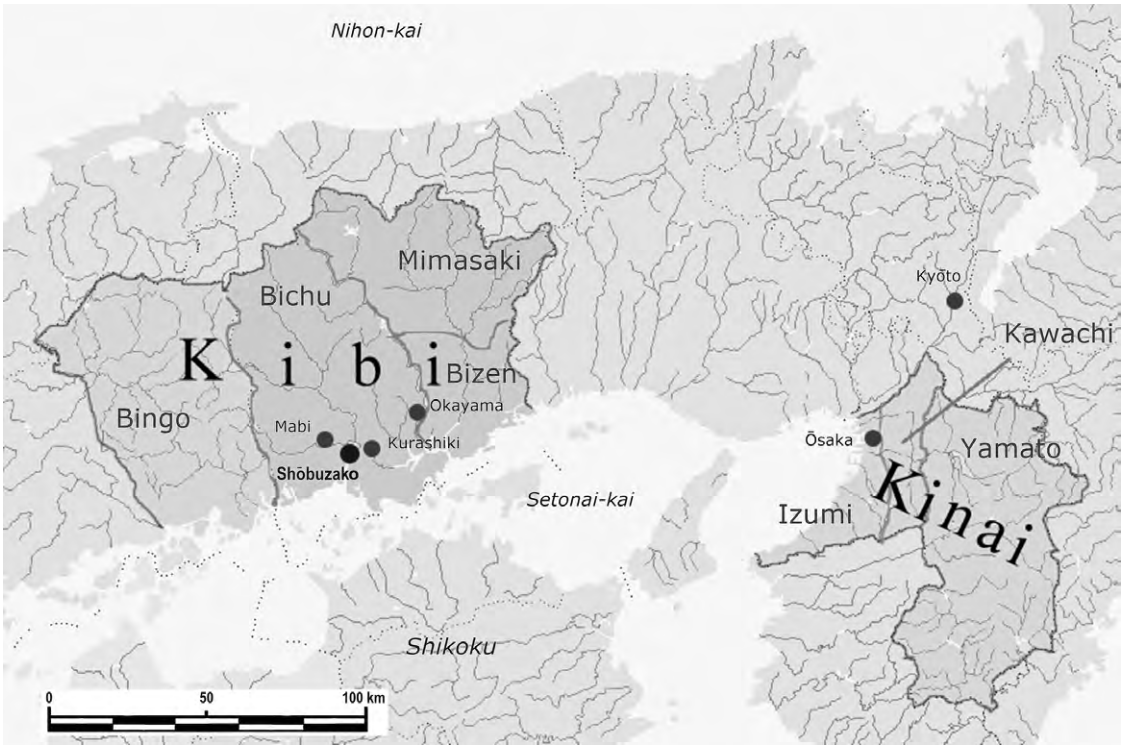

Figure 16.1 General location of Shōbuzako Kofun in Okayama Prefecture and location of ancient Kibi and Kinai

Research Background

The wide plain of Kibi houses numerous Kofun mounds spread all over its lowland in a seemingly homogenous distribution; however, as we shall learn shortly, they have varied temporal concentrations in the different areas, which are demarcated by natural borders in the shape of a multitude of rivers that cross the plain on their way to the Inland Sea.

Kibi boasts two giant mounds from the early 5th century, Kamo-Tsukuriyama Kofun (360 m in length) that is situated in the southern part of Sōja Plain (Figure 16.2: 6) and Misu-Tsukuriyama Kofun (286 m) (Figure 16.2: 5), located to the west of the lower reaches of the Ashimori River. Both are keyhole-shaped mounds.[1] However, in the second half of the 5th century, during what is called the "Yūryaku dynasty"[2]

[1] A three-year survey of the Kamo-Tsukuriyama Kofun was initiated by NIIRO Izumi of Okayama University, employing digital equipment for accurate measurements. At 360 m long, that tomb is the fourth largest keyhole-shaped mound in all of Japan and is fortunately not categorized as a 'royal tomb' like other gigantic tumuli, which would make it untouchable not only in terms of actual excavation but also in terms of surface observation (NIIRO and ISHISAKA eds. 2006: 1).

[2] Yūryaku is the posthumous name for a late 5th-century ruler called Waka Takeru (Ohohatsuse no Wakatake) according to the 8th-century chronicles, the *Kojiki* and the *Nihon Shoki*. He is mentioned in the Chinese chronicles for sending a letter to the Chinese emperor together with four other "kings", and his name appears on two swords excavated from Saitama and Kumamoto Prefectures. According to tradition, he was the 21st emperor. Thus, Yūryaku does not refer to any ruler within Kibi but his name is used for the phase in question.

phase, no large-scale mounds of keyhole shape were constructed in the Kibi area. A few mounds were built in the landscape surrounding Kamo-Tsukuriyama, but these are of a diameter of less than 50 m. Also at the Suna River in the former Bizen Province, where the keyhole-shaped Ryōgūzan Kofun (190 m in length) had been erected in the middle of the 5th century, there was a decline in the building of large mounds in this phase (MATSUGI ed. 2001: 26).

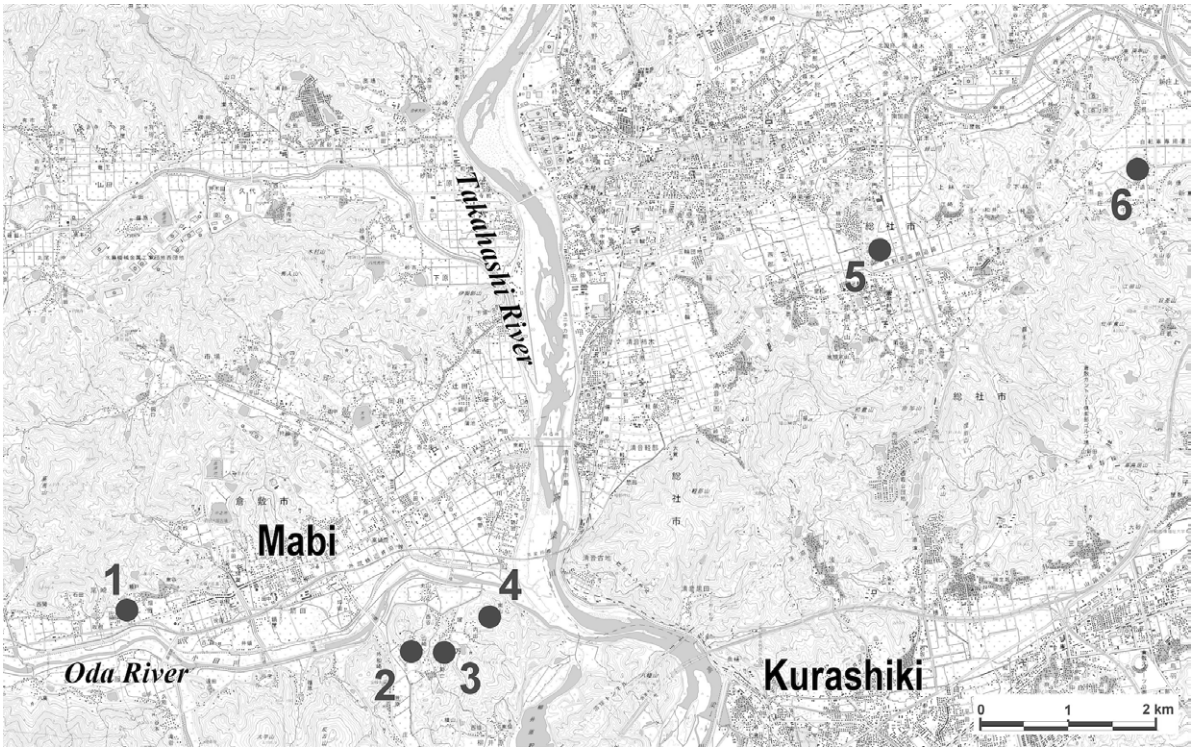

Figure 16.2 Location of sites mentioned in the text

1. Kuromiya-Ōtsuka Site, 2. Nima-Ōtsuka Kofun, 3. Shōbuzako Kofun, 4. Tenguyama Kofun, 5. Misu-Tsukuriyama Kofun, 6. Kamo-Tsukuriyama Kofun

In contrast to this, construction of tombs began in the Mabi area at the Oda River in the former Bichu Province—an area whose role in terms of mound-building had hitherto been extraordinarily modest, with mounds whose size now surpassed those of the previously "leading" areas. Thus, we have here Tenguyama which is strategically placed next to the junction of two rivers, and we have Nima-Ōtsuka which proved to be one of the earliest passage grave mounds in Kibi (NIIRO 2005). Both will be dealt with in detail below.

Almost no burial mounds had been built in the Mabi area since the square tumulus of Kuromiya-Ōtsuka (Figure 16.2: 1) was constructed in the 2nd century CE. No Early Kofun (3rd and 4th century) mounds exist in the area. "Kings" who were sufficiently influential to order the construction of burial mounds for themselves or their predecessors thus seem to have been absent in the Mabi area until the latter half of the 5th century, when construction was initiated of mounds that were, on average, larger in size than those built in the areas that house the above-mentioned giant mounds built earlier in the century.

The "Yūryaku-dynasty project" carried out by the researchers at Okayama University and their students aimed at answering the question of what the mound sequences in the Kibi region mean by

surveying[3] and excavating mounds constructed in Mabi and beyond from that phase and until the middle of the 6th century. The project was initiated in 1998 by NIIRO Izumi at Okayama University, who conducted the excavations at Nima-Ōtsuka Kofun (NIIRO 2005) from 2001 to 2004, and by MATSUGI Takehiko, who previously led the excavations at Tenguyama Kofun (MATSUGI ed. 2001) from 1998 to 2000.

The investigations carried out in the Nima section indicated that a powerful dynasty was founded in the previously insignificant Mabi area in the Yūryaku Dynasty Period, a dynasty that continued to build burial mounds also in the early 6th century, Late Kofun, when the practice had come to a complete stop in many areas within the Kibi region.

Tenguyama, a Mound from the Closing of the Yūryaku Dynasty Period

Tenguyama[4] (Figure 16.2: 4) is a scallop-shaped mound[5] located on the top of a small mountain 80 m above sea level. It overlooks the place where the Oda River flows into the Takahashi River, commanding a fine view of the alluvial plain formed by the Oda River and clearly attesting the role of this mound as the most important one of the plain. The mound itself measures 60 m, but it is enclosed with an earthen dike that gives the feature a total length of 80 m.[6] At its southwestern edge, the small Tenguyama-Nishi mound, measuring 10 m in diameter, is attached.

Mirrors, horse gear, and armor had already been unearthed during a pre-war excavation of the stone pit-chamber in Tenguyama,[7] when the researchers at Okayama University decided to make renewed investigations. The burial chamber (Figure 16.3) was rectangular and measured 3.9 x 1 m. The foundation stones of the walls, built by small boulders, had been solidly buried and the wooden coffin placed on the surface. Six large flat capstones covered the chamber, giving it a height of 0.8 m.

Sherds from cylindrical *haniwa*,[8] some with flaring mouth and all with a diameter between 20 and 23 cm, were recovered from all over the mound. The base of 23 of these still stood at their original

[3] Digital measurements make up an important part of the whole project. Contour lines are transferred to three-dimensional representations of the excavated mounds. Registering the height above sea level of countless points using a total station that transmits all information to a central computer ensures the standardization of all information from all excavations and surveys.

[4] Data for Tenguyama are taken from MATSUGI (ed.) 2001.

[5] Basically of keyhole shape, but whereas regular keyhole-shaped mounds have square parts at least half as long as the diameter of their round parts, the square parts of scallop-shaped mounds are much shorter and lower than their round parts.

[6] When Tenguyama was digitalized, the whole mound was covered with markers at a mutual distance of 50 cm. The heights of all of these were used to create a Digital Elevation Model (DEM), after which the results were transferred to a map constituted by 50 cm meshes. In order to make up for the many changes in obliqueness of the mound, TIN (Triangulated Irregular Network) was used in addition to the meshes, meaning that numerous randomly picked points were measured in terms of height and joined with lines, thus forming triangles of various shapes (MATSUGI ed. 2001: 27).

[7] I.e., a pit-chamber is one that had been closed from its top with ceiling rocks and covered by the top of the mound, thus not meant to be accessible after the initial burial.

[8] I.e., cylindrical *haniwa* with walls divided by raised bands into four sections of which the second and sometimes also the third from the bottom had been equipped with round holes (MATSUGI ed. 2001: 19).

locations, creating a row along one side of the round part and the adjoining constriction.[9] From the square projection, a large quantity of sherds from the same type of *haniwa* were collected.

Sué ware dating from the latter half of the fifth century was recovered from different parts of the mound but particularly in large quantities from the ceremonial platform.[10] The chamber, whose floor was located 5 m below the top of the mound, was entered using the route left by the earlier excavators. During the excavation a dagger, two spears, and a halberd of iron were recovered as was horse gear and armor.

Figure 16.3 The pit-chamber of Tenguyama Kofun
View after removal of one end-wall, with large ceiling rock capping the chamber

Several aspects of the Tenguyama mound bear evidence of close contact between the leaders in the area and those in the Korean Peninsula during the Yūryaku Dynasty phase. The clay filling between the stones used to build the chamber and the fact that the chamber was placed in such great depth from the surface are phenomena that exhibit peninsular influence, and pieces among the recently excavated Sué ware proved to be imported from the southwestern part of the Korean Peninsula.

The Finds of Nima-Ōtsuka

Nima-Ōtsuka[11] (Figure 16.2: 2) is a representative of what happened in the Mabi area in the early 6th century, i.e., Late Kofun. As mentioned, after the Yūryaku Dynasty phase, the construction of keyhole-shaped mounds ceased and scallop-shaped mounds were built instead; but Nima-Ōtsuka marks the revival of the keyhole shape.

This mound, situated 200 m west of Shōbuzako and close to the small Nimadani River flowing into the Oda River to its north-west, was excavated from 2001 through 2004, and a multitude of beautiful in situ finds were revealed during the investigations. What makes up one of the most lasting impressions, however, was the fact that the mound was equipped not with a closed pit-chamber but with a passage grave chamber (Figure 16.4).

Nima-Ōtsuka measures 38 m and is thus somewhat smaller than the earlier Tenguyama. Sué ware recovered from the surface of the northern constriction prior to excavation led the excavators to anticipate the ceremonial platform. Here, the platform had been carved into a natural hill that had been levelled down to fit the height of the lower of the two tiers making up the mound. The base of the top

[9] This is the angle created where the round and the square parts meet.
[10] The ceremonial platform constitutes a section protruding to one side near the constriction between the round and the square parts. The sherds from the platform all belonged to bowls or lids of these. Also, Sué ware was recovered from the annex Tenguyama-Nishi mound (MATSUGI ed. 2001: 23-25).
[11] The descriptions of Nima-Ōtsuka are taken from Niiro 2005.

tier had a slightly smaller circumference than the top of the bottom tier, creating an all-encircling terrace on which *haniwa* had been lined up.

The lower tier had been built after leveling off the mountain, and it included the stone chamber and the passage, at whose outer walls the earth could be observed to have been fitted carefully in between the stones. An isolated area was discovered of whitish burnt soil located near the top of the chamber containing a concentration of about 40 small and fragile sherds from the neck of a 6th-century pot. Based on this find, it is assumed that a fire-involving ritual took place after the completion of the stone complex and the lowest tier. Nothing similar to this phenomenon was recovered anywhere else within the fill of the mound. The pottery itself carried no traces of fire, but the general appearance of the find seems to reflect a phenomenon that could be observed inside the chamber involving charcoal. (This will be dealt with below.)

Figure 16.4 The chamber of Nima-Ōtsuka Kofun

View from inside the high-roofed chamber looking out through the corridor passage

The bases of 49 *haniwa* were still in situ extending along one side of the mound including the inner line of the ceremonial platform (Figure 16.5). On top of the platform figurative *haniwa* had been assembled in one corner,[12] whereas Sué ware was lined up along the platform edge facing away from the mound.[13] Large quantities of *haniwa* sherds were found in layers at the foot of the mound; and at the base of the platform, there was a high concentration of sherds stemming from the *haniwa* and Sué ware above.

The stone chamber, measuring 4.7 x 2.5 m, and the 4.4 m long passage that connected it to the outside world were built on the levelled surface of the original mountain; the base of the walls were solidly buried, and drainage facilities dug in the floor of both the chamber and the passage.

The grave goods included accessories and weapons, armor, horse gear, tools, and pottery of which the accessories and part of the tools are reminiscent of items known from the Korean Peninsula. A bronze

[12] It is the corner closest to the constriction.

[13] Of both these types of artifacts also, only the bases remained; however, one *haniwa* was identified as being of house shape, and three others are thought to be of human figures. The row of Sué ware consisted of a bowl, three large pots, and a footed jar. The entire assemblage of Sué pottery from the exterior of the mound came from the platform (NIIRO 2005: 9, 11).

mirror,[14] measuring 11.3 cm in diameter, was recovered—as were earrings[15] and a bronze bracelet of a type that is rare in Japan but reminiscent of pieces made from silver on the Peninsula. A multitude of beads were found along the walls of the chamber. Three long and two short swords[16] and 163 arrow points of iron were recovered in addition to the metal fittings from a quiver.

Figure 16.5 *Haniwa*-line at Nima-Ōtsuka Kofun

Figure 16.6 Ceramics mostly Sué ware, at the chamber entrance of Nima-Ōtsuka Kofun

Sué ware had been assembled and piled up at the entrance (Figure 16.6), in one of the corners, and at the center of one of the walls of the chamber. Also, at the entrance and at one of the walls there were concentrations of horse gear. The Sué ware and the horse gear at the inner walls of the chamber proved to be earlier than those at the entrance, stemming from the middle and later part of the 6th century respectively.

Activities involving the use of fire—reminding us of the whitish burnt earth next to the top of the chamber—had left traces inside the chamber in the shape of pieces of charcoal found in the layer closest to the floor, in some places sparsely distributed but in others in big black lumps. However, there was no burnt soil inside the chamber, and no traces of heating activities; so these pieces must be residue of organic material burnt either outside the chamber or inside it but in a vessel, before being spread on the floor.

From the artifacts recovered inside and outside the mound, the date of construction of Nima-Ōtsuka could be assessed to the middle of the 6th century. It is thus one of the oldest keyhole-shaped mounds with a passage grave in Kibi, and it served as the prototype of mounds to be built later in the region.

As was the case with Tenguyama, Nima-Ōtsuka also clearly demonstrates the connection that the political leaders in Mabi must have had to the Korean Peninsula, attested in part by some of its grave goods and by the construction of the burial chamber itself—here not as a deeply situated vertical grave, as was the case at the earlier Tenguyama, but as a passage grave accessible after the initial burial had taken place. In fact, re-entrance into Nima-Ōtsuka seems likely to have been the case based on the two temporally different assemblages of Sué ware and horse gear within the chamber. The height of 1.65 m

[14] The back of the mirror has a saw-tooth pattern near the knob and depictions of five beasts near the rim.
[15] Three pairs and a single item have been found.
[16] The sword lengths are 111 cm, 96 cm, 69 cm, 36 cm, and 31 cm.

inside the passage and 2.5 m inside the chamber would have made access relatively easy and allowed for performing activities inside the chamber.

Investigations of Shōbuzako

From Nima-Ōtsuka and the mid-6th century, we return to Shōbuzako,[17] which is contemporary with Tenguyama, and whose keyhole shape is likewise of the scallop variation. It is by now proved to be 42 m long, of which 29 m constitutes the round part, and was surrounded by a moat (Figure 16.7). It is located on a small hillock 200 m east of Nima-Ōtsuka and 500 m west of Tenguyama. Its shape has been confirmed during the surveys and excavations taking place over the last seven years, and it adds to the likelihood of the king buried here belonging to the same lineage as those buried in Nima-Ōtsuka and Tenguyama.

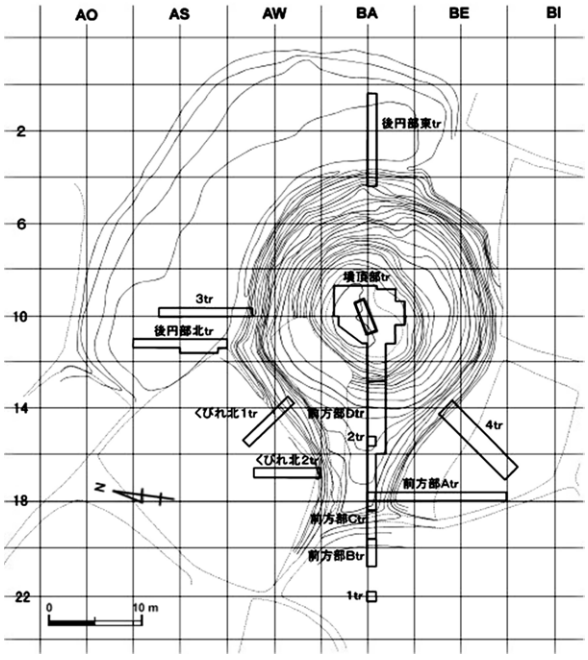

Figure 16.7 Contour map of Shōbuzako Kofun

Numerous students from Okayama University have participated in the excavations of Shōbuzako. Each year new students, who are in the earlier phase of their studies in the archaeological department join the excavation, and others, who have just completed their masters, leave it. Some of the people currently working here are in the last year of their master's course, and they have been digging at Shōbuzako every year in March almost since investigations started in 2000.

From 2001 to 2005 new trenches were cut every year into various parts of the mound, crossing the perimeter of what was believed from the beginning to be the square and round parts respectively in order to verify firstly, the shape of the mound, and secondly the presence of a moat encircling it (Okayama Daigaku Kōkogaku Kenkyūshitsu et al. 2005). And eventually, the trench—that had been dug all the way from the end of the square part into the center of the round—was widened, deepened, and made permanent in order to offer the excavators an entrance. Contrary to the investigations at both Tenguyama and Nima-Ōtsuka, the ones carried out at Shōbuzako have never led to finds of *haniwa* that can be related to the mound.

In 2003, work was begun to locate the grave itself, and a multi-angular area measuring approximately 40 m^2 was opened at the top of the mound. This area was to develop into a shaft as it became still deeper over the following two years of excavation.

In 2004, the shaft dug from the top of the mound disclosed a stratum with a different quality of soil, slightly dislocated from the center of what would later be detected as a dome-like feature built over the grave. Most likely, this interruption of soil types was caused by the subsequently realized collapse of

[17] Data for Shōbuzako are taken from Okayama Daigaku Kōkogaku Kenkyūshitsu et al. 2007.

one of the large stone slabs that covered the grave, resulting in the whole sequence on top of it caving in.

As the team worked its way down the shaft, the details of a highly interesting and complicated mound construction became clear. After the stone coffin had been built at the bottom and sealed with clay, reddish earth was piled up on top of it until it formed a circular dome with a flat top. This round structure had been built carefully and coherently over the chamber where it rose to a height of 1.5 m (Figure 16.8). Two more layers of red soil were added on top of the circumference soil, leaving the center of the dome. Then a yellowish-brown layer followed by a blackish-brown layer, each measuring approximately 50 cm, were added.

Figure 16.8 Dome of reddish earth with flat top, unearthed in 2005

Figure 16.9 The chamber covered with pale clay, from the west

However, in between these two layers, a ring of black soil was added, just thick enough to neutralize the sloping down of the layers. After these painstaking arrangements had been completed, the construction of the rest of the mound had been interrupted and reinitiated countless times, since the following layers consisted of innumerable small units of different qualities of soil in order to shape the mound, until it had a total height of ca. 10 m.

In 2006 an untouched layer of clay covering the coffin was reached, and apart from the broken cap stone, the intact state of the grave was realized (Figure 16.9). Taking the opportunity of observing and excavating a grave unlooted and unexcavated by earlier researchers, MATSUGI applied for, and obtained, funding to prolong the season of excavation, initially for an extra month but eventually for a total of four months, meaning that the investigations came to an end in June 2007.

The building of the chamber before erecting the mound is reverse to the sequence for constructing a pit-chamber, in which initially the mound would be constructed and subsequently the grave would be established by digging a vertical shaft hole from its top. The sequence employed at Shōbuzako explains the depth of 4 m from the surface of the mound to the bottom of the chamber, and this circumstance is

what has saved the grave from being looted. The chamber, originally constructed as a stone frame around an inner wooden coffin, was opened and examined (Figure 16.10).

Figure 16.10 Excavating the pit-chamber, from the west

Cleaned capstones (left) and opened chamber showing grave goods (right), including an iron cuirass chest protector

The chamber had been covered by eight oblong capstones, which may have been covered by a layer of red color, since traces of red pigments were recovered on parts of their upper surface. Gaps between the capstones had been filled with round pebbles and small angular stones, and everything had been sealed with bluish-grey clay. After many months of observing and measuring, the excavators removed the clay, observed the condition of the capstones, and finally removed these in order to investigate the inside of the grave itself.

The interior of the chamber measured 3.6 x 1.2 m and the height of its walls was 60 cm. Also, the interior of the walls had been worked with clay; this had been fitted into gaps between corner stones and levelled down to fit the height of the walls. The floor had been covered by round pebbles before placing the wooden coffin. The coffin itself had decayed, but three sets of iron cramps, presumably used as clasps on the coffin, were located in opposite positions along the walls. Iron nails were found at both ends of the chamber, and traces of wooden material were discovered between the capstones and the walls. The purpose of either of these materials, however, is as yet unclear.

What met the eyes of the excavators when they removed the capstones was a set of armor in almost perfect shape, together with additional grave goods and the skull of the person buried there. The deceased had been placed with his head to the east. Bones of his skull, including some teeth, were found resting on a bronze mirror. The rest of the grave goods (Figure 16.11) were concentrated in the western half of the chamber.

Long-necked iron arrowheads

Rosettes

Iron cuirass

Haji ware jars

Figure 16.11 Grave goods from Shobuzako pit-chamber tomb

From the corpse's waist to the area around its feet had been placed at least two bundles of iron arrowheads, all of the long-necked slender type, and two swords, the latter accompanied with some wooden material. The most conspicuous object, a cuirass made of horizontal strips of iron riveted together, was placed about 50 cm from the eastern end. Its surface was covered with organic material, probably the remains of a wrapping. Between the cuirass and the end wall was found a set of horse trappings. The iron bit and the bronze rosettes exhibited wear of the leather bridle originally fastened to them. The rosettes are thin metal plates of various shapes and with various decorations attached to each side of the horse bit, serving the function of holding the bit in the right position. They were extraordinarily shaped into S-curving cylinders from which rows of small bells were suspended. Next to the trappings, in the northwestern corner, a third bundle of iron arrowheads had been placed; Most of these had long necks, but a few were of short triangular type. Also two spearheads of iron were recovered—one with a long hilt varnished with black lacquer, pointing from the feet of the deceased towards the southwestern corner of the chamber. The surface of the hilt seems to have consisted of bark. The other did not have a visible hilt; it was placed at the opposite side of the cuirass. Apart from the metal ware, also two whetstones and a pair of small-sized Haji ware jars were found in the chamber, placed together along the southern wall. Haji pottery is rare as a grave good for the period in question.

Like Tenguyama and the later Nima-Ōtsuka, Shōbuzako bears clear evidence of connections to and influence from the burials built on the Korean Peninsula. The rich use of clay when building the chamber and the process of constructing the mound itself both originate in the southern part of the Korean Peninsula. It is also in this area that we find the insertion of wood in the construction of the stone chamber, a phenomenon which has been observed here in chambers earlier than that of Shōbuzako. It is furthermore likely that the origin of the cylindrical bronze rosettes should be traced to the Peninsula.

The contents of the grave itself confirmed Shōbuzako's date of construction. The combination and styles of the grave goods place it in the latter half of the 5th century, temporarily with Tenguyama, and in the Yūryaku Dynasty Period. None of the sherds of *haniwa* and Sué ware, recovered over the years of investigations in various trenches and in the earth accumulated in the moat, had been in a position to clearly verify their connection to the mound itself.

Conclusion

The discontinuity in Kibi in the late 5th century of the building of giant and large-scale *kofun* mounds like Kamo-Tsukuriyama, Misu-Tsukuriyama, and Ryōgūzan is sometimes seen as indicating that the elite here suffered a restriction of power by the great kings in the region. This discontinuity, however, can be observed all over western Japan. Even the Furu'ichi and the Mozu *kofun* clusters in Ōsaka that represent leaders in what we assume must have been the most powerful region of all, move towards a stop in terms of construction of large-scale mounds at exactly the same point of time (MATSUGI ed. 2001: 64).

Furthermore, the excavations and surveys executed by the archaeologists at Okayama University show that mounds *were* constructed in Kibi in the latter half of the 5th century, although in a more moderate scale than the large examples from the beginning of the century. Particularly, many more scallop-shaped mounds were erected—among these Shōbuzako and Tenguyama—and in all areas of Kibi, they came to mark the landscape together with keyhole-shaped mounds. So, "was it the political relations of the people in power in Kibi that changed, or was it the meaning inherent in the keyhole-shaped mound itself?" ask the researchers in one of their excavation reports from Shōbuzako (Okayama Daigaku Kōkogaku Kenkyūshitsu et al. 2006: 7). So far, the answer seems to be that the keyhole-shaped mounds themselves came to have new and weaker connotations during the late 5th century, and that some of the shape's earlier connotations of supremacy were taken over by that of the scallop-shaped mounds.

As was the case with Tenguyama, Shōbuzako Kofun has proved to be the grave of one of the strong leaders of the Nima area in the late 5th century. The image of the deceased person buried here in a highly complex chamber is that of a powerful person with a strong air of militarism around him—an image derived from his grave goods dominated by weapons and armor. Particularly, the cuirass is believed to be a piece of armor associated with Kinki power, which was a leader in the production and distribution of armor; it demonstrates the military connection of the deceased to the political power held by the supreme kings in Yamato.

In other words, the researchers continue, in the process of abolishing the maintenance of supreme rulers inside certain areas such as those interred in Kamo-Tsukuriyama and Misu-Tsukuriyama, a situation arose in which the leaders of other areas—areas that had previously supported the few supreme areas—became connected in and by their own power. Furthermore, these new, though less hegemonic, leaders held connections not only to each other but also to leaders in other regions inside

as well as outside the Japanese archipelago using their political power—which relations at one time strengthened their position and caused them to compete. Shōbuzako and the nearby Tenguyama make up two of the burials belonging to this new situation of social upheaval.

By the start of the 6th century, the chambers of burial mounds began to be built with a corridor entrance, as was the case at Nima-Ōtsuka—which shows that, once again, a change had taken place in the meaning of the mound and in its relation to society. Large scale changes and reorganizations took place in the surrounding society leading ultimately to the *ritsuryō* nation.[18]

The Nima section in Mabi is one of the few areas of Kibi in which construction of burial mounds continued *after* the turn of the 6th century. The rich graves found there that stem from the latter half of the 5th century constitute a prelude to the turn things took in the following period. The Nima area, which held no mounds at all until the middle of the 5th century, rose to power in the early 5th century. While several areas within Kibi came to a complete stop in terms of mound-building of any shape, the Nima area offers a unique concentration of scallop-shaped mounds and houses one of the oldest passage graves in Kibi. Thus, it can be viewed as the headquarters of a leading dynasty that came to hold the concentrated power of Kibi half a century or more after it had waned in the areas of the giant tombs of Kamo-Tsukuriyama and Misu-Tsukuriyama (Okayama Daigaku Kōkogaku Kenkyūshitsu et al. 2006: 7).

Acknowledgements

First of all, I would like to thank Professor MATSUGI for inviting me to visit the excavation of the Shōbuzako Kofun in early March 2007, thus giving me an excellent opportunity to experience one of the important archaeological investigations constituting the Yūryaku Dynasty project, which he and Professor NIIRO have been carrying out over the previous decade together with their students. Also, I want to thank Professor MATSUGI for reading and commenting on this article and for following up on the account by sending me the report from the current year's excavation within days after completing it together with fresh pictures, thus providing the article with some of its most crucial details, namely those dealing with the content of the chamber of Shōbuzako.

I also want to express my appreciation to the students working at Shōbuzako for kindly introducing me to the details of the excavation during my visit, and for including me in their team in spite of the disturbance of their daily routine that my presence must have caused.

In addition, I want to thank Professor MATSUMOTO Naoko, Okayama University, for sending me the material on Tenguyama and Nima-Ōtsuka Kofun, which constitutes substantial parts of this article, and for answering my questions on a number of details. And I want to thank Professor NIIRO Izumi for sending me the pictures of Nima-Ōtsuka Kofun.

Finally, I want to thank Barbara SEYOCK for valuable comments on and help with numerous details within the article and Michael MOOS for producing the maps used here and for his work with the photos.

[18] The *ritsuryō* code, a set of laws and regulations stemming from the beginning of the 8th century, assessed the right of aristocratic families to be exempted from tax and asserted the hereditary authority of the emperor as well as of government officials.

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Part III

Classical Western Writings on Japanese Archaeology and Anthropology

CHAPTER 17

TWO ESSAYS ON JAPANESE ARCHAEOLOGY BY EDWARD SYLVESTER MORSE

Michael MOOS

In this section, the importance to Japanese archaeology of the historical figure, Edward Morse, is described and illustrated. This introduction gives an outline of Morse's background and academic activities in 19th-century Japan. Two of Morse's essays are then offered in succeeding chapters with extensive annotations.

Keywords: Classical writings, research history

Edward Sylvester MORSE[1] (Figure 17.1) was born on June 18, 1838 in Portland, Maine. After an eventful early life, in 1856 MORSE enrolled in the small Bethel Academy in Maine, where he pursued his interest in the study of nature. After graduating in 1859, MORSE began studying marine biology with a concentration in conchology (the study of mollusc shells) at the Lawrence Scientific School of Harvard University. He also started working in the Zoological Museum. In the 1860s, MORSE's studies of brachiopods along the Atlantic coast attracted international attention. He later became chair of comparative anatomy and zoology at Bowdoin College, lecturer at Harvard University, fellow of the National Academy of Science, and associate editor of the journal *American Naturalist*.

In search of new specimens for his studies MORSE prepared a trip to Japan, where he finally arrived in June 1877 and stayed much longer than planned, almost three years. Unexpectedly, he was appointed professor of zoology and physiology at the Faculty of Science at the University of Tōkyō. The University of Tōkyō was founded in April 1877, just a few months before MORSE arrived in Japan.

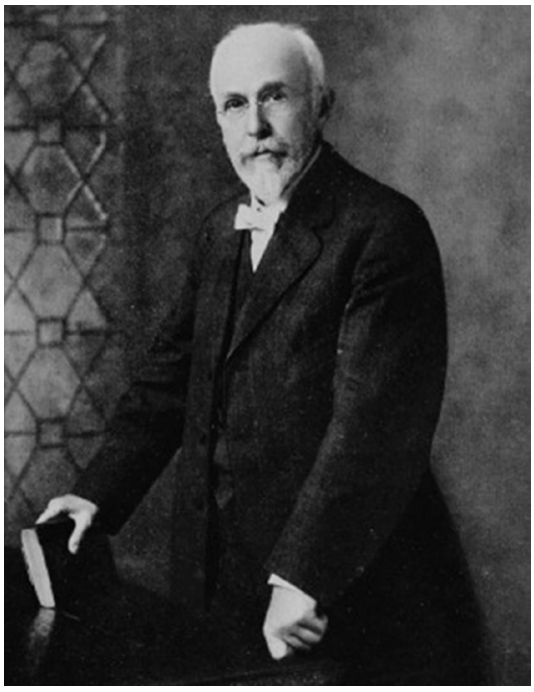

Figure 17.1 Edward Sylvester MORSE
1883–1925

In his Japan diary, MORSE describes his early encounter with the Ōmori shell mound (MORSE 1917, I: 287-289, [September 16, 1877]):[2]

> The very first time I rode to Tōkyō, a few days after I landed, I noticed from the car windows in a railway cut through which we passed, a deposit of shells which I knew at once to be a true Kjoekkenmoedding. I had studied too many shell heaps on the coast of Maine not to recognize its character at once. I had waited for months for an opportunity to visit it, fearing all the time that somebody would get there before me.

[1] Countless books and articles exist on MORSE's biography, his work, his collections and his impact on Japanese archaeology, anthropology and zoology, to name only a few: ISHIKAWA 1930; HICKMAN and FETCHKO 1977; ISONO 1990; and IMAMURA 2000.

[2] ISONO (1990: 206) gives June 19, 1877 as the date of the first visit.

The chapters in this section originally appeared in BSEAA, Vol. 1 (2007).
They have received minor editorial changes.

At that time, MORSE did not know that the Ōmori shell mounds were already known in Japan, "and collections of paraphernalia from them existed in the Tokugawa era, if not earlier" (TANAKA 2004: 28). However, these collections were not assembled through scientific excavations but were removed from the mound as part of more or less casual field investigations resulting from Tokugawa antiquarianism.

Regarding the chronology of Western interest in the Ōmori mound, moreover, there is also clear evidence that Heinrich von SIEBOLD (1852–1908), son of the well-known physician and Japan expert Philipp Franz von SIEBOLD (1796–1866), was active in private excavations at the Ōmori shell mounds even before MORSE began his investigation (KREINER 1980: 155*seqq*.; SAHARA n.d.). Heinrich von SIEBOLD describes these excavations in his publications on Japanese prehistory (e.g., SIEBOLD 1878, 1879). In addition, the German geologist Edmund NAUMANN (1854–1927) is said to have carried out investigations at the Ōmori shell mound at the end of 1877 (KREINER 1980: 183).

Nevertheless, MORSE was first to excavate these mounds with university subsidies[3] and accompanied by colleagues and students, and he was the first to publish an excavation report on a Japanese site. The report on the material collected at Ōmori was published in both English and Japanese. The English edition, "Shell Mounds of Ōmori" (Figure 17.2), appeared in July 1879 as Volume 1, part 1 of the *Memoirs of the Science Department, University of Tōkyō* (MORSE 1879b). The Japanese edition, *Ōmori Kaikyo Kobutsuhen*—translated by YATABE Ryōkichi (1851–1899),[4] was published in December of the same year as Volume 1 of the *Rika Kaisui.*

MORSE describes the first day[5] of his excavation at Ōmori in his Japan diaries as follows (MORSE 1917, I: 288seqq.):

> With Mr. Matsumura and two of my special students[6] I started early in the morning, carrying a small basket but no implements with which to dig.... We rode to Omori, six miles from Tokyo, and then walked up the line half a mile to the embankment. In the mean time I told my students what we should find ancient hand-made pottery, worked bones, and possibly a few crude stone implements, and then gave a brief account of Steenstrup's discovery of shell heaps along the Baltic and also the shell heaps in New England and Florida. When we finally reached the place we began immediately to pick up remarkable fragments of ancient pottery and the students insisted that I must have been there before. I was quite frantic with delight and the students shared in my enthusiasm. We dug with our hands and examined the detritus that had rolled down and got a large collection of unique forms of pottery, three worked bones, and a curious baked-clay tablet. As there has always been a great interest as to the character of the aborigines of the country, and as this subject has never before been studied, it is considered an important discovery. I shall prepare a general paper for the 'Popular Science Monthly'....

The paper MORSE had in mind is the reprint paper "Traces of an Early Race in Japan" presented below. MORSE, always accompanied by students, friends and colleagues, visited the Ōmori shell mounds several times during his years in Japan and continued to collect artifacts there.

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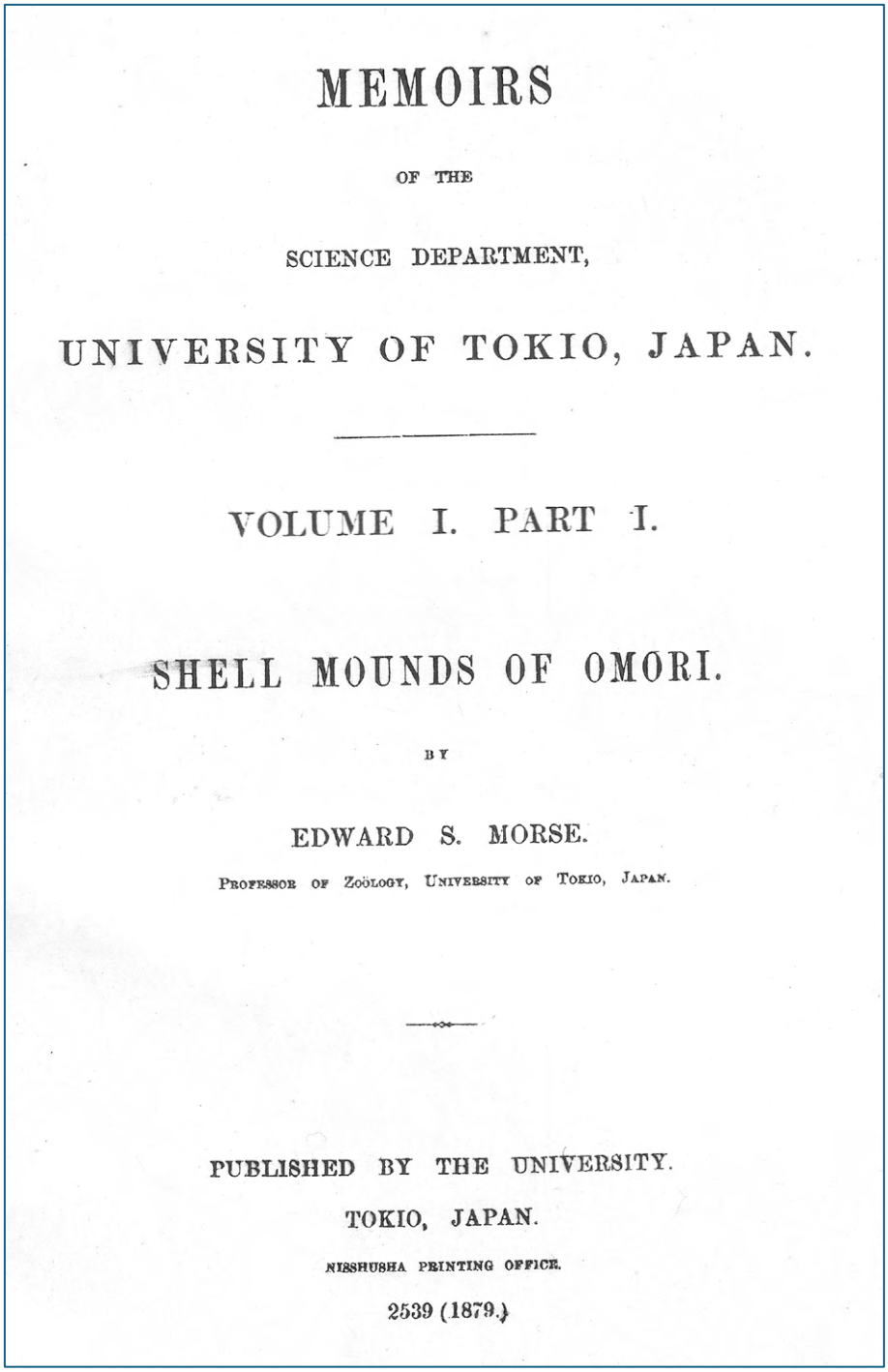
[3] "Through the intelligent interest manifested by Mr. Kato and Mr. Hamao, Director and Vice-Director of the Imperial University of Tokio, every facility for a thorough investigation of these deposits will be given me" (MORSE 1877).

[4] See reprint below (MORSE 1879b, 1880), endnotes.

[5] MORSE gives the date as "September16, 1877" (MORSE 1877), four days after he had given his first lecture at the University of Tōkyō.

[6] For MATSUMURA Jinzō, SASAKI Chūjirō, and MATSURA Sayohiko see below MORSE (1879), and below endnotes v, w and x.



MEMOIRS

OF THE

SCIENCE DEPARTMENT,

UNIVERSITY OF TOKIO, JAPAN.

VOLUME I. PART I.

SHELL MOUNDS OF OMORI.

BY

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PUBLISHED BY THE UNIVERSITY.

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NISSHUSHA PRINTING OFFICE.

2539 (1879.)

Figure 17.2 Title page of *The Shell Mounds of Omori*

In any case, MORSE was a brilliant promoter of his investigations. Already dated September 21, 1877, he announced his discovery to the leading scientific journal in London, Nature: "The discovery...enables me to give positive evidence regarding a prehistoric race who occupied this island."[7]

[7] The essay "Traces of Early Man in Japan" was published in *Nature* XVII, November 29, 1877: 89.

The next month he gave a lecture on the Ōmori pottery and the evidence of an early race in Japan (MORSE 1917, I: 359):

> On Saturday, October 13, I gave a lecture before the Asiatic Society of Japan, in Yokohama, on 'Traces of Early Man in Japan'. It has never been my fortune to have so mixed an audience before, mostly Englishmen, a few Americans, a few ladies, and in the rear of the hall a fringe of Japanese. Mr. Fukuyo helped me get my objects down from Tokyo, and I had some rare and delicate specimens to handle.

And in June 1878[8] (MORSE 1917, I: 385seqq.):

> ...I was invited to address a native archaeological club on the Omori shell mounds. The club holds its meetings at a room in the University on the first Sunday of every month. Mr. Hattori, the Vice-Director of the University, is to act as interpreter. This morning, June 2, I went to the place of the meeting. The members were sitting around a big table, each one having in front of him a small vessel of hot coals buried in ashes for warming the hands and lighting the pipe. I was introduced to them and they all bowed profoundly. I gave my talk in an adjoining room, where I had the ancient pottery spread out in trays. I gave them a general sketch of the subject: the four ages in Europe as defined by Lubbock, the paleolithic, neo-lithic, bronze, and iron age; then Steenstrup's work on the shell heaps of the Baltic; and finally the Omori mound. It was delightful to have such intelligent and attentive listeners. My blackboard drawings seemed to please them. Altogether I don't know when I have enjoyed giving a lecture more than I did this one.

It seems that, again, he was not the first to inform the Japanese experts about this issue. As early as January 31, 1878, *Nature* reported on a meeting of the "archaeological society, bearing the Title of Kobutzu-Kai (Society of Old Things). Its members, numbering 200, are scattered throughout the land, but meet once a month in Yeddo. They consist chiefly of wealthy Japanese gentleman, learned men, and priests." *Nature* continues that Heinrich von SIEBOLD, a member of the society, "has lately made a most interesting discovery of a prehistoric mound at Omuri, near Yeddo, containing over 5,000 different articles in stone, bronze &c." (LOCKYER 1878).

On May 9, 1879, Edward S. MORSE, together with his assistant, Mr. TANADA, Professor YATABE, and two servants, left Yokohama for a research trip to the south of Japan. On the way back from Kyūshū they visited Kyōto, Nara and Ōsaka in July 1879. In his Japan diaries he remembers (MORSE 1917, II: 181seqq.):

> While in Osaka we were told that there were certain ancient mounds in the villages of Hattorigawa, and Korigawa, about twelve miles from Osaka. Our ride carried us across a large plain under complete cultivation. As far as the eye could reach were innumerable well-sweeps after the typical New England style, which were used in bringing up water from shallow wells for irrigating purposes. The mounds were typical dolmens such as have been described in Brittany and Scandinavia: a huge mound of earth covered a long, narrow entrance-way leading to a square chamber, ten or twelve feet across. We examined them with great interest, and wondered how these people, twelve hundred years or more ago, could have raised the immense blocks of stone that form the roofs of these chambers.

[8] ISONO (1990: 208) gives the date of the lecture as "June 2, 1878".

Morse describes these dolmens in detail in the article reprinted below, entitled "Dolmens in Japan", published in the March 1880 *Popular Science Monthly*.[9]

Morse made four trips through Japan, to Nikko in 1877 (with Dr. Murray), to Hokkaidō in 1878 (with Prof. Yatabe), to the Inland Sea and Kyūshū in 1879, and to Kyōto and the Inland Sea in 1882 (with W.S. Bigelow and E. Fenellosa). In addition to collecting specimens for his zoological and anthropological research, researching the prehistory of Japan was always one of his main concerns on these trips.

In 1879 Morse returned to the US where he took over the position of director of the 'Peabody Academy of Sciences' (now the 'Peabody Museum of Salem') from 1880 to 1916 and director emeritus until his death. Between June 1882 and February 1883 he visited Japan for the last time. Edward Sylvester Morse died in Salem on December 20, 1925 at the age of 87. A memorial stone was erected in 1929 at the Ōmori shell mound, commemorating Morse's pioneering research (Figure 17.3) (Ohyama 1930).

Figure 17.3 Memorial stone at the site of the shell mound of Ōmori
Erected November 2, 1929. Inscription:
"The Site of the Omori Shell Mounds, discovered by Professor Edward S. Morse"

Morse's bibliography contains 560 entries (Hickman and Fetchko 1977: 195), including many essays on Japan and Japanese archaeology. The following two essays are known, but not easily accessible. They were published in *Popular Science Monthly* in 1879 and 1880. The first, "Traces of an Early Race in Japan", was partially translated into Japanese by Ikeda Jirō in the 1970s (Ikeda and Ōno 1973: 54-60).

[9] Some early photographs of these dolmens were taken by William Gowland (reprinted in Harris and Gotō 2003: 52*seqq*.).

Both essays are landmarks in the debate over the origins of the Japanese people, a central them in the general discussion of Japanese prehistory among western experts in the early Meiji period (1868–1912). In particular, MORSE's "unquestionable evidences of cannibalism" (1879a) proved to be a hotly debated topic.[10] They are reprinted below with comprehensive annotations and edited to fit the format of the new edition.

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[10] Morse read on this topic at the meeting of the Biological Society of the Imperial University on January 5, 1878. The lecture was published as part of his report on the Ōmori site (MORSE 1879b: 17-19).

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CHAPTER 18

TRACES OF AN EARLY RACE IN JAPAN

Edward S. MORSE
(with annotations by Michael MOOS)

This article, by Edward S. Morse, was first published in 1879. The text has been modified for editorial consistency. The annotations appear as endnotes (roman numerals) in this edition to keep them apart from MORSE's original footnotes (here as arabic numerals). The images and captions appear as in the original.

There is no race of people in whose origin we are more interested than in that of the Japanese. Their history going so completely back for nearly two thousand years, their civilization, which in so many respects parallels our own—the various epochs in our history being typified again and again by similar ages in Japan—all excite our deepest interest. The difficulty of tracing out ethnical affinities either through their personal peculiarities or their language presents a problem yet unsolved. That they are a composite race we cannot doubt. All their traditions point to their coming from the south, and equally sure are we that when they landed they found a hairy race of men to contest their occupation. Later history shows that a number of Chinese invasions took place, and these unwelcome visits were returned by the Japanese. Corea was invaded by the Japanese long ago. With these facts in mind, we are no longer surprised at the great variety of faces to be met with in Japan—faces purely Chinese; others with the coarser features of the northern tribes; and again the delicate and pleasant features of what is supposed to represent the typical Japanese.

The conjectures and opinions that have been advanced regarding the origin of the Japanese would form a curious and bulky collection. It is worth noting that both pagan and Christian writers have held almost equally preposterous notions regarding the origin of the Japanese. The people themselves have a tradition that they owe their origin to the sun. Kämpfer[i] holds the absurd idea that "they are descended from the first inhabitants of Babylon". From these vagaries we pass in turn to other ideas based on some foundation of fact. In a paper read before the Asiatic Society of Japan by Mr. Aston,[ii] an affinity is shown to exist between certain words in the Japanese and Aryan; while Mr. Brooks,[iii] in the proceedings of the California Academy of Sciences, takes ground for believing that the Japanese and Chinese may have been derived from the west coast of South America. Mr. Isawa,[iv] an intelligent Japanese student, at the last meeting of the American Association for the Advancement of Science, called attention to the similarity existing between many Japanese words and Hindostanee. With these and many other conflicting views, authorities seem to agree upon one thing, and that is, that the present inhabitants of Japan are not autochthonous, neither the Japanese nor the Ainos in Yesso [Ezo = Hokkaido].

So far as the ancient records of Japan are to be relied upon (and they certainly go back before the Christian era with considerable accuracy), Jimmu Tenno in the first century of our era came from a province in Kinshin for the conquest of Niphon or Japan. The invaders met with so courageous a resistance that they were obliged to go back to their own shores. The people who repulsed Jimmu Tenno and his followers are believed by the Japanese to have been the hairy men of Yesso, the ancestors of the present inhabitants of the northern islands.

This annotated reprint of Edward Sylvester MORSE's "Traces of an Early Race in Japan" (originally published in January 1879 in *The Popular Science Monthly* 14: 257-266) appeared online in BSEAA, Vol. 1 (2007). MORSE's essay was also printed separately by D. Appleton & Co. New York in 1879.

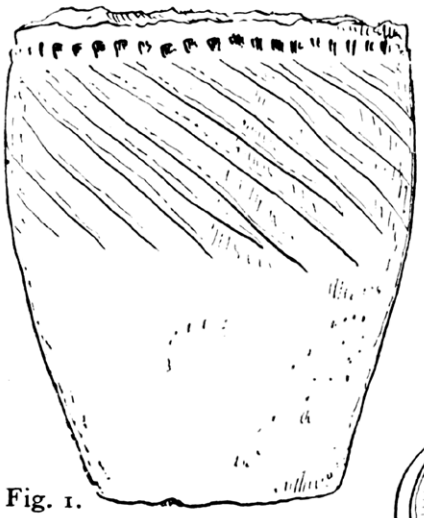
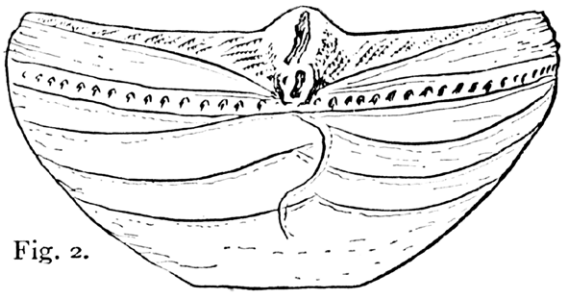


Fig. 1.



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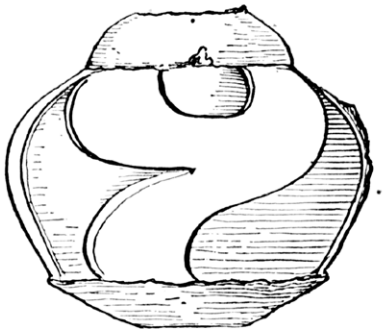
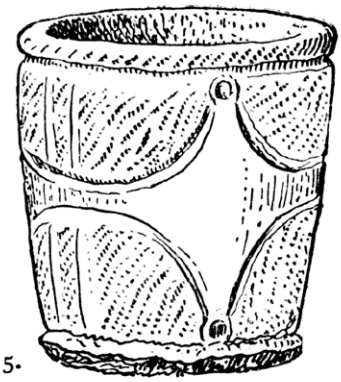


Fig. 3.



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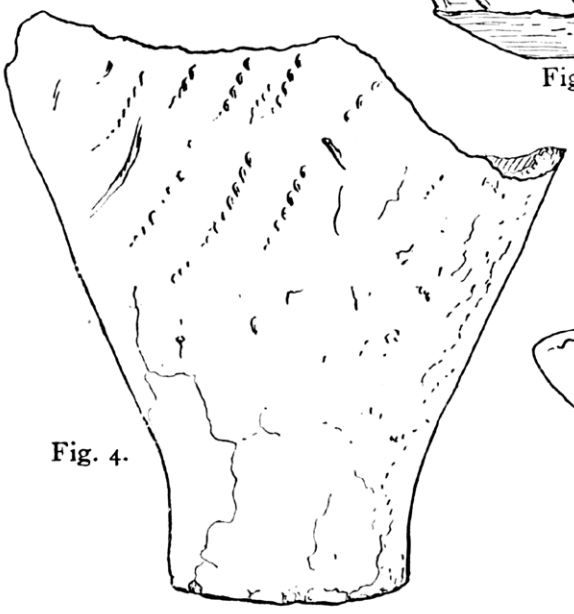

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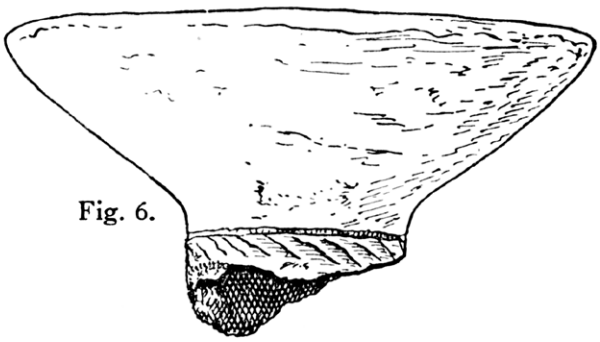

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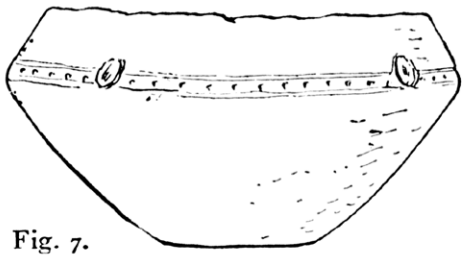


Fig. 7.

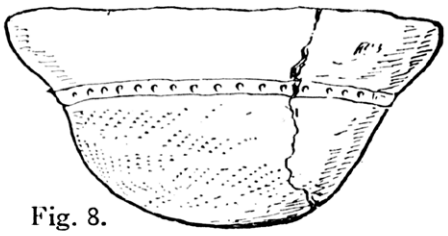


Fig. 8.

Figs. 1 to 9 show some of the various forms of vessels. Fig. 1, diameter, 130 mm. Fig. 2, diameter, 280 mm. *Fig. 3,* diameter. 130 mm. Fig. 4, height. 330 mm. Fig. 5. diameter, 105 mm. Fig. 6, diameter, 180 mm. Fig. 7. diameter, 150 mm. Fig. 8, diameter, 150 mm.

The study of the language, traditions, and folk-lore of the Ainos, furnishes good reasons for beieving that the ancestors of the Ainos came from Kamtchatka, drifting down through the Kuriles, and gradually becoming proprietors of the soil before the Japanese came from the south to displace them.

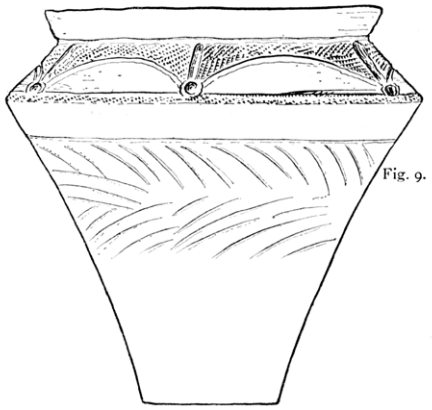


Fig. 9 - the rims of this vessel are quite common in the heaps, but only one, the fragments of which could be matched, was found. Its height was about 300 mm.

With every reason for believing that the Japanese came from the south, displacing the Ainos, who came from the north, the question next arises as to the original occupants of the island. Did the northern people encounter resistance from a primitive race of savages, or were they greeted only by the chattering of relatives still more remote, whose descendants yet clamber about the forest-trees today? The records are silent on these points. A discovery that I made in the vicinity of Tokio last year leads me to believe that possibly the traces of a race of men previous to the Aino occupation have been found. I say possibly, because a study of the Aino people, their manners, and traces of their early remains, is necessary before a definite opinion can be formed.

On my first visit to Tokio I discovered from the car-window a genuine "Kjoekkenmoedding", or shell-heap, as we call them. The deposit is in Omori, about six miles from Tokio; and one may well wonder why it had not been recognized before. It had probably often been seen, but, like many similar deposits in Europe and America, had been looked upon as natural beds of sea-shells deposited in past times, and after their formation elevated by upheaval. It was not until Steenstrup,[v] of Copenhagen, first took up the critical study of similar deposits along the shores of the Baltic, and showed that the deposits were really the work of man, and of ancient man, that attention was attracted to these beds in other parts of the world.

Thanks to several years' study of these deposits along the coast of New England, in company with Prof. Jeffries Wyman,[vi] I was enabled to recognize the character of the Omori deposit at once. The railway passes directly through it, and most of it has been removed for ballasting the road. The bed evidently covered the field beyond the track for a considerable distance, judging from the quantity of shells and fragments of pottery which were strewed in the adjacent rice-field. The deposit varied from a few inches to two feet and a half in thickness, and the layer of earth above varied from two feet to nearly five feet in thickness. This great depth of soil above the shells might have been brought in by man, as the Japanese are famous for the manner in which they level the ground and fill in depressions. The thickness of soil above a deposit is always an untrustworthy guide in estimating the age of such a deposit: as, for example, the deposits about Salem, Massachusetts, containing precisely the same kinds of pottery and bone-implements, and presumably of the same age, will have in one place a thickness of two feet of soil above, and in the sterile pastures a thin layer of a few inches. The Omori deposit is made up of shells which still live in the bay of Yeddo, though I have not yet been able to study the living-forms sufficiently to ascertain whether any changes have taken place in the fauna since the heaps were made. A number of genera are found, representing, among others, *Eburna, Turbo, Ceritheum Area, Pecten cardium*, two species of *Ostrea*, and, curiously enough, large valves of the common clam, *Mya arenaria*, hardly to be distinguished from the same species so common along the New England coast. The position

of the Omori heap is striking. The shell-heaps of New England, Florida, and nearly all places where they have been observed, are always in immediate proximity to the shore or river. In some places, as at Goose Island, Maine, the ocean encroaches upon the deposits and is gradually removing them. Rev. James Fowler,[vii] in commenting upon the absence of shell-heaps along the New Brunswick coast, offers this as one of the evidences that the sea is encroaching upon the land, and calls attention to the fact that buildings, which stood at some distance from the shore fifty years ago, have since been washed away.[1,viii] Along the shores of the Baltic, the shell-heaps, on the contrary, are a mile or more from the shore, and this fact, with evidences of a geological character, shows a practical encroachment of the land upon the sea by upheaval since the deposits were made.

The Omori deposits, like those of the Baltic, are some distance from the sea-shore—nearly, if not quite, half a mile. And that an upheaval has taken place since the deposits were made, there can be no doubt. Geological evidences are not wanting to support this view; these various deposits, remote from each other, such as the Denmark, New England, and Florida deposits, have each their peculiarities. In the Danish heaps there seems to be a scarcity of pottery, but an abundance of flint-chips and rude stone implements, as well as implements worked out of horn and bone. The New England shell-heaps are not rich in pottery fragments, the stone implements are rude and scarce, but the implements of horn and bone are comparatively not uncommon, those worked out of bone being more common. In the Florida deposits fragments of pottery are more abundant; and while rude stone and bone implements are found, the larger shells seem to have furnished them with material for many of their implements. Prof. Wyman[ix] has figured many of them in his memoir on the fresh-water shell-heaps of Florida, and Dr. Stimpson[x] has figured an awl in the *American Naturalist*, which was made out of the spirally grooved columella of *Fasciolaria*. While the pottery of Denmark and New England is ornamented by incised lines and "cord-marks", the Florida pottery bears the marks of stamps by which they impressed a rude ornamentation upon their vessels. The Omori shell-heap has also its peculiarities: 1. The extreme abundance of pottery, both in fragments and nearly perfect vessels. From the great quantity found there, one is led to believe that in past times it was a famous place for its manufacture. Yet in the excavations no masses or unfinished vessels were found to justify this assumption. 2. The great variety in the form of the vessels and remarkable diversity in their ornamentation. From these characters alone one might infer it to be of more recent origin. Its rudeness, however, and the absence of anything like lathe-work or glazing, show it to be ancient.[2] A greater portion of the pottery has the twisted cord-mark so common in most of the early pottery. Much of it has incised lines, and small fragments show a peculiar carving, made after the clay was dry, but before baking.

The ornamentation in these fragments is almost precisely similar to the Aino style of ornamenting. In other pottery also the peculiar way in which spaces between curved lines are "filled in", either by "cord-marks" or punctures, again recalls the Aino. And had nothing-else been found in the deposit, the remains might have unhesitatingly been referred to the Yessoines. Such comparisons are unsafe, as Mr. Frank H. Cushing,[xi] of the Smithsonian Institution, finds similar pottery in Northern New York and Canada, and I may add that in New England such pottery has been found. In many cases the borders of vessels are ornamented with undulating ribs, showing the marks of "fingersqueezing". A marked

[1] "Smithsonian Annual Report" for 1870, p. 389.

[2] A writer in one of the Yokohama papers calls attention to the fact that a fragment of glazed pottery was found, when the excavations were first made, against the exposed bank of the railway. He might have added that an English button and the soldered disk of a tin preserving-can were also found! Such a one, finding a living toad in a granitic crevice, would be likely to infer, either that the toad was as old as the granite, or that the granite was as recent as the toad.

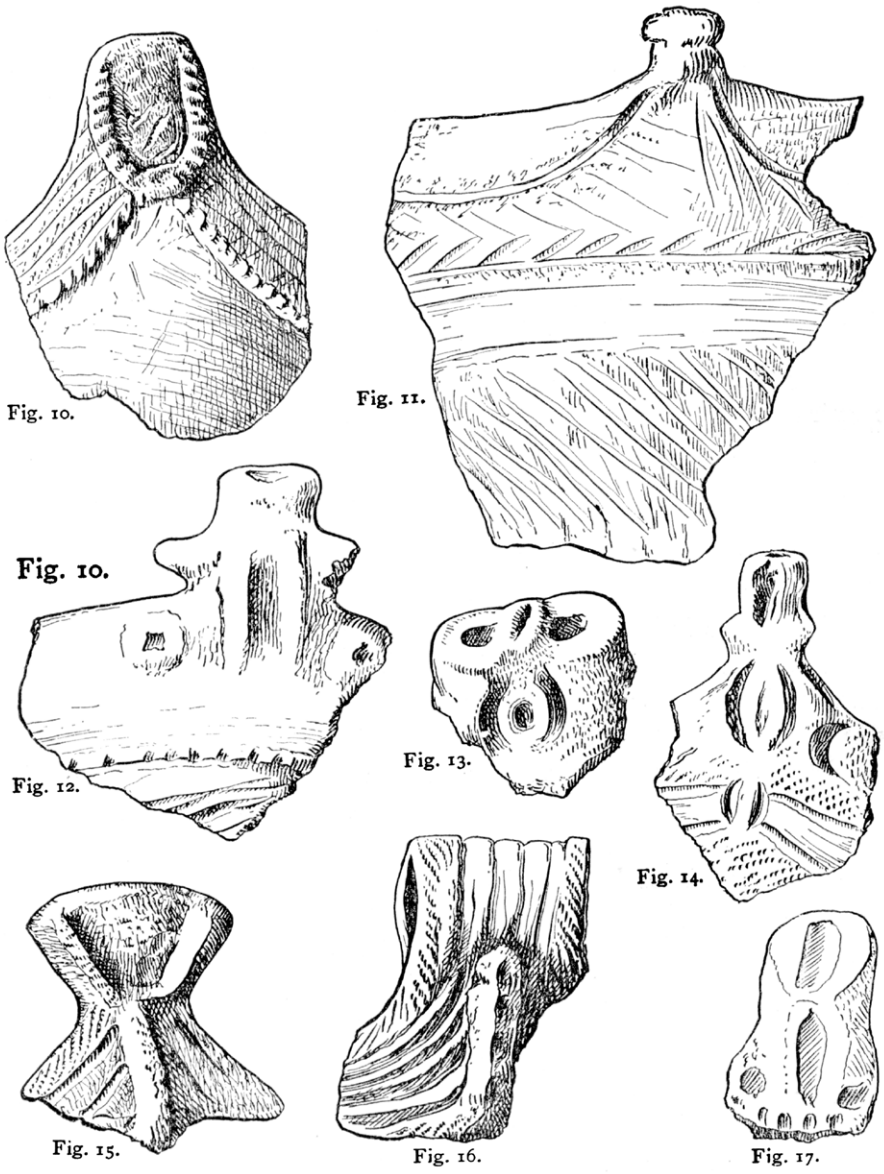


Fig. 10 to 17 show a few of the knobs or handles which are peculiar to the Omori deposit. Not a single vessel was found with legs, as with the Central American pottery, but most of the vessels have raised knobs on the margin.
Fig. 16 is looped, so that a wooden handle might be adjusted.
Fig. 11 is 190 mm. in its longest diameter; the size of the other knobs may be estimated from this.

peculiarity of the pottery consists in the elevation of the rim or border into ornamented knobs or handles, some of which are represented in Figs. 10 to 17 inclusive. Some painted pottery was also found, the coloring matter of which, on analysis by Prof. Jewett, [xii] of the Imperial University of Tokio, proves to be cinnabar. The occurrence throughout the empire of stone celts, finished arrow-heads, and spear-points and pestles, is common. These might or might not have belonged to the Ainos, though, as similar forms occur in Yesso, the probability is that many of them at least are of early Aino manufacture. It is significant, however, to observe that the few stone implements found in the Omori

beds are of the rudest manufacture; and, furthermore, that no shell-heap that I know of has revealed a less number, the two shown in Figs. 28 and 29 being made of a soft volcanic rock. Curiously enough, most of the other implements were made out of deer's-horns, only one being of bone (Fig. 21, evidently the end of a deer's metatarsal). An exquisitely finished arrow-point (Fig. 25) was fabricated out of a boar's tusk.

The bones of birds were not common. I searched in vain for traces of the great auk, the remains of which are so widely met with in Denmark and New England. Though ponderous shells of various species occur in the heap, no evidence was found that these were worked in any way.

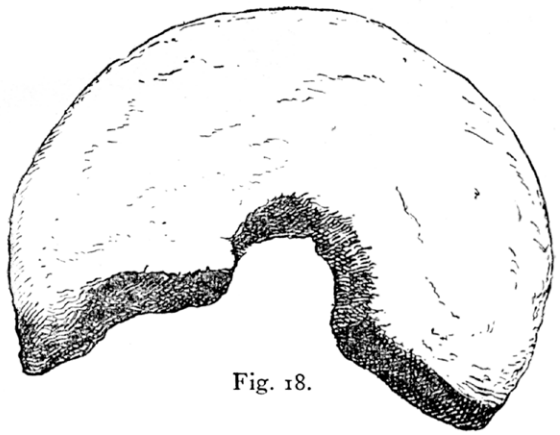


Fig. 18.

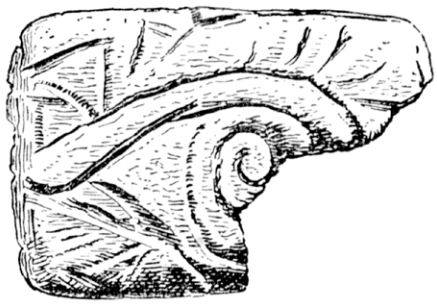


Fig. 19.

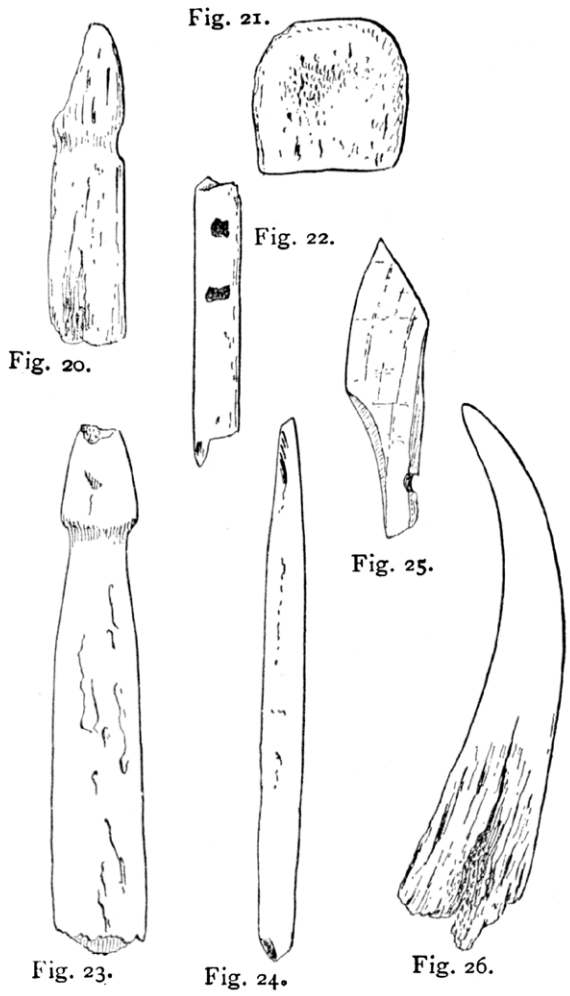
Fig. 18 is a piece of pottery that may be a spindle-whorl - diameter, 70 mm.
Fig. 19 is a small clay brick, 55 mm. in length. This is ornamented on both sides. It is difficult to conjecture its use. I have four more in the collection at the university, much larger and ornamented in a different manner. These are possibly amulets, or perhaps signs of office or authority. I think they are unique.

A fragment of a spindle-whorl is shown in Fig. 18. A peculiar tablet, or brick of clay, curiously ornamented, is shown in Fig. 19. Nothing of the kind, so far as I know, has been found in the shell-heaps of other parts of the world. It is difficult even to conjecture its use.

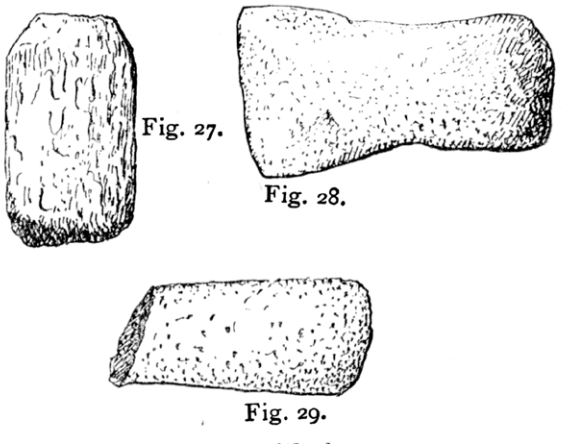
The most important discoveries connected with the Omori deposits are the unquestionable evidences of cannibalism. Large fragments of the human femur, humerus, radius, ulna, lower jaw, and parietal bone, were found widely scattered in the heap. These were broken in precisely the same manner as the deer-bones - either to get them into the cooking-vessel, or for the purpose of extracting the marrow - in all respects corresponding to the facts cited by Wyman[xiii] in proof of the evidences of cannibalism found in the Florida and New England shell-heaps.

The question as to the antiquity of the Omori deposits naturally arises, and the evidences all point to a considerable antiquity, suggested by the entire absence of worked metals, as well as of finished or polished stone implements, the few implements found being of the rudest character.

The change which has taken place in the coast-line by upheaval, since the deposits were made, has not the importance which would be ascribed to it in a more stable country.



Figs. 20 to 26 represent a number of implements made out of horn, with the exception of Fig. 25. which is worked out of a boar's tusk. Figs. 23, 24, and 26, are respectively 60, 62, and 125 mm. in length.
Fig. 21 is worked out of the end of a deer's metatarsal. Fig. 22 is a bird's bone, probably a humerus, with two holes worked in it.
Fig. 27 is a portion of deer's antler cut at both ends and broken.
Figs. 28 and 29 are two stone implements, worked out of soft lava-rock. They are respectively 50 and 70 mm. in length.



The next question arises as to whether the deposits are Aino or pre-Aino. The race who left these remains were pot-makers *par excellence*. It is generally admitted by ethnologists that the art of pottery once gained is never lost. It is a fact, however, that neither the Esquimaux, Aleutians, Kamtchadales, nor the Ainos, are essentially earthen-pot makers, their vessels being usually wrought out of stone or wood, and their ancient stone vessels are often met with in various parts of Japan.

If the unquestionable resemblance between the ornamentation of some of the fragments and similar styles of ornamentation among the present Ainos be looked upon as indicating a community of origin, what shall be said of the following figures of knobs found in a shell-heap on the Upper Amazon by the lamented Prof. Hartt?[xiv] The knobs themselves are so unlike anything figured here-tofore, and yet so precisely do they resemble similar knobs which are most common in the Omori deposits, that were they mixed with the collection it would be impossible to separate them by a single character! –even to the depression on top and in front, as shown in Fig. 12.

A curious stone ornament, having the general shape of a comma, with the big end perforated, is known as the *magatama*. These peculiar-shaped objects are looked upon as ornaments belonging to the

primitive inhabitants of Japan. Mr. Borlase[3, xv] says the traditions about them have been handed down from mythological times.

Siebold[xvi] says:

To this day they are in use among the Ainos of Yesso and in the Kuriles, as precious ornaments, under the name of *sitogi*. The inhabitants, too, of Liukiu wear a stone resembling the *magatama*; so that this little jewel helps us to a noteworthy historic fact, namely, to the connection which in remote times existed between the inhabitants of the whole chain of islands from Taiwan to Kamtchatka.

An exhaustive examination of the Omori deposits did not reveal anything like a *magatama*.

Were the Ainos cannibals?

Repeated inquiries among eminent Japanese scholars and archaeologists, like Mr. Kanda,[xvii] Mr. Ninagawa,[xviii] and others, as to this question, are always answered in the same way. Not only were they not cannibals, but they are reported as being so mild and gentle that murder was never known to have occurred. So monstrous a habit would certainly have been known and recorded, particularly in the painstaking annals of early historians.

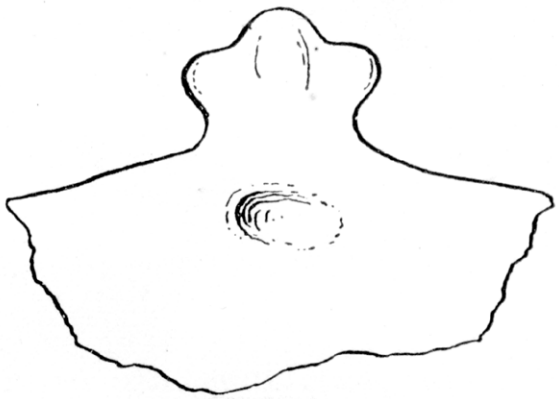


Fig. 30.

Fig. 31.

[No captions for Figs. 30 to 31 in the original]

In conclusion, then, the Omori shell-heap presents all the leading characteristics of the typical Kjoekkenmoedding. And the evidences which Prof. Wyman[xix] cites as evidence of cannibalism, in the shell-heaps of Florida and Massachusetts, are likewise present in the Omori deposit. The recent occupation of America by the white race renders it difficult to determine how recent the shell-heaps along the coast may be, since the savages when first encountered were living in much the same condition as their ancestors had lived, just as to-day there still exist in some parts of the world veritable Stone-age savages. In Japan, however, where historians have chronicled with remarkable fidelity the minute details of their history, we get, as it were, some standard for time in estimating the age of the Omori deposits. It can be stated with absolute certainty that they are pre-Japanese; and there are as good reasons for believing them pre-Aino as early Aino.

[3] "Niphon and its Antiquities".

I have to return my sincere thanks to the university authorities for the zeal they have displayed in assisting me in the examination of the deposits, and to the personal help afforded me in the excavations by Profs. Yatabe,[xx] Toyama,[xxi] and Dr. David Murray,[xxii] Messrs. Matsumura,[xxiii] Sasaki,[xxiv] Matsura,[xxv] Fukuyo, and others. I made a special request that the deposits should be completely examined during my absence, and this examination was most faithfully done. A much larger collection was made with many new and curious forms of pots. I hope at some future time to illustrate them.

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[i] KAEMPFER 1777–1779. Vol. 1, chapter 5: "*Aus allen, was wir bisher angeführt haben, läst sich nun die sichere Folge ableiten, daß die Japaner eine selbstständige originale Nation sind. Diese müste also ohne Zweifel unmittelbar von den babylonischen Völkern nach diesen Inseln ausgezogen seyn; ob es sich gleich nicht bestimmen läst, wie lange sie auf ihrer Reise dahin mögen zugebracht haben*" [From everything we have stated so far, the certain conclusion can now be derived that the Japanese are an independent, original nation. There is no doubt that they must have moved directly from the Babylonian peoples to these islands; although it cannot be determined how long they may have spent on their journey there]. Engelbert KÄMPFER (1651–1716), German traveller and physician, worked as a

VOC-physician in Deshima, Japan, 1690–1692.
[ii] Aston 1874. William George Aston (1841–1911) was a British consular official in Japan and Korea.
[iii] Brooks 1875a. Two more articles by C.W. Brooks in the same issue of the *Proceedings of the California Academy of Sciences* deal with a similar topic: "Early migration—ancient maritime intercourse of Western nations before the Christian era. Ethnologically considered and chronologically arranged, illustrating facilities for migration among early types of human race" (1875b), and "Report of Japanese Vessels Wrecked in the North Pacific Ocean, from the Earliest Records to the Present Time" (1975c). Charles Wolcott Brooks (1851–1939) was an American merchant. Since 1870 he was Japan's first Honorary Consul in San Francisco, where he hosted Iwakura's embassy in 1872.
[iv] Isawa Shuji 伊沢修二 (1851–1917) was a student at the Bridgewater School and Harvard from 1875 to 1878. After returning to Japan, he was one of the authorities in elementary education, music and physical education in Meiji Japan.
[v] Johannes Japetus Smith Steenstrup (1813–1897) was a Danish zoologist and biologist. He was a professor of zoology and director of the Zoology Museum at the University of Copenhagen.
[vi] Wyman 1868. Jeffries Wyman (1814–1874) was an American naturalist and anatomist. He became the first curator of the Peabody Museum of Archaeology and Ethnology, and later president of the American Association for the Advancement of Science. Wyman was one of Morse's teachers at Harvard.
[vii] James Fowler (1829–1923) was an American biologist.
[viii] Fowler 1870.
[ix] Wyman 1875. (See also endnote vi).
[x] William Stimpson (1832–1872) was an American naturalist. In 1853 he joined the United States North Pacific Exploring and Surveying Expedition, which visited Madeira, South Africa, Australia, the Coral Sea, Hong Kong, Japan, and the Aleutian Islands. He collected over 5,000 specimens, mostly invertebrates, of which he described 3,000. After his return in 1856, Stimpson worked at the Smithsonian Institute. In 1865 he became director of the Chicago Academy of Sciences.
[xi] Frank Hamilton Cushing (1857–1900) was curator at the ethnological department of the National Museum in Washington, D.C.
[xii] Frank Fanning Jewett (1844–1926) held the post of chemistry professor at the Imperial University of Tokyo in 1876 to 1880.
[xiii] For Jeffries Wyman see endnote vi and ix.
[xiv] Hartt 1870. Charles Frederick Hartt (1840–1878) was a Canadian-American geologist and paleontologist, and member of the Thayer Expedition to Brazil in 1865-66.
[xv] Borlase 1876. William Copeland Borlase (1848–1899) was a British antiquarian and Liberal politician with a profound interest in archaeology and excavations.
[xvi] Siebold 1832-1858. Philipp Franz von Siebold (1796–1866) was a German physician ethnologist, plant collectors and botanists. He lived and worked in Japan from 1823 to 1829 (as VOC-physician in Deshima) and from 1859 to 1862.
[xvii] Kanda Takahira 神田孝平 (1830–1898) was a Japanese politician and scholar, and first president of the Anthropological Society of Nippon (ASN).
[xviii] Ninagawa Noritane 蜷川式胤 (1835–1882) was an important collector of Japanese ceramics.
[xix] For Jeffries Wyman see endnote vi and ix.
[xx] Yatabe Ryōkichi 矢田部良吉 (1851–1899) studied botany at Cornell University in 1872 to 1876 and became the first professor of botany at Tōkyō Imperial University. Yatabe translated Morse's report on the Ōmori shell mound into Japanese in 1879 (among other things, he also made some Shakespeare translations together with Toyama Masakazu). Together with Morse, Yatabe was founder of the Botanical Society of the University of Tōkyō, later the Botanical Society of Japan.
[xxi] Toyama Masakazu 外山 正一 (1848–1900) studied at the University of Michigan and became the first Japanese professor of philosophy. From 1886 to 1890 he was president of the Tōkyō Imperial University and later minister of education.
[xxii] Murray David (1830–1905) was a mathematics professor and advisor to the Japanese Ministry of Education in 1873–1879. Murray accompanied Morse on some of his trips through Japan.
[xxiii] Matsumura Jinzō 松村任三 (1856–1928) was one of Morse's students. From 1885 to 1888 he studied in Germany. 1890–1922 he was professor of botany at the Imperial University of Tōkyō.
[xxiv] Sasaki Chūjirō and Iijima Isao 1880, 1882. Sasaki Chūjirō (1857–1938), a Morse student, became an

entomologist. Sasaki, together with Iijima Isao (1861–1921), published some excavation reports on the Okadaira shell mound, where the first independent excavations were carried out by Japanese scholars.
[xxv] Matsura Sayohiko 松浦佐用彦 (1857–1878), a student of Morse, died in 1878, the year of the excavation of the Ōmori shellmound, from beri-beri.

CHAPTER 19

DOLMENS IN JAPAN

Edward S. MORSE
(with annotations by Michael MOOS)

This article, by Edward S. MORSE, was first published in 1880. The annotations here appear as endnotes (roman numerals) in this edition to keep them apart from MORSE's original footnotes (marked by symbols). The text has been modified for editorial consistency, but the images and captions appear as in the original.

Though a large amount of material has been collected and published regarding the megalithic structures of Europe, their classification is in a somewhat unsatisfactory condition.

The misery of the systematist has already made itself apparent in synonyms for a well-known class of monuments—namely, the dolmens. To make the matter more perplexing, structures of quite a different form, and possibly intended for a different purpose, are called by the same name.

A dolmen, generally speaking, consists of an arrangement of stones, few or many in number, supporting one or more stones in such a way as to inclose [sic] a cavity beneath. These supporting stones may form the four walls of a chamber, which may or may not be covered by a mound of earth. This chamber may or may not communicate outwardly by a long, narrow gallery (*allée couverte*). The mound may or may not have one or more rows of stones encircling it. And, finally, the stone structure may be on top of a mound of earth, instead of beneath it!

The simplest form of dolmen, if indeed it can be compared to the more elaborate structures bearing the same name, consists of several standing stones supporting one or more stones which rest upon them horizontally. If the roofing-stones rest with one end upon the ground, then it is called a demi-dolmen. A holed dolmen has one of the supporting stones (which generally forms one side of a square chamber) perforated. The demi-dolmens are not sufficiently specialized to establish any line of distribution. The holed dolmens are found in France and in India, and their curious resemblance has led many to believe in their common origin. In the mound-covered dolmens a relationship is also seen between those of Brittany and Scandinavia, in the passageway generally opening toward the south or east and never to the north.*

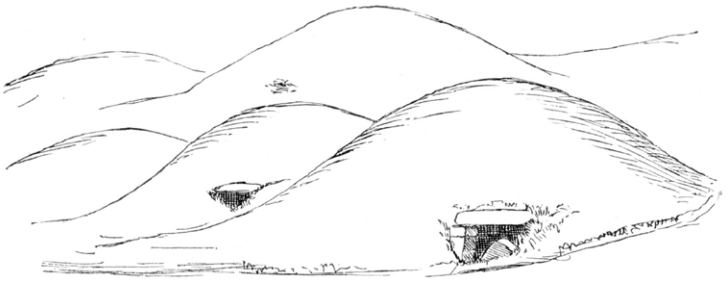

FIG. 1.—GENERAL APPEARANCE OF DOLMENS

* Lubbock, "Prehistoric Times", p. 124.

This article by MORSE was published 1880 in *The Popular Science Monthly* 16.5: 593-601 and was also printed separately by D. Appleton & Co., New York, in 1880. The annotated version appeared online in BSEAA, Vol. 1 (2007).

From the mass of observations brought together regarding the dolmens, Mr. Fergusson[†i] has prepared a map showing their distribution in the Old World. From this map, dolmens are found to occur in the greatest number in France. They are also found in various parts of Great Britain, more abundantly on the eastern coast of Ireland, western coast of Wales, eastern coast of Scotland, southern portion of Sweden, and in Denmark and Northern Germany; also on the coast of Spain, Portugal, Northern Africa and the western portion of India. Mr. Fergusson, at the date of the publication of his book, asserts that the typical dolmen had not yet been found in America.

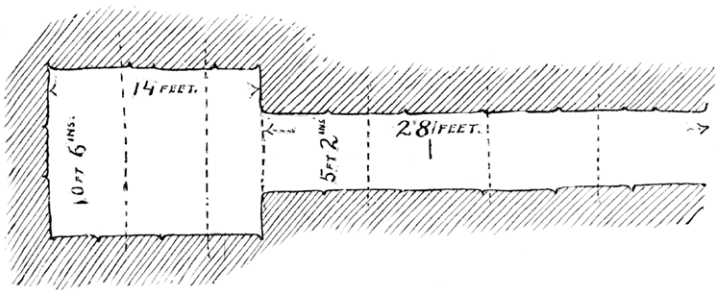

FIG. 2.—PLAN OF CHAMBER.
The dotted lines show the roofing-stones.

The occurrence in different parts of the world of a mound of earth containing a stone vault or chamber can not be looked upon as evidence of a community of origin, because such a structure seems to be a most natural form for the purposes of burial. The same structures are built to-day in many countries. It is only when it possesses some peculiar feature, like a perforation in one of its wall-stones, or a certain direction in which the passageway opens, that it suggests the idea that a common origin may be ascribed to those possessing these peculiarities.

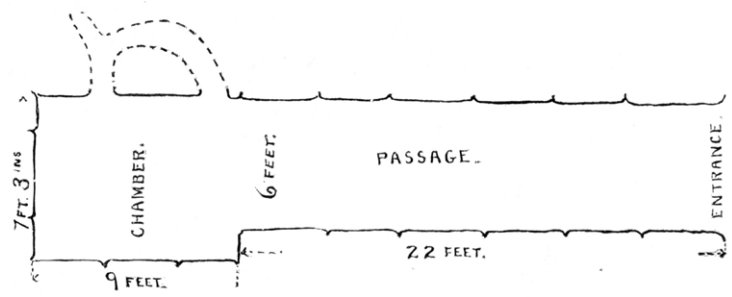

FIG. 3.—PLAN OF CHAMBER. Usual form.

In traveling across the southern part of Yeso [Ezo=Hokkaido] last year, and also in a journey overland from the northern part of Japan to Tokio, I scanned the country carefully for mounds or monuments of any description. At the entrances of towns, one often sees two large mounds between which the road runs. Each mound is often surmounted by a large tree. Though these mounds are old, they are not prehistoric. With the exception of these, I saw nothing that would suggest a monument coming under the names of dolmen, menhir, etc.

There are many burial-mounds in Japan, such, for example, as the large one in Yamato, the grave of Jimmu Tenno, and others which are known to belong to historic periods. It is not improbable that the dolmens to be described belong to the same category.

It is difficult for one who has not traveled in Japan to realize the almost universal state of cultivation the country is under. Having a population of 33,000,000, largely given to agriculture, with an area not exceding 80,000 square miles, one may imagine how few tracts of uncultivated land are found. One is amazed at the sight of ranges of hills and mountains extending for miles, and all terraced to their very summits, for the cultivation of wheat and other products. The lower levels for miles are ditched and

† Fergusson, "Rude Stone Monuments", 1872.

diked for rice-cultivation. This is specially marked along the coast bordering the Inland Sea, and along the western coast of Kiushiu from Nagasaki round through Higo to Satsuma. This widespread cultivation has necessitated the leveling or other modifications of large tracts of country, and with this disturbance have probably disappeared many evidences of an ancient race. My attention was first called to the existence of some curious stone structures near Osaka, by Professor YATABE,[ii] of the University of Tokio, who had received a letter from Mr. OGAWA, of the college at Osaka, with the request that I should examine them. This letter, accompanied by a few sketches, was published by Professor YATABE in a Japanese periodical in Tokio.

On my return from an expedition to the southern portion of the empire, I visited Osaka with my assistant, Mr. TANADA,[iii] for the purpose of examining these structures. Mr. OGAWA and Mr. AMAKUSA, both teachers in the Osaka College, kindly accompanied me and rendered much assistance in the work of exploration. Our time was too limited to do more than make a hasty reconnaissance. We left Osaka early in the morning by *jinrikishas* (vehicles drawn by coolies), our way leading across extensive rice-fields, and our course directed to a range of low mountains about ten miles away. The country was as flat as a prairie, and had evidently been the floor of the sea at no remote geological period.

The dolmens are found in the villages Hattori Gawa and Kori Gawa, which lie at the base of a low chain of mountains. Having reached Hattori Gawa, we left our *jinrikishas*, and hunted up the headman of the village who was to accompany us to the dolmens.

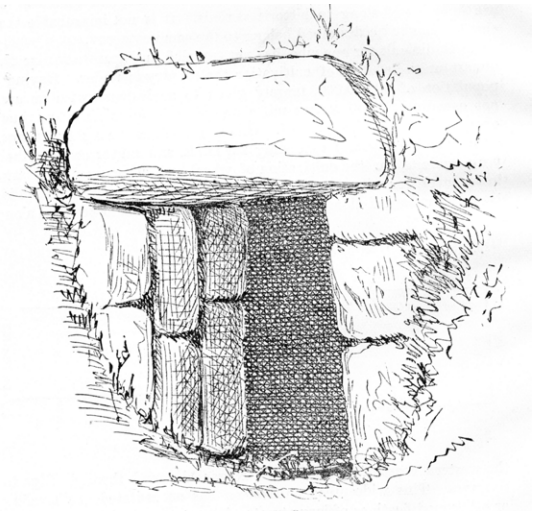

FIG. 4.—ENTRANCE TO CHAMBER.

Providing ourselves with candles, we started up a rather steep road, and after a while diverged to the left, down through a tangled ravine—stopping at the door of a temple to examine an old pot which was brought out for our inspection, and which proved to be a piece of Bizen-ware, not very old. Shortly after, we came to a group of dolmens. They are widely scattered in groups of several along the slopes of the mountains for a considerable distance; and their general appearance is not unlike the mounds of Upsala, Sweden, as represented in the frontispiece of Lubbock's "Prehistoric Times".[iv]

The structures consist of stone chambers covered by mounds of earth, communications with the chamber being by means of a long, straight, narrow passage—a typical *allée couverte*. The apices of the mounds are not so pointed as in the figure of Lubbock, and their slopes not so steep (see Fig. 1). They average fifteen to twenty feet in height, and fifty to seventy-five feet in diameter. The entrances to most of the chambers are partially obstructed by dirt and stone which have tumbled from the sides and roof of the entrance. The stones composing the walls of the passageway and chamber were not large. In every case, however, the roofing-stones, both of the passageway and chamber, were of very large size. In some cases the entire roof of the chamber consisted of a single stone, and in one case four huge blocks formed the roof of a passageway twenty-eight feet long (see Fig. 2). In every case, too, the stone which covered the passageway adjoining the chamber and forming part of its wall was of great size. The variation in the length of the passageways is due to their partial destruction. The other dimensions are

quite uniform, as will be seen by comparing the following measurements of nine chambers, taken at random. The plans vary but little—a single chamber, with the right wall flush with the right wall of the passageway, as in Fig. 3; or else the passageway entering the chamber on a median line, leaving a jog on each side, as in Fig. 2. Mr. OGAWA informed me that he had seen one with a small supplementary chamber leading from the end of the larger chamber. The passageway was nearly a foot narrower at the top than at the base, and in some cases was slightly narrower at the entrance.

[Table 19.1 Comparisons of sizes of different dolmen chambers (eds.)]

Length of Chamber	Breadth of Chamber	Height of Chamber	Length of Passageway	Breadth of Passageway	Height of Passageway
14•0	10•6	11•6	28	4•3	5•3
9•0	7•3	8•6	22	5•6	5•8
14•0	11•8	8•9	7	4•5	5•0
18•0	7•0	8•8	20	4•6	5•0
14•0	6•4	8•6	14	4•3	6•0
11•0	5•6	8•7	11	3•6	5•3
12•0	5•8	8•3	*	4•1	5•0
12•4	8•2	12•0	*	4•4	6•0
13•8	7•9	10•2	*	5•0	6•3

* Passageway partially destroyed. Measurement in feet and inches.

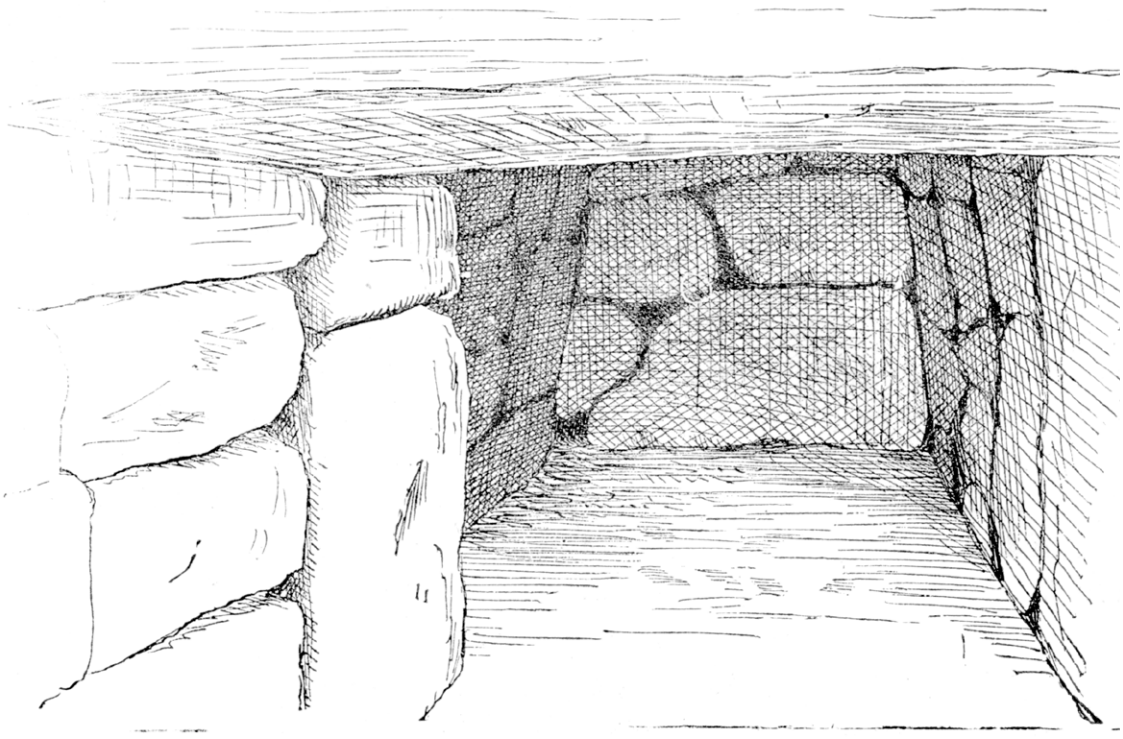

FIG. 5.—APPEARANCE OF CHAMBER FROM PASSAGEWAY.

In one case only were there signs that the chamber had been used as a place of residence. A small opening between two of the wall-stones at the base of one of the chambers appeared blackened by fire. By removing the dirt and smaller stones which had tumbled down, I managed with some difficulty to crawl into an irregular flue which was blackened with smoke. This flue communicated with another smaller flue leading back into the chamber (see Fig. 2).

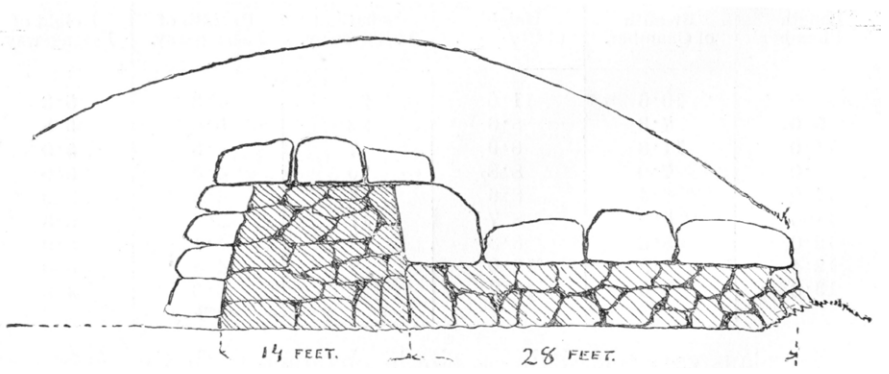

FIG. 6.— LONGITUDINAL SECTION OF DOLMEN, SHOWING CHAMBER AND PASSAGEWAY.

A rude sort of plaster was observed in some of the caves.

The walls of all the caves examined were carefully scrutinized to detect if possible signs of tool-marks or inscriptions, but nothing of the kind was observed. A careful search was made also for relics of some kind, but the floors were equally bare. Trenches were also dug down to the undisturbed soil, but no traces of pottery or implement of any description was found. This result is not surprising, when it is known that during the feudal days these chambers were often used as places of refuge for outlaws or political refugees, and during these times the earlier relics were probably removed or destroyed.

History records the fact that the governors of various provinces in which underground shelters occur ordered the closing of these places as a necessary measure.

No great antiquity can probably be assigned to these structures. That they are over a thousand years old there can be no doubt.* I am told by Japanese scholars that their early records call attention to these megalithic chambers existing in different parts of the country. Many of them have been destroyed, either for the purpose of securing the stone they contained for building materials, or to gain ground for cultivation.

In the vicinity of the dolmens and in the paths leading to them, fragments of a hard, blue, unglazed pottery were

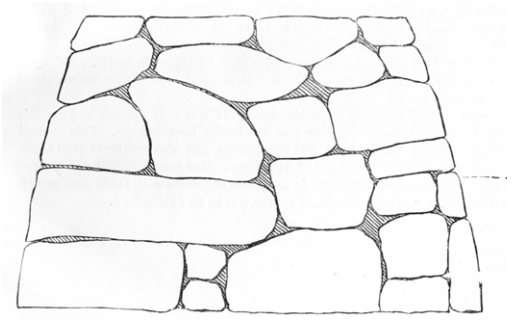

FIG. 7.—SHOWING ARRANGEMENT OF STONES IN SIDE-WALL OF- CHAMBER. Length, 14 feet; height, 11 feet 6 inches. The dotted line to the right shows roof of passageway.

* In Fergusson's work, already alluded to, there is figured a dolmen of Uby, Scandinavia, page 811, and Antiquera Spain, page 383, which resemble in many features the dolmens near Osaka. Jewitt also, in his work entitled "Grave-Mounds and their Contents", figures the dolmen of New Grange, Meath, Ireland, page 57, and the cairn of Howth, Ireland, page 58, which again recall similar features to those of the dolmens described in this article. In the cairn of Howth the passageway is twenty-seven feet long.

found; and these fragments are identical with vessels dug up in various parts of the empire, which are regarded by Japanese archaeologists as being of Corean origin, from nine to twelve hundred years old.

At the same meeting of the Boston Society of Natural History in which I communicated the results embodied in this paper, Professor F.W. Putnam[v] announced the discovery of chambered mounds in America, and communicated the following, which is taken from advance sheets of the "Proceedings" of that Society:

These chambered mounds are situated in the eastern part of Clay County, Missouri, and form a large group on both sides of the Missouri River. The chambers are, in the three opened by Mr. Curtiss, about eight feet square, and from four and a half to five feet high, each chamber having a passageway several feet in length and two in width, leading from the southern side, and opening on the edge of the mound formed by covering the chamber and passageway with earth. The walls of the chambered passages were about two feet thick, vertical, and well made of stones which were evenly laid, without clay or mortar of any kind. The top of one of the chambers had a covering of large, flat rocks, but the others seem to have been closed over with wood. The chambers were filled with clay which had been burned, and appeared as if it had fallen in from above. The inside walls of the chambers also showed signs of fire. Under the burned clay, in each chamber, were found the remains of several human skeletons, all of which had been burned to such an extent as to leave but small fragments of the bones, which were mixed with the ashes and charcoal. Mr. Curtiss thought that in one chamber he found the remains of five skeletons and in another thirteen. With these skeletons there were a few flint implements and minute fragments of vessels of clay.

A large mound near the chambered mounds was also opened, and in this no chambers were found. Neither had the bodies been burned. This mound proved remarkably rich in large flint implements, and also contained well-made pottery, and a peculiar "gorget" of red stone. The connection of the people who placed the ashes of their dead in the stone chambers with those who buried their dead in the earth-mounds is, of course, yet to be determined.

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[i] FERGUSSON 1872. James FERGUSSON (1808–1886) was a Scottish architect and writer in the field of the architecture. He lived for several years in India and the Orient.

[ii] YATABE Ryōkichi 矢田部良吉 (1851–1899) studied botany at Cornell University from 1872 to 1876 and became the first professor of botany at Tōkyō Imperial University. YATABE translated MORSE's report on the Ōmori shell mound into Japanese in 1879 (among other things, he also made some Shakespeare translations together with TOYAMA Masakazu). Together with MORSE, YATABE was founder of the Botanical Society of the University of Tōkyō, later the Botanical Society of Japan.

[iii] TANADA Orizō 種田織三 was MORSE's assistant at Tōkyō University.

[iv] LUBBOCK 1865. John LUBBOCK (1834–1913), 4th Baronet and 1st Baron Avebury, was an English banker, politician, naturalist and archaeologist. He coined the terms 'Palaeolithic' and 'Neolithic'.

[v] Putnam (comp.) 1889: 247-254, 419-49 (Vol. 23); 141-65 (Vol. 24). Frederick Ward Putnam (1839–1915) was one of the first anthropologists in the United States and a fellow student of Morse at Harvard. He founded institutions for anthropological research at Harvard University and the University of California at Berkeley, and worked to develop anthropological museum collections. Putnam taught anthropology, archaeology, and ethnology at Harvard University and led some of the first field expeditions in the Americas. He later became curator of the Peabody Museum of American Archaeology and Ethnology (1875–1909), honorary curator of the Peabody Museum (1909–1913), and honorary director of the Peabody Museum (1913–1915). Putnam held the positions of Peabody Professor of American Archaeology and Ethnology (1886–1909) and Peabody Professor Emeritus (1911–1915).

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