

Craft Production and Social Change in Mumun Pottery Period Korea



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SECONDARY STATES FORMED ON THE KOREAN PENINSULA c. 300 B.C.—A.D. 300/400. The processes of state formation occurred at a time when there was interaction with outposts of Western Han, warfare, iron production and distribution, and full-time specialized ceramic production (Barnes 2001; Kang 2000; Lee 1998; Pai 1989). However, archaeological evidence that has accumulated since the mid-1990s indicates that basic subsistence and social changes related to the development of complex societies, such as intensive agriculture and specialized craft production, have even more ancient origins dating to the Mumun¹ Pottery Period (c. 1500 to 300 B.C.) (Table 1). Some authors describe this period as a “Bronze Age,” but this does not accurately reflect the archaeological record because evidence suggests that bronze artifacts were few in number until sometime in or after the sixth century B.C.

In early agricultural societies, specialized craft production is often found in household contexts and grows out of a group-oriented strategy to create economic alternatives to reliance on agricultural resources (Stark 1991:72) or an exclusionary strategy of leaders to control resources and wealth (Blanton et al. 1996:2, 5). Households are economically and socially oriented domestic units in which people usually co-reside (Netting 1982:642–643; Wilk and Rathje 1982:621–622), and as such they are key to tracking the development of craft production and society at the community and regional scales. By considering the processes in the development of specialized craft production, we can gain insight into the political-economic and social processes that mark the transition from egalitarian groups to ranked polities.

In this paper we examine changes in the production, distribution, and use of craft goods such as greenstone ornaments, groundstone daggers, and bronzes of Mumun Korea. These artifacts are often found in burials as mortuary offerings, but the processes of their production and their sociopolitical significance are not well understood. From a global perspective, however, archaeologists have noted that leaders of emergent chiefdoms were often involved in the production of craft

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TABLE I. PERIODIZATION SCHEMES FOR THE KOREAN PENINSULA

DATE	RHEE AND CHOI (1992)	LEE S. J. (1998)		BALE AND KO (2006)		
-A.D.- 600	Three Kingdoms	Three Kingdoms	Late	Three Kingdoms		
500			Early			
400		Metal Production	Proto-Three Kingdoms	Late	Proto-historic	Late
300	Early					
200	Bronze		Late	Early		
100			Early			
-A.D.- 0				Late		Early
-B.C.- 100				Early		
200			Mid	Late		
300	Mumun		Early	Mumun Pottery	Mid-Late	
400					Mid-Early	
500					Early	
600	Jeulmun	Neolithic		Jeulmun		
700						
800						
1500 -B.C.-						

Note: The shaded area indicates the period of this study (c. 1100–550 B.C.).

items for exclusionary purposes such as gifting, exchange, and control of the economy. Furthermore, leaders used production as a corporate strategy along with group mortuary ceremonies, reinvestment in infrastructure, construction of public works, and feasting (Blanton et al. 1996:5; Hayden 1995:24; Underhill 2002:50–65).

We argue that in addition to the production and control of agricultural surplus, the production and distribution of prestige artifacts by part-time craft specialists was an incipient “network” strategy that full-time leaders of the Mumun used to gain support, prestige, and create power for themselves and their supporters. Following Blanton and his colleagues (1996:5–6), we propose that full-time leaders of the Mumun used a patchwork of exclusionary and group-oriented strategies rather than using one kind of strategy of political action exclusively or cycling between corporate and network strategies. For example, evidence suggests

that Mumun leaders may have been involved in the small-scale, low-intensity household-oriented production of prestige craft items for gifting, exchange, and mortuary goods, and they were involved in additional activities such as reinvestment in the construction of public works, feasting, and overseeing ceremonial life.

PRESTIGE ARTIFACTS, PRODUCTION, AND SOCIAL DIFFERENTIATION

Jade and bronze were important symbolic and prestige artifacts in Neolithic China (Chang 1986:163, 184–185; Liu 2003; Underhill 2002:135–140) and Japanese Yayoi (Imamura 1996:182), and greenstone was an important valuable in Formative Mesoamerica (Lesure 1999:36–45). In the case of Mumun Korea, prestige goods include greenstone ornaments, groundstone daggers, bronze daggers, and finely made red-burnished pottery. Archaeologists debate the meaning and significance of the Korean artifacts. For example, some contend that they were essentially prestige goods and may have been crafted by specialists (JNM 2002:79–114; Nelson 1999:161–162) and that they were associated with complex chiefdom society after 450 B.C. (Rhee and Choi 1992:75–76). The predominant theoretical perspective in Korea is culture-historical archaeology, and so the changes of c. 450 B.C. are viewed as the geographic spread of a set of co-occurring archaeological features and artifact groups known as the *Songgung-ni* Culture (i.e., Ahn 1996:70–75, 83–90; Song 2001:76–79). Some problem-oriented research addresses the social transformations that accompanied changes in architecture and production (i.e., Bale 1999; Crawford and Lee 2003; J. Kim 2002; S. O. Kim 1996; Shoda 2004), but many questions related to production and distribution of prestige artifacts and the development of social complexity remain unexamined from a perspective rooted in anthropological archaeology.

In contrast, Bong-won Kang (1990, 1995) uses the results of the analyses of burial data to carefully interpret the social organization of the Mumun. Kang notes the dearth of bronze, greenstone ornaments, and groundstone daggers in megalithic burials and points out that “as far as mortuary goods are concerned, no strong evidence of the presence of chiefdoms” existed in the Mumun Period (1990:72–73). Furthermore, he found no qualitative differences between mortuary goods in his sample (1995:106). At the time it was difficult to characterize craft production and social organization because the available dataset was small and few settlements had been excavated up to the mid-1990s (Kang 1995:113).

The situation has changed. We concur with Kang’s interpretation based on the data at the time, but most settlement sites in the register of Mumun villages of south-central Korea were excavated after his publications appeared. In fact, 69 percent of Mumun sites (11 of the 16) in the area were excavated after 1995 (Bae 2005:104–108). Now that more archaeological data are available, new research needs to address the production, use, and distribution of prestige greenstone ornaments, groundstone daggers, bronze daggers, and red-burnished pottery. Thus in this paper we address three questions: First, to what degree was there economic specialization in the production of craft goods in the Mumun of south-central Korea? Second, what were the parameters (i.e., Cathy Costin’s [1991] context, concentration, scale, and intensity) of the production of craft goods and how did they change over time? Third, to what extent did craft goods function as prestige goods and how did this change through time?

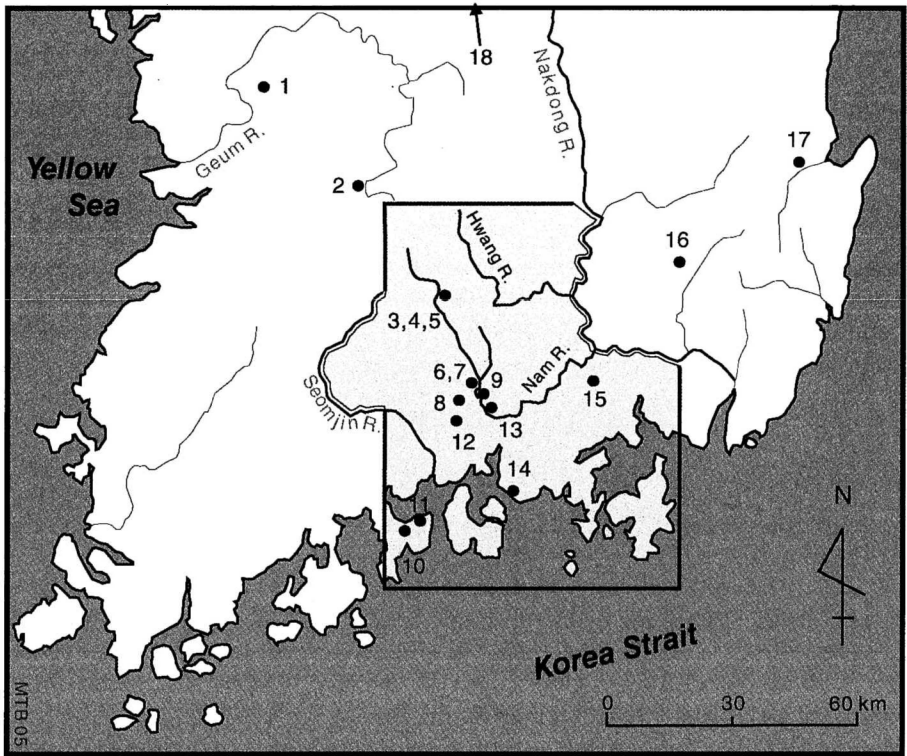


Fig. 1. South-central Korea (indicated in gray) and sites mentioned in the text: 1: Songgung-ni; 2: Upper Geum sites; 3: Oksan-ni; 4: Mt. Duncheol; 5: Muggong-ni; 6: Sawol-li; 7: Baeyang; 8: Okjong-myeon; 9: Daepyeong; 10: Wolnae-dong; 11: Orim-dong; 12: Bonchon-ni; 13: Daechon; 14: Igeum-dong; 15: Mt. Hwajang; 16: Jilla-ri; 17: Inbi-dong; and 18: modern Chuncheon (off map).

In order to address these questions, we examine changes in the production, distribution, and use of craft goods by analyzing the presence and distribution of these artifacts at the household, settlement, and regional scales. We use data excavated from agricultural settlements of Mumun Period in south-central Korea (Fig. 1). Most of the data that we use here are from Daepyeong, a sprawling community on the Upper Nam River. Large-scale whole-site excavations of 25 localities at Daepyeong and the surrounding area by 16 archaeological institutions between 1996 and 1999 exposed an area of 243,125 m². We also consider six other Mumun settlements in south-central Korea (BGNUM 1998; Busan Museum 1998; Cho 1998; DAUM 2001; DEUM 1999; GSNUM 2002; GUM 1996; Kim et al. 1999; KUM 2001) in the same river system and within a 20 km radius of Daepyeong (Figs. 1, 2), the settlement with the greatest number of excavated features. Published data from several outlying sites are sparse, so we focus on reports and other publications on Daepyeong (i.e., Bae 2005; CNRICH 2001; GARI 2002; GICP 1999; GSNUM 1999, 2001; JNM 2001; Ko 2004; Lee 1999; Lee 2001; NRICH 1994; Shoda 2004). Additionally, we incorporate data from Igeum-dong, a major Mumun settlement-burial-ceremonial center in coastal south-central Korea (GARI 2003). Basic data on the settlements of south-central

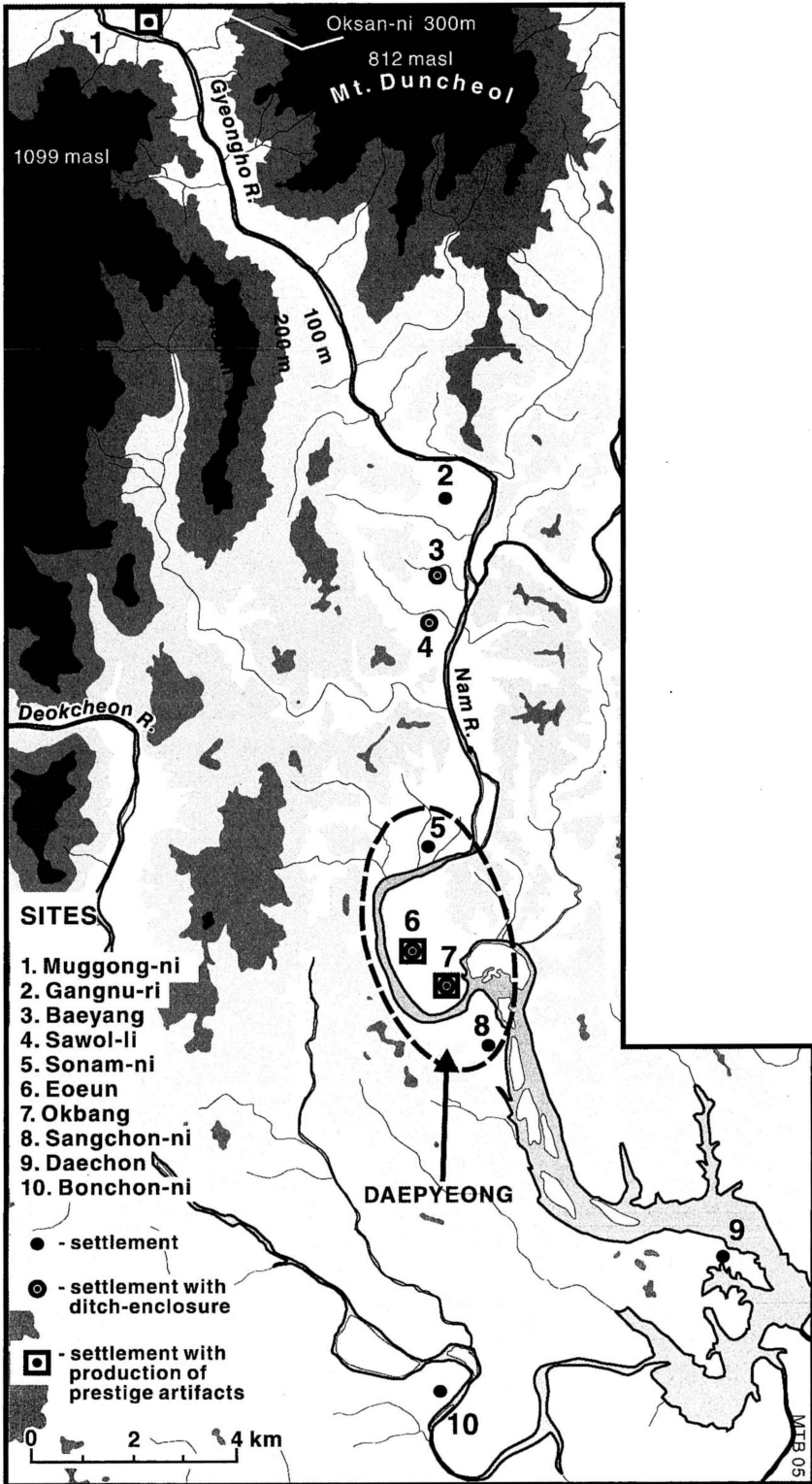


Fig. 2. Regional settlement patterns of the Middle Mumun Pottery Period (c. 850–550 B.C.) in the Nam-Gyeongho Rivers, south-central Korea.

TABLE 2. DETAILS OF SETTLEMENT IN SOUTH-CENTRAL KOREA IN THE LATE EARLY MUMUN (C. 1100-850 B.C.)

SITES	PIT HOUSES
Daepyeong (Okbang, Eoeun, Sangchon-ni)	46
Daechon	1
Bonchon-ni	2
Baeyang	1
Sawol-li	3
Igeum-dong	5
TOTAL	58
Mean of pit house roofed area	37.1 m ²

TABLE 3. DETAILS OF SETTLEMENT IN SOUTH-CENTRAL KOREA IN THE EARLY MIDDLE MUMUN (C. 850-700 B.C.)

SITES	PIT HOUSES	MEAN OF PIT HOUSE ROOFED		RAISED FLOOR STRUCTURES*	AGRICULTURAL DRY FIELDS (M ²)
		AREA (M ²)	DITCHES		
Okbang:					
<i>Inside Ditches</i>	51	17	8	8	—
<i>Outside Ditches</i>	64	17	—	3	14,704.8
Total Okbang	115	17	8	11	14,704.8
Eoeun	144	18.4	4	—	17,782.5
Sangchon-ni	18	16.3	—	2	—
Daechon	5	25	—	—	—
Bonchon-ni	13	18.3	—	—	—
Sawol-li	5	18	—	—	—
Muggong-ni	3	—	—	—	—
Oksan-ni	54	—	2	5	—
Igeum-dong	3	31	1	—	—
TOTALS	360	18	15	18	32,487.3

Note: The shaded area indicates wards that comprise the community of Daepyeong. *Indicates that there is not enough artifactual evidence to confirm to which phase of the Middle Mumun the raised floor structures correspond.

Korea are presented in Tables 2, 3, and 4. We cannot provide an analysis of bronze production here since such evidence is absent in Mumun south-central Korea. We include red-burnished ware and other pottery types as kinds of prestige artifacts, but due to space restrictions, an examination of prestige pottery is beyond the scope of this paper (however, please see Ko 2004). The data that we consider here represent the total number of greenstone and groundstone daggers that were excavated from clearly identifiable chronological contexts.

TABLE 4. DETAILS OF SETTLEMENT IN SOUTH-CENTRAL KOREA IN THE LATE MIDDLE MUMUN (C. 700-550 B.C.)

SITES	PIT HOUSES	MEAN OF PIT		RAISED FLOOR STRUCTURES*
		HOUSE ROOFED AREA (M ²)	DITCHES	
Okbang:				
<i>Inside Ditches</i>	23	30.2	8	8
<i>Outside Ditches</i>	20	28	—	3
Total Okbang	43	29	8	11
Eoeun	3	28	4	—
Sangchon-ni	3	35	—	2
Daechon	3	21.3	—	—
Baeyang	7	—	3	—
Sawol-li	7	—	2	—
Oksan-ni	13	—	—	—
Igeum-dong	24	17	2	25
TOTALS	103	27	31	38

Note: The shaded area indicates wards that comprise the community of Daepyeong. With the exception of Igeum-dong, * indicates that there is not enough artifactual evidence to confirm to which phase of the Middle Mumun the raised floor structures correspond.

PREHISTORY AND SETTLEMENT IN SOUTH-CENTRAL KOREA

Locations of Mumun settlement such as alluvial flats and low hillsides were formed by curves of the Nam River and its tributaries. Local soils consist of sandy loam alluvium. Steep, forested hills and mountains 100-1100 m in height dominate the topography of the region. Early settlement is dated to the Middle Jeulmun Period (c. 3500-2000 B.C.). Mumun archaeological features at Daepyeong were discovered 1-1.5 m below the surface under layers of alluvium and historic rice paddies. Settlement was heaviest in the Middle Mumun (c. 850-550 B.C.), but Protohistoric settlements (c. 300 B.C.-A.D. 300/400) have also been found.

In the Early Mumun (c. 1500-850 B.C.), Daepyeong was the location of a series of chronologically spaced, geographically dispersed hamlets with large rectangular pit houses (c. 28-100 m² in roofed area). In the Middle Mumun, Daepyeong had four nucleated wards that were each spaced approximately 1 km apart. From north to south, these are Sonam-ni, Eoeun, Okbang, and Sangchon-ni. We see these built-up areas as a community of wards connected through kin relations and shared social identities rather than simply a series of separate settlements because of the close proximity of the sites and general similarities in material culture. Four additional settlements and a burial site, Gangnu-ri, are located within 7 km north and south of Daepyeong along the Nam system. The settlement-ceremonial site of Igeum-dong is 33 km south of Daepyeong near the coast, while the Oksan-ni and Muggong-ni settlements are located 20 km north (upstream) of Daepyeong on the same river system.

The basic unit of settlement in the Middle Mumun was made up of groups of 2–10 pit houses with timber frames and wattle-and-daub walls that were built in clusters along with outdoor hearths, various kinds of pit features, open plaza-type areas, and occasionally raised-floor buildings. Residential zones were separated from the river by large belts of dry fields where millet, rice, and other crops were grown (Crawford and Lee 2003:91). Long intermittent lines of megalithic and stone cist burials dotted the inner border of the fields. A natural levee along the river's edge seems to have protected the area from flooding. Daepyeong was the largest Middle Mumun community in south-central Korea in the number of pit houses and settlement features such as raised-floor buildings, substantial agricultural dry fields, multiple ditch-and-palisade enclosures, evidence of greenstone ornament production, pottery kilns, pit features, megalithic burials with platforms paved with river cobbles, and prestige artifacts (Fig. 3). In addition to its role as a settlement, Daepyeong is unique in south-central Korea in that it functioned as a production area of pottery, stone tools, and jade ornaments and was the location of ceremonies. Middle Mumun Daepyeong was a central place, because no other community in the region had this combination of demographic, economic, and ideational features (Ahn 2000:55; Bale 1999; JNM 2002).

Social and technological transformations mark the change from Early to Middle Mumun Periods. For example, change in household organization in the transition from the Early to Middle Mumun is shown by the absence of large rectangular pit houses (Figs. 4a, 4b) and the presence of groups of small pit houses (c. 20 m² in roofed area) (Fig. 4c). Interior features of large rectangular pit houses such as multiple hearths indicate that most Early Mumun households were extended and composed of a number of multigenerational family groups. The absence of hearths in most Middle Mumun pit houses and the presence of one or two outdoor hearths in every group of pit houses show that food preparation moved outdoors. A central oval-shaped pit characterizes the interior of Middle Mumun pit houses. Many of these pits have evidence of stone tool production consisting of stone tool blanks, broken and unfinished tools, whetstones, and powdered debitage. Kin lineages are suggested by the presence of groups of megalithic burials and stone cists that are interconnected by low cobble platforms. Ash, charcoal, broken red-burnished pottery, and other prestige artifacts found scattered on the cobble platforms show that megalithic burials were the location of mortuary ceremonies (GARI 2002:30–49).

Incipient social ranking is demonstrated by the presence of differential mortuary offerings of greenstone, red-burnished pottery, groundstone daggers, and bronze at a few Middle Mumun burial sites. Evidence of social differentiation is strengthened by the fact that many of the craft goods of the Middle Mumun are found in burials inside or in the vicinity of the ditch-and-palisade precinct of Okbang (Bale 1999). Evidence of mortuary ceremonies has been found (see above), demonstrating that group-oriented activities were held in the Middle Mumun. Igeum-dong developed during this subperiod and had comparatively rich megalithic burials and ditches, and it was the only settlement with large raised-floor buildings meant for storage and housing. However, the small number of pit houses dated to the Late Mumun (c. 550–300 B.C.) suggests that the interior became depopulated when political and ceremonial centers developed in the southern coastal area. Furthermore, local conflicts likely increased after 400 B.C.

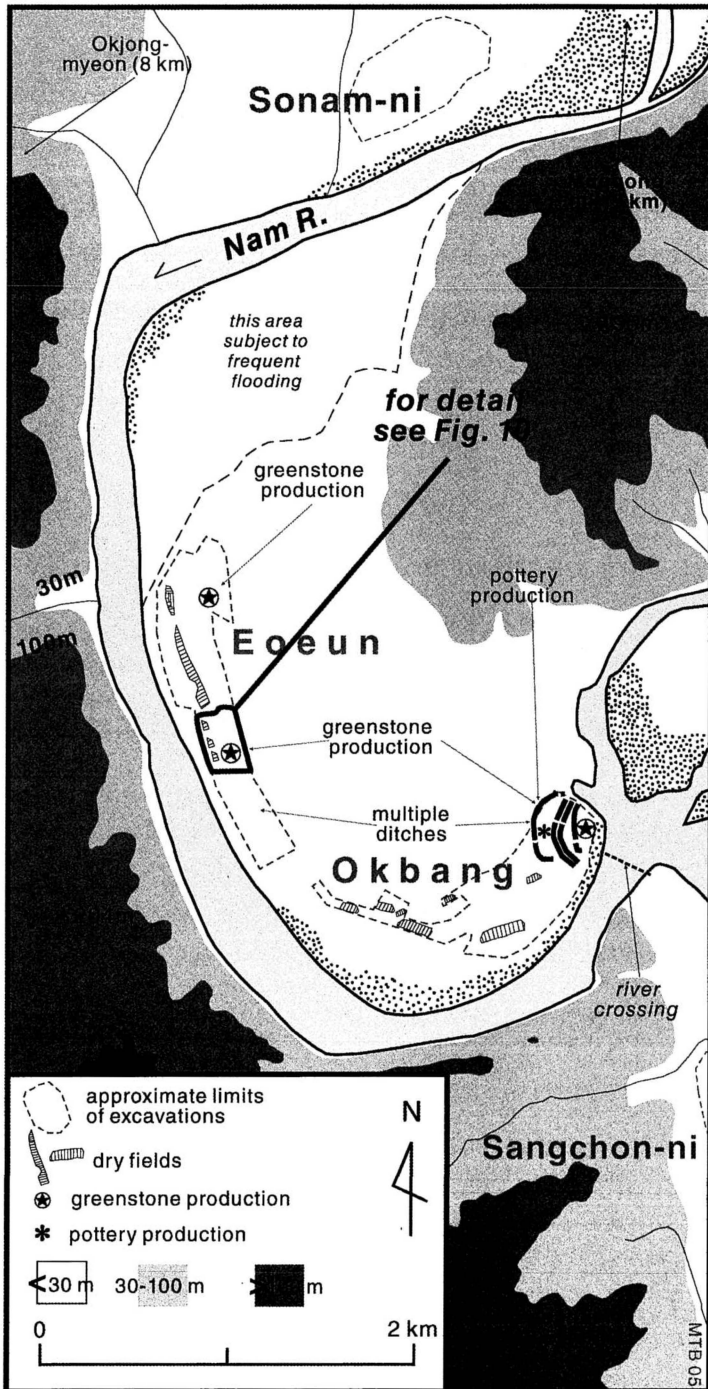


Fig. 3. Macrosettlement patterns and locations of prestige production at Daepyong, located just west of Jinju City, Gyeongsang Nam-do. Substantial agricultural dry fields, multiple ditch-and-palisade features, along with hundreds of pit houses and other settlement features were recovered in excavations that were conducted to expand the floodway of a local dam.

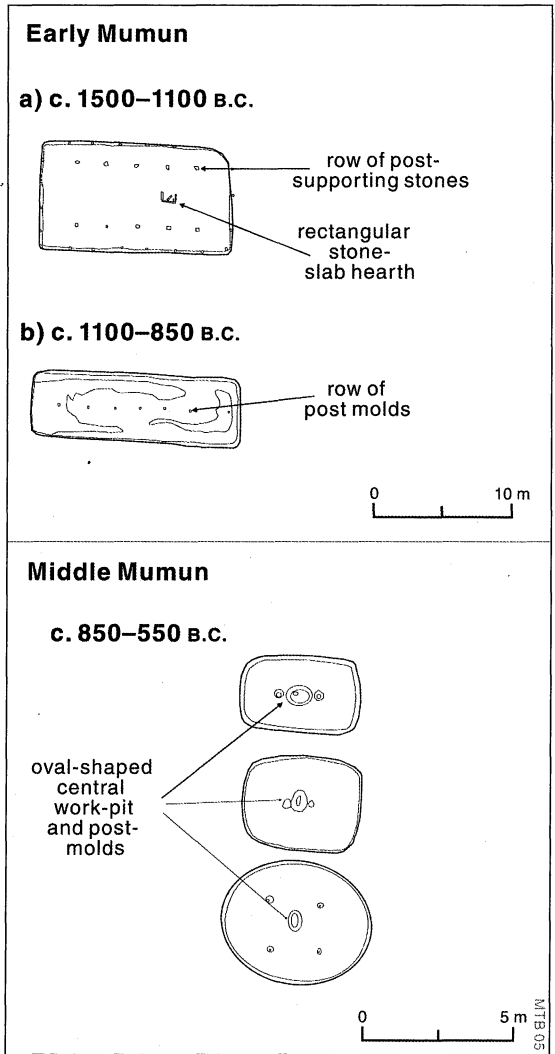


Fig. 4. Typical plans of Mumun Pottery Period pit houses in south-central Korea.

and populations were reorganized into small, widely spaced hamlets and fortified hilltop villages (Kim 2001 : 455). At the same time, pit houses with floor plans that are strikingly similar to the Middle and Late Mumun architectural style appeared in Kyushu and other regions of Japan.

There are a number of challenges in conducting this research with Korean data. Because most excavations occur as salvage archaeology and sites are rapidly dug out, the resulting data are sometimes not as rich as they would be in academic excavation conditions. Large-scale excavations are frequent and the quantity of gray-literature archaeological data is voluminous, but since site reports and research results are published in Korean, they are inaccessible to most archaeolo-

gists outside of Korea. Organic material breaks down rapidly in many postdepositional contexts, and screening of soil from archaeological contexts is not common, so subsistence patterns such as fishing and hunting can only be discussed generally using stone tools. Systematic palaeoethnobotanical research is relatively new, but initial results are promising (see Crawford and Lee 2003).

A MODEL OF CHANGE IN PRODUCTION AND SOCIAL DIFFERENTIATION

This diachronic model sheds light on production and sociopolitical complexity in south-central Korea over a 450-year span from the Late Early Mumun to the end of the Late Middle Mumun (c. 1000–550 B.C.). The dual processual perspective of Blanton and his colleagues (1996) was developed to explain diachronic trends in the development of complex societies in Mesoamerica, but it is also useful here because it deals with individual agency, ideology and power, is firmly rooted in the results of global ethnographic studies, and builds on comparative work (i.e., Clark and Blake 1994; Costin 1991; Hayden 1995). This model is based on dual processual theory and the results of two pilot studies (Bale 1999; Ko 2004). We propose a scenario in which corporate strategies were abandoned abruptly in favor of a shift to network strategies. We also outline an alternative scenario in which corporate strategies were dominant but a few network strategies also developed over time.

Hirth (1996:210) points out that societies with emerging leaders had a small number of households with hyperactive production that was used to benefit the whole community. Archaeologists such as Clark and Blake (1994:18) characterize the social scale of such groups as “transegalitarian” (see also Hayden 1995). This term refers to societies that are not egalitarian but have weak or ephemeral correlates of social inequality. Evidence from south-central Korea suggests that the circumstances of production in the slash-and-burn agriculturalist societies of Late Early Mumun would have included such qualities. In transegalitarian groups, evidence of production would be found only in household settings (Costin 1991:10). Yet the presence of prestige artifacts such as groundstone daggers in the Late Early Mumun suggests that some status differentiation would have been present. Regardless, Late Early Mumun leaders would have been the heads of households, and leadership would have been based on age, gender, personal abilities, or charisma. Decisions would have been based on community consensus, but at times of need leaders would have served in a part-time function to oversee the organization of household production.

Blanton and his colleagues (1996:7) theorize that some leaders used “corporate” strategies in which they stressed group cohesion through community-wide mortuary ceremonies, deemphasis of social differences between community members, low-intensity production and reduced consumption of prestige goods, and distribution of such artifacts in a more egalitarian manner (see also Costin 1991). Thus in the Late Early Mumun, prestige artifacts such as groundstone daggers would have been produced by members of the leader’s household in small numbers and were likely distributed relatively equally among the heads of households and others in the community through local exchange networks (Fig. 5). Prestige artifacts would have functioned more as symbolic emblems of age or gender than prestige or wealth. Production intensity and scale of prestige artifacts

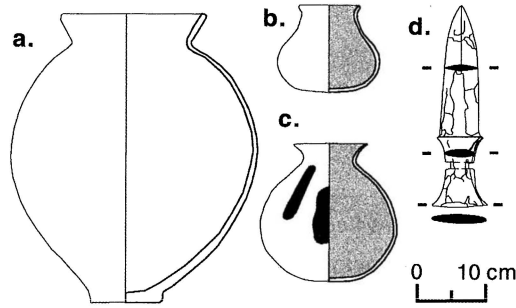


Fig. 5. Artifacts of the Late Early Mumun (c. 1100–850 B.C.) from Okbang: a: large jar; b: red-burnished jar; and c: *chemun* burnished jar from Pit-house 1 (1977 excavations, NRICH 1994). The groundstone dagger (d) is from Stone Cist 3, Locality 8, Okbang (CNRICH 2003). These artifacts required more time and intensive labor to produce than other types of Mumun pottery and groundstone tools. Artifacts in this paper were redrawn from the originals by Martin Bale.

is low in transegalitarian contexts (Costin 1991), so evidence of such activities would be ephemeral in the archaeological record.

Changes in the sociopolitical conditions of transegalitarian groups have been linked with competition between aggrandizing individuals or factions (Clark and Blake 1994; Hayden 1995). In south-central Korea, sociopolitical competition appeared c. 850 B.C., coeval with the onset of large-scale agriculture as evidenced by the extensive dry-field features of Daepyeong (32,487.3 m²). Intensive agriculture is important because Jeulmun and Early Mumun groups had relied on a broad-spectrum economy with small-scale slash-and-burn cultivation. At the same time, large rectangular-shaped houses were replaced somewhat abruptly by small square and rounded structures (J. Kim 2003). This was a significant social change when we consider that Early Mumun families lived together in large extended households for perhaps 650 years. This change could be explained by an increase in dependence on agriculture, but in the case of the Middle Mumun such changes in pit-house plans would have been linked to the introduction of exclusionary strategies such as the intensification of the production of craft goods (see Blanton et al. 1996:5). For example, part-time specialization of the production of jade or greenstone ornaments appears to have developed in south-central Korea (Ahn 2000:55; Bale 1999).

Given that some Middle Mumun features with incipient social differentiation appear at the same time as abrupt architectural change, it would have likely had implications for the nature and the intensity of production. For example, we expect that production of craft goods would have increased rapidly through time with the appearance of smaller pit houses. In this way, the Middle Mumun configuration of pit houses with central, oval-shaped “work-pits” can be seen as an expression of the spatial and material reallocation of production. Additionally, as incipient social differentiation took hold, prestige artifacts of the Middle Mumun would have gained symbolic status as prestige or wealth objects (Figs. 6, 7). Employing material from Costin (1991:11–18), we hypothesize that, as exclusionary strategies increased, one possible outcome could have been that full-time attached specialization would have developed to serve the needs of full-time leaders who began to participate in regional exchange. Kinds and quantities of

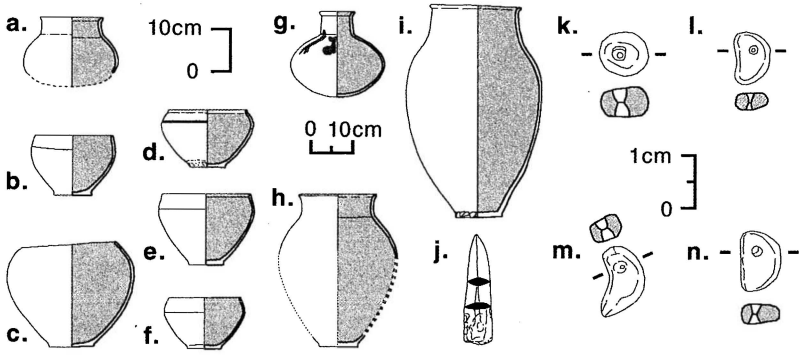


Fig. 6. Craft artifacts made by specialists of the Early Middle Mumun (c. 850–700 B.C.) from Daepyeong: a: red-burnished jar; b: line-incised red-burnished bowl; c: large red-burnished deep bowl (Pit-house 5, Okbang 9); d, e: line-incised red-burnished bowls (Pit-houses 44 and 39, Okbang 9); f: line-incised red-burnished bowl (Pit-house 4, Okbang 1G); g: *chemun* jar (Pit-house 7, Okbang 9); h: large jar (Pit 11, Okbang 9); i: large partly burnished jar (Pit 11, Eoeun 2); j: unfinished groundstone dagger; k, m: greenstone rounded ornament and comma bead (Pit-grave 29, Okbang 2); l, n: greenstone comma and lunar-shaped ornaments (Stone Cist 21, Okbang 8) (CNRICH 2002, 2003; GARI 2002; GSNUM 1999:224).

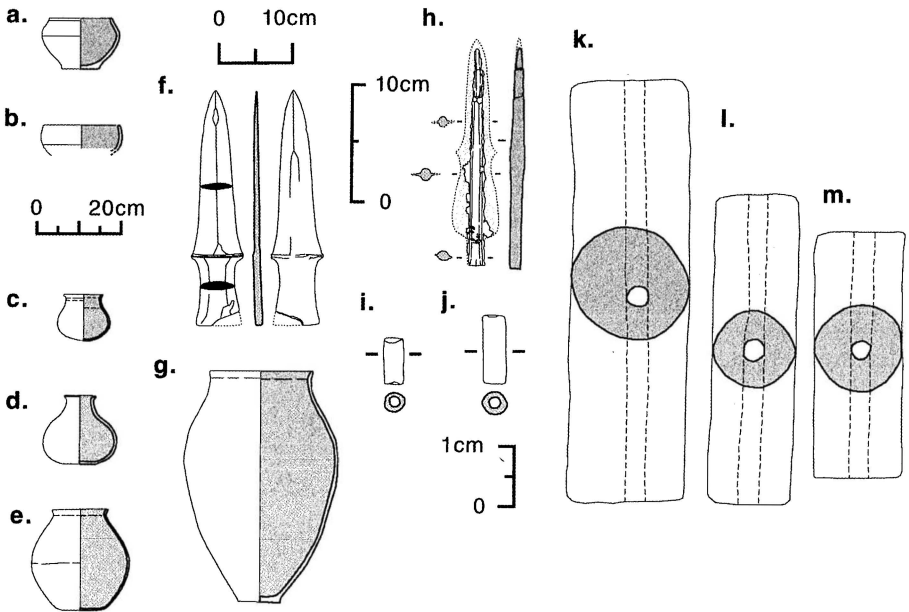


Fig. 7. Craft artifacts made by specialists of the Late Middle Mumun (c. 700–550 B.C.): a, b: line-incised red-burnished bowls (Pit-house 25, Okbang 1G); c–e: red-burnished jars (Pit-house 45, Kiln 619, Pit-house 33, Okbang 1G); f: groundstone dagger (Megalithic Burial 5, Okbang 1G); g: large jar (Pit-house 22, Okbang 9); h: bronze Liaoning-style dagger (Burial D4, Igeum-dong); i–m: tubular greenstone ornaments (Pit-houses 15, 14, Okbang 1J; Burial 2, Okbang 1994 excavations) (GARI 2002, 2003; JNM 2001; NRICH 1994).

production debris and parameters such as the presence of workshops, the concentration of production in specific areas, scale, and intensity indicate the relative control of production by full-time leaders. In turn, these would have affected site function and degree of centralization at the settlement, community, and/or regional scales. For example, in a network-oriented pattern of craft production, artifacts would have been made from exotic raw materials gained through long-distance exchange. Production would have taken place in workshop-only structures staffed by unrelated producers, and workshops would have been clustered in the vicinity of elite residences at a central-place site (Costin 1991:29–32).

On the other hand, a preliminary examination of a smaller sample of data led Bale (1999) to conclude that Daepyeong society was underpinned by enduring long-term traditions of corporate strategies. Contrary to Protohistoric burials of elites with hundreds of prestige mortuary goods (i.e., Lee 1998:203–214), initial research indicated that indisputably clear and definitive evidence of social differentiation in the Mumun was sparse. Bale's pilot study of pit houses and mortuary features in the Upper Nam suggests that signs of ranked sociopolitical organization were scant in the Early Mumun, but that exclusionary strategies such as craft production and concentration of production activities at large settlements gradually developed in the Middle Mumun (Bale 1999). It seems more likely that, following a corporate mode of production (Blanton et al. 1996:7; see also Costin 1991), craft specialists would have been independent part-time producers. Such individuals worked in kin-based household settings rather than workshop-only structures. There would have been fewer social restrictions on who could consume prestige goods, and such artifacts would be more evenly distributed across sites and regions.

PRODUCTION AND DISTRIBUTION OF GROUNDSTONE DAGGERS

Groundstone daggers appeared in northwestern Korea in the Early Mumun and likely originated as imitations of bronze daggers. They disappeared at the end of the Late Mumun after bronze production became firmly established in southern Korea. Most bronze and groundstone daggers of the Mumun are found in burials and are thought to have functioned as ceremonial or symbolic artifacts (Nelson 1999:162; NMK 1992; Rhee and Choi 1992:66). This argument is strengthened by the notion that bronze and groundstone daggers would have shattered if used as a thrusting weapon (Nelson 1993:131). Furthermore, groundstone daggers are not distributed equally across all archaeological features. Only 5 percent of pit houses (22 daggers, 463 pit houses) and 5 percent of burials (16 daggers, 352 burials) contained daggers in the Middle Mumun of south-central Korea. Groundstone dagger shapes appear as designs carved into the capstones of some megalithic burials at Orim-dong and Inbi-dong along with human representations in southern Korea (Fig. 8) (Lee et al. 1985). In spite of these data, some scholars interpret them as weapons or hunting tools (Chon 1992:162; JNM 2002:110). Questions about the possible uses of daggers must be addressed with a systematic program of use-wear analysis.

In contrast with rare bronze daggers, groundstone daggers are found in comparatively greater numbers across a wider range of features. For example, they are found in association with pit houses and burials, and broken daggers are found

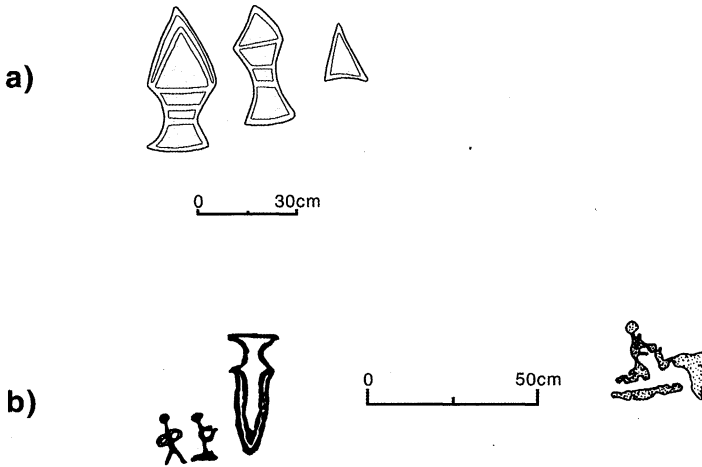


Fig. 8. Two depictions of stone daggers carved into the capstones of megalithic burials at a: Inbi-dong and b: Orim-dong, redrawn after Lee et al. (1985). Note the kneeling human representations, especially the size of the figure on the left-hand side of b that is much smaller than the dagger.

in pit features and ditches. On the other hand, bronze daggers are found in burials in hoard features. Most groundstone daggers in south-central Korea date to the Late Middle Mumun. Daggers from south-central Korea are made with gray and brown-colored mudstone, hornfels, and slate (JNM 2002:96). Sandstone, diorite, granite, and quartzite were used to make other tools such as semilunar blades.

The shape and style of groundstone daggers changed from tanged and stepped-handle examples in the Early Mumun into increasingly tapered and streamlined shapes in the Middle Mumun. Early Mumun examples are typically about 18–25 cm in length, but there are a small number of Late Middle Mumun daggers exceeding 50 cm in length, such as the examples from A-1 megalithic burial at Igeum-dong (59.6 cm, GARI 2003:167) and from No. 3 megalithic burial at Jilla-ri (66.7 cm, YICP 2005:304–305). At first glance, the presence of such long and labor-intensive daggers does not fit well with Costin's parameters of production and the paradigm for corporate or network strategies (Blanton et al. 1996; Costin 1991). If daggers were produced in a dispersed pattern by independent specialists, why would we find them as mortuary offerings co-occurring with bronze and greenstone at sites such as Songgung-ni (NMK 1979) or in Igeum-dong burials close to megaliths with bronze? Why would we find two kinds of daggers in the Late Middle Mumun: common examples about 25 cm in length and finely made daggers in excess of 50 cm in length? The unequal presence of a small number of long daggers clearly indicates that some kind of social differentiation was present in the Late Middle Mumun. After Lesure (1999:27), it is likely that a "gradation of values" had developed based on dagger length, stone material, craftspersonship, and other factors that affected the degree to which they were considered as wealth or symbolic artifacts.

Table 5 shows that the number of chronologically sensitive archaeological features with daggers increased over time. Most daggers are found in pit-house floors in the Late Early (63 percent) and Early Middle Mumun (63 percent), but they are split between burials (41 percent) and pit houses (31 percent) in the Late Mid-

TABLE 5. SUMMARY OF ARCHAEOLOGICAL FEATURES AND LOCATIONS WITH GROUNDSTONE DAGGERS IN MUMUN SOUTH-CENTRAL KOREA (C. 1100–550 B.C.)

SUBPERIOD	PIT				TOTALS	OKBANG	OUTSIDE	OUTSIDE
	HOUSES	BURIALS	PITS	OTHER*			OKBANG	DAEPLYEONG
Late Early	5	2	—	1	8	3	4	1
Mumun	(63%)	(25%)		(12%)	(100%)	(38%)	(50%)	(12%)
Early Middle	12	3	—	4	19	4	14	1
Mumun	(63%)	(16%)		(21%)	(100%)	(21%)	(74%)	(5%)
Late Middle	10	13	4	5	32	14	3	15
Mumun	(31%)	(41%)	(13%)	(15%)	(100%)	(44%)	(9%)	(47%)
Totals	27	18	4	10	59	21	21	17
	(44%)	(29%)	(6%)	(21%)	(100%)	(36%)	(36%)	(28%)

* Other refers to ditches, outdoor hearths, piled-stone features, and surface finds.

dle Mumun. In contrast to greenstone, the geographical distribution of daggers in the Middle Mumun is wider (i.e., outside Daepyeong) and more evenly spread out. However, when daggers from pit features and other contexts are included, features from Daepyeong contain the largest number of groundstone daggers in the Middle Mumun.

Clear evidence of dagger production debris is lacking, and the mode of production is not well known. Most examples of daggers are found in a broken state, and this sometimes makes it difficult to discern if they were discarded finished products or in the middle of production. A complicating factor is that—given the wide distribution of artifacts related to the production of utilitarian stone tools such as whetstones and unfinished tools—the production and maintenance of stone tools was a common household activity in the Middle Mumun associated with the central pit in the pit-house floor. It is difficult to distinguish the tools involved in dagger production, such as whetstones, because the same tool kits may have been used to produce other common groundstone artifacts, such as semilunar blades and groundstone projectile points. Judging by the rough and chipped state of unfinished daggers, they appear to have been made, along with semilunar blades, through reduction by chipped stone technology and then shaping by groundstone technology.

Evidence of dagger production at Daepyeong could only be inferred from broken pieces found in two Early Middle Mumun pit houses outside the ditch-and-palisade precinct at Okbang—GARI-9-4 (GARI 2002:268)—and one in Eoeun—CNRICH-18 (CNRICH 2001:80). In fact, excavators sometimes find it difficult to distinguish between the forms of some unfinished daggers and spearheads (i.e., in GARI-4 at Okbang 9). In contrast to greenstone production, because dagger and other stone tool production is indistinguishable, it is difficult to identify if dagger production was concentrated in Daepyeong or south-central Korea. Nonetheless, it was likely dispersed because individual pit houses were the location of the production of daggers. Contrary to the circumstances of greenstone production in the Early Middle Mumun, independent producers may have made daggers only on the basis of need. This idea is supported when we consider that daggers were found in only 59 features in south-central Korea, an area that

was continuously occupied for more than 500 years in the Mumun. This implies that the production scale was small, intensity was low, and that daggers were special artifacts.

Examples of daggers in excess of 40–50 cm in length were not excavated at Daepyeong, so it seems likely that—with the exception of a few local examples less than 30 cm in length—long daggers were not made at Daepyeong. However, 26.7 percent of the 165 megalithic and stone cist burials in the Upper Geum River area contained groundstone daggers. The percentage of burials with daggers in the Upper Geum seems quite high when compared to that of south-central Korea as a whole (5 percent), and thus it appears that specialized production occurred somewhere on the Korean Peninsula during the Middle Mumun—but likely not Daepyeong.

As of the writing of this paper, there were no studies on the production and distribution of groundstone daggers. Many similar dagger shapes are found from the Early Mumun Period at distant sites on the Korean Peninsula. Yet it is difficult to ascertain if daggers with similar forms were made at the same site, if they were exchanged over long distances, or if daggers were standardized in form. Nonetheless, a small number of daggers from megalithic burials at different sites in south-central Korea are similar enough in form that they could have been made by the same craftsperson. For example, while they differ slightly in length, the daggers greater than 40 cm from the Upper Geum River (i.e., Yeoeuigok 54) or Wolnae-dong site (No. 20) have similarities in the blade and handle forms with examples from Daepyeong (GARI Megalith No. 5), Igeum-dong (A-1), and Wolnae-dong (66-2) (GARI 2002, 2003; GNM 1992:150; S.-O. Kim 2003).

GREENSTONE ORNAMENT PRODUCTION AND DISTRIBUTION

In southern Korea, the use of greenstone as jewelry and mortuary goods started in the Middle Mumun and continued through to the latter part of the Three Kingdoms Period (c. A.D. 300/400–668). Table 6 shows that greenstone ornaments were unearthed from 7 percent of burials and 2 percent of pit houses of the Middle Mumun of south-central Korea. Approximately half (48 percent, 19 of 40) of all features with greenstone ornaments are from Okbang. While these data alone do not imply that greenstone was a prestige item, they indicate that not all indivi-

TABLE 6. SUMMARY OF ARCHAEOLOGICAL FEATURES AND LOCATIONS WITH GREENSTONE ORNAMENTS IN MIDDLE MUMUN SOUTH-CENTRAL KOREA (c. 850–550 B.C.)

SUBPERIOD	PIT				TOTALS	OKBANG	OUTSIDE	OUTSIDE
	HOUSES	BURIALS	PITS	OTHER*			OKBANG	DAEPEYONG
Early Middle Mumun	5 (33%)	9 (60%)	—	1 (7%)	15 (100%)	9 (60%)	6 (40%)	—
Late Middle Mumun	4 (16%)	16 (64%)	1 (4%)	4 (16%)	25 (100%)	10 (40%)	1 (4%)	14 (56%)
Totals	9 (22%)	25 (62%)	1 (3%)	5 (13%)	40 (100%)	19 (48%)	7 (17%)	14 (35%)

* Other refers to ditches, outdoor hearths, piled-stone features, and surface finds.

duals were able to acquire such artifacts. A few Early Mumun features with greenstone ornaments and production debris exist (i.e., Lee 2001), but in these cases it is thought that Middle Mumun producers utilized nearby shallow depressions as refuse pits, some of which were formed by abandoned Early Mumun pit houses. Finished shapes consist of small tubular ornaments, rounded beads, and comma- and C-shaped greenstones. Some of the materials that were used to make ornaments were identified by X-ray diffusion analysis as microcline (amazonite), jasper, and nephrite (jade) (CNRICH 2001:325–330; JNM 2002:115–117; Lee 2001). Most ornaments are not larger than 2×2 cm in size and range in color from mottled blue-green to blue-gray.

EARLY MIDDLE MUMUN

Early Middle Mumun ornaments were produced in Eoeun,² but most were consumed as mortuary offerings in Okbang burials. For example, 60 percent (9 of 15) of Early Middle Mumun ornaments were deposited exclusively in burials at Okbang in the vicinity of the ditch-and-palisade precinct (Table 6). Importantly, this suggests the presence of social differentiation because the consumers—presumably the full-time leaders of Daepyeong—were distinct from the non-consuming part-time specialists in Eoeun. However, since Okbang is the ward with the majority of finished greenstone ornaments, the expectation that society would have become more complex through the establishment of long-distance networks with leaders in settlements outside of the local area is not met. That is to say, distribution was by and large limited to Daepyeong. Daechon, only 7 km south, was the only area of distribution outside Daepyeong. These trends more closely resemble a mix of network and corporate strategies in which prestige artifacts exist but leaders downplay their significance by distributing them differentially on a local basis to gain supporters and control agricultural surplus (Blanton et al. 1996).

Table 7a summarizes data on the number of features with greenstone production tools and debris from Eoeun (CNRICH 2001; Lee 2001). Greenstone raw material, debitage, unfinished ornaments, broken/waster ornaments, grindstones, and small drills came to light in 15 pit houses at Eoeun and a pit house outside the ditches at Okbang (Fig. 9). These represent 5.4 percent of the total number

TABLE 7A. SUMMARY OF ARCHAEOLOGICAL FEATURES AND LOCATIONS WITH GREENSTONE PRODUCTION EVIDENCE IN MIDDLE MUMUN SOUTH-CENTRAL KOREA (C. 850–550 B.C.)

SUBPERIOD	PIT			TOTALS	OKBANG	OUTSIDE	OUTSIDE
	HOUSES	PITS	OTHER*			OKBANG	DAEPEYONG
Early Middle Mumun	15 (83%)	1 (6%)	2 (11%)	18 (100%)	—	18 (100%)	—
Late Middle Mumun	7 (50%)	3 (21%)	4 (29%)	14 (100%)	14 (100%)	—	Muggong-ni (data not available)
Totals	22 (69%)	4 (12%)	6 (19%)	32 (100%)	14 (100%)	18 (100%)	—

* Other refers to ditches, outdoor hearths, piled-stone features, and surface finds.

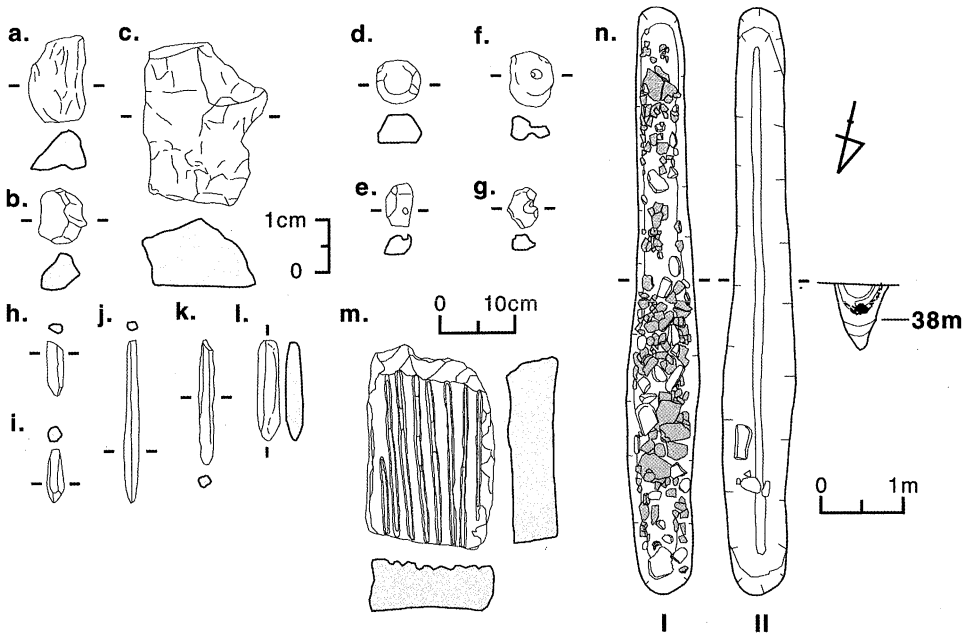


Fig. 9. Production tools and features in Daepyeong. Evidence of greenstone production in the Early Middle Mumun includes: a–c: raw material (fill of Eoeun Pit-house CR-4); d–g: unfinished and broken ornaments (Eoeun, surface C); h–l: drills (Pit-house 37, Eoeun 2); and m: a grindstone (Pit-house 15, Eoeun 2) (CNRICH 2002; Lee 2001). Evidence of pottery production in the Late Middle Mumun includes kilns such as n: No. 619 inside the ditch-and-palisade precinct at Okbang (I: plan view of levels 3 and 4 [pottery indicated by shading]; II: kiln floor) (GARI 2002).

of the Early Middle Mumun pit houses in Daepyeong ($n = 277$). These data imply that only a small number of individuals were doing this work in the Early Middle Mumun. Some scholars report that the pit houses with greenstone production were “workshops” (Crawford and Lee 2003:87; Lee 2001). A more likely interpretation is that because pottery and subsistence artifacts were excavated from these features and food preparation features such as outdoor hearths were found nearby, they had the same function as other Middle Mumun residences. Given that these are not workshop-only structures, it seems likely that—after Costin (1991:25)—the context of production involved independent producers. In contrast, the location of greenstone production activities was separated from groups of more numerous pit houses in Okbang. Leaders encouraged the concentration of production activities in a central place, but the pattern here seems to follow Costin in that groups of independent producers also tended to locate in market centers (Costin 1991:13–15).

Figure 10 shows the location of 11 greenstone production houses in Eoeun next to dry fields and close to the riverbank. The close proximity of greenstone production to agricultural production (i.e., dry fields) indicates the likelihood that some agriculturalists were part-time greenstone specialists. Excavators note that greenstone debitage was strewn across the surface of the Middle Mumun layer in the vicinity of the pit houses with production evidence (Lee 2001:379). Small drills used for perforating greenstone beads were found in close proximity

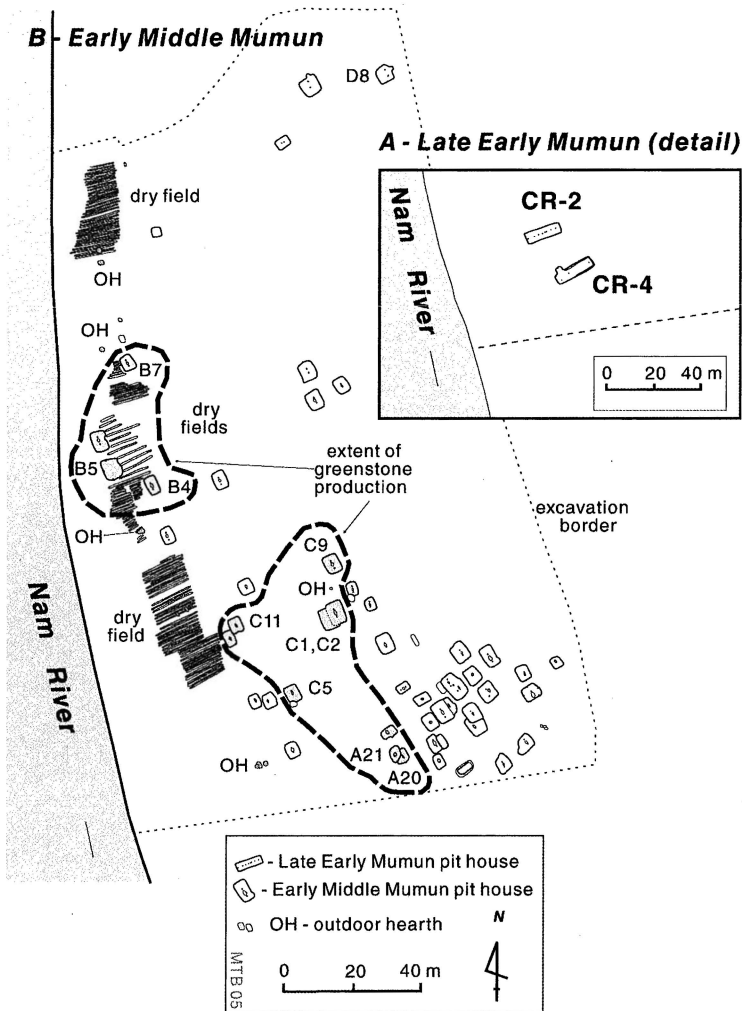


Fig. 10. The distribution of settlement and greenstone production in part of Eoeun in the Late Early Mumun (A, see inset) and Early Middle Mumun Periods (B) after Lee (2001). The spatial relationships between settlement, agricultural production (dry fields), and locations of greenstone production are shown. Greenstone production evidence was also recovered in Eoeun in a cluster of four pit houses north of the group illustrated here.

to each other in a group of three pit houses (C1, C2, and C5), indicating that certain tasks were differentially allocated among pit houses. In fact, Shoda (2004:102–103) has proposed that a “division of labor” characterized greenstone production at Daepyeong. The largest pit house with greenstone production (B5, 31 m²) is greater in mean roofed area than the mean of all pit houses of the Early Middle Mumun (17.7 m²) in south-central Korea. B5 contained the largest amount of greenstone debitage (n = 36). Perhaps the presence of larger pit houses adjacent to dry fields implies that greenstone craftspeople were more prosperous than other individuals or—after Stark (1991:72)—that individuals in Eoeun used part-time greenstone production as an economic means to supplement cultiva-

tion. Yet evidence indicates that Daepyeong's most powerful individuals resided in Okbang and were the consumers of the greenstone, and thus—contrary to the proposal by Liu (2003:9–12) that in Chinese Neolithic Liangzhu, elites were jade craftspeople—the Early Middle Mumun leaders of Okbang were not the producers.

Nevertheless, we hypothesized that the scale and intensity of production would have increased through time, but that expectation was not met. In a strict sense, the scale and intensity of Mumun greenstone production is difficult to assess directly because we do not know if the sample of excavated production debris is representative of the actual population of debris that was accumulated during production. Indirect evidence, however, reveals that the scale of production was small and intensity was low in the Early Middle Mumun. For example, the total sample of excavated debris from this subperiod numbers only 228. Furthermore, although 15 pit houses were involved, their close proximity and the lack of workshops show that there were likely only one or two production units. Greenstone part-time craft specialists probably were related individuals from the same or neighboring household.

LATE MIDDLE MUMUN

Megalithic burials at Igeum-dong made up more than half of the features with greenstone ornaments in south-central Korea (14 of 25 burials, or 56 percent) in the Late Middle Mumun (Table 6). As with the previous period, local production of the Late Middle Mumun was located in Daepyeong, but production shifted to seven pit houses inside the ditch-and-palisade precinct at Okbang, representing 30 percent of the pit houses. The mean roofed area of pit houses with greenstone production in the Late Middle Mumun (30.5 m², n = 7) is similar to the mean area of all pit houses inside the ditch-and-palisade precinct (30.2 m², n = 23), hinting that greenstone craftspeople were not socially different than other residents of Okbang. The largest pit house in roofed area with greenstone production (JNM 15, 46.9 m²) contained a rhyolite grindstone with four deep grooves, a tubular greenstone ornament, 11 pottery vessels, a red-burnished vessel, and 10 stone tools (JNM 2001:60–63). Given that Costin (1991:30) stresses that “production units” are essentially social phenomena, the close proximity of JNM 15 to other features in space and in time implies that it was likely part of a single greenstone production unit that included a number of features with finished ornaments and debris—namely pit houses J8, J9, J14, pits J130, J145, and ditches V, X, Y, and J37 (JNM 2001). Contrary to expectations, workshops were not used, the production unit was small, and the total amount of production debris (n = 43) of the Late Middle Mumun is much less than in the previous subperiod (Table 7b). Thus the scale and intensity of local production remained small and low in the Late Middle Mumun. Additionally, it is difficult to say that Late Middle Mumun production was “concentrated” since only seven pit houses were involved. However, all of these pit houses, along with pottery kilns, are found inside the ditch-and-palisade precincts.

This pattern suggests that individuals were producing only for themselves and for distribution in the local area. However, the extent to which greenstone raw materials or ornaments were exchanged in other areas is unclear because source

TABLE 7B. TOTAL NUMBERS OF GREENSTONE ORNAMENTS AND GREENSTONE PRODUCTION EVIDENCE IN MIDDLE MUMUN SOUTH-CENTRAL KOREA (C. 850–550 B.C.)

SUBPERIOD	FINISHED	RAW		UNFINISHED	BROKEN/ WASTER	GRIND- STONE	OTHER TOOLS	TOTALS
	ORNAMENTS	MATERIAL	DEBITAGE					
Early Middle Mumun	14	9 (4%)	170 (74%)	4 (2%)	14 (6%)	6 (3%)	25 (11%)	228 (100%)
Late Middle Mumun	513	21 (40%)	19 (37%)	2 (4%)	1 (2%)	9 (17%)	—	52 (100%)
Totals	527	30 (11%)	189 (68%)	6 (2%)	15 (5%)	15 (5%)	25 (9%)	280 (100%)

analysis data was not available at the time of this paper. Ornaments are reported in houses and burials in North Korea (ESP 1984:140–141; ISSP 1964:23–24; Rhee and Choi 1992:70). A Late Middle Mumun stone cist at Songgung-ni in west-central Korea yielded 17 greenstone ornaments (NMK 1979:106–109). Burials at the Late Middle Mumun settlement-ceremonial center of Igeum-dong yielded 492 greenstone ornaments (GARI 2003). Igeum-dong had more ornaments than the total number of all other Middle Mumun ornaments and debris combined, increasing the likelihood that there were greenstone production centers other than Daepyeong and Muggong-ni.

Ornament size increased in the Late Middle Mumun. Megalithic Burial No. 2 at Okbang contained a groundstone dagger, two groundstone projectile points, and five comparatively large tubular ornaments (NRICH 1994:139). These ornaments dwarf all others in south-central Korea in size (see Fig. 7k,l,m). In fact, the largest piece of greenstone raw material found in Daepyeong is not large enough to make such ornaments. The Upper Geum River area is approximately 90 km from the Upper Nam area, but only a small number of greenstone ornaments have come to light in 1.2 percent (2 of 165) of burials in the Upper Geum River area (Kim and Lee 2000:110, Table 2). Perhaps these sites were beyond the distributional area, or greenstone was less important in some Mumun communities.

It will be difficult to get a clear picture of the greenstone exchange system of the Middle Mumun until the sources of greenstone ornaments and production debris are identified. For example, individuals may have obtained greenstone 8 km east of Daepyeong in Okjong-myeon (GN-NRET 1998:66). However, another Mumun settlement with greenstone production, Muggong-ni, was established upstream in the same river system approximately 20 km north of Daepyeong (GUM 1996). Muggong-ni is located in the shadow of Mt. Duncheol, another potential source (JNM 2002:116). Amazonite has been reported from Mt. Hwajang in Haman-gun. A modern source is located in the North Han River Valley near Chuncheon, more than 300 km north of Daepyeong.

DISCUSSION AND CONCLUSION

In the Late Early Mumun, daggers were not common and they were symbolic of the social and/or ceremonial role of the head of extended households. Overall, the pattern indicated by the circumstances of dagger production in the Late Early

and Early Middle Mumun reveal a corporate strategy. Dagger makers of the Late Early Mumun were part-time specialists in the sense that only a small percentage of the population was involved in such production. However, the subsistence labor demands of slash-and-burn agriculture may have constrained the appearance of sociopolitical competition in the Late Early Mumun. In addition, given the transegalitarian modes of the period, competition between leaders to publicly display goods that symbolize leadership was probably suppressed, so the market for distribution was small. Daggers were likely made by expert stone toolmakers in households on a small scale and at a low intensity. Although individuals were able to make more common groundstone tools such as semilunar blades, the concepts of symmetry and balance in the working of stone material were especially important only in dagger production. Thus the skill required to make them was probably not available in every settlement, but the patterns emerging here make it difficult to say that production of daggers was concentrated.

Groundstone daggers were not common artifacts in the Middle Mumun, but their numbers increased in south-central Korea, especially in Daepyeong. However, the fact that few pit houses have evidence of production indicates that daggers may have been exchanged from the outside into Daepyeong and the Nam River system. The small number of unfinished daggers found at Daepyeong may represent those that were made on the basis of imitation or need. Yet, as in the Late Early Mumun, specialists made groundstone daggers in the Middle Mumun. The fine craftsmanship of specific daggers from south-central Korea and the Upper Geum (see above) supports this conclusion.

Patterns that reflect network strategies appear in the Late Middle Mumun. The human and dagger carvings at Orim-dong illustrate the important role of daggers in social and ceremonial life. Moreover, the kneeling figures in these carvings indicate that the daggers—or perhaps the individuals who wielded them—were associated with veneration. However, in contrast with circumstances of previous subperiods, the appearance of daggers from mortuary contexts that are 50 cm or more in length shows that Late Middle Mumun groundstone daggers came to be associated with social rank. The excavation context of these daggers indicates that they were more valued than the shorter ones. Late Middle Mumun full-time leaders who wielded long daggers had attained some special status that Late Early and Early Middle Mumun leaders did not have. These patterns suggest that full-time leaders of the Late Middle Mumun distributed groundstone daggers, especially the long examples, as prestige objects to compete against rivals and gain support on an extralocal basis. Direct evidence of their production is scant, but given the circumstances, we propose that the context, concentration, scale, and intensity of production may have increased through time. However, the parameters of production probably mirrored those of greenstone production in the Early Middle Mumun. These parameters are summarized below.

Along with macroprocesses such as the onset of intensive agriculture and the building of ditch-and-palisade precincts, the Middle Mumun marks the beginning of microprocesses such as part-time specialized greenstone production. Greenstone ornaments were produced in a specialized setting in Daepyeong by a small part of the population. Independent part-time specialists made ornaments in regular pit houses. Greenstone production was concentrated in Eoeun during the Early Middle Mumun, but the number of finished ornaments and production de-

bris illustrates that the scale of production was small and the intensity was low. Full-time leaders probably did not have great control over greenstone production in the Early Middle Mumun, because if they did, such activities would have taken place inside the ditch-and-palisade precinct at Okbang in proximity to elite residences. Ornaments were consumed as mortuary offerings in the burials close to the ditch-and-palisade precinct of Okbang, but they were not widely distributed in large numbers outside of Daepyeong. Thus, with the exception of the observed concentration of production, these trends show a mix of corporate and network strategies in which competition between leaders existed but social differences between community members were deemphasized and consumption of prestige artifacts was reduced.

Daepyeong's importance as a greenstone production center decreased along with its population in the Late Middle Mumun. Although production took place in the ditch-and-palisade precinct of Okbang, few greenstone ornaments were produced locally in this subperiod. Independent part-time specialists used some of the largest pit houses (e.g., JNM No. 15), but judging by the small numbers of finished ornaments and production debris, the scale of production was small and the intensity was low. Furthermore, large ornaments found at Okbang were probably not made there. Similar ornaments have also been found in burials at Songgung-ni, and a large number of ornaments were excavated from burials at Igeum-dong. A greenstone production center at Muggong-ni was active at the time. Taken together, evidence from Okbang, Songgung-ni, Igeum-dong, and Muggong-ni—along with the appearance of long groundstone daggers—indicates that long-distance exchange of prestige artifacts, an exclusionary network strategy, began in the Late Middle Mumun.

These trends indicate not only the beginning of part-time specialized craft production, but some of the clearest evidence of social differentiation as well. Specialized production of greenstone, groundstone daggers, bronze, and red-burnished pottery were not each prime movers in the development of social differentiation, but—along with intensive agriculture—they all played important roles. It is important to note that Middle Mumun social differentiation was at an incipient state in comparison with the sociopolitical circumstances of jade production and consumption in the Liangzhu or Qijia Cultures of Neolithic China. The nature of Middle Mumun social ranking, the unintended result of competition between aggrandizing leaders who used a mix of corporate strategies with incipient network strategies, differed from that of the Korean Protohistoric, when network trends such as long-distance exchange, intensive metal production, and conspicuous consumption of prestige artifacts contributed to important social changes before secondary states developed in Korea c. A.D. 300.

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NOTES

1. We use the romanization system for Korean instituted by law in July 2000, except for personal names and place names that have clear and logical precedents in romanization.
2. This locality is designated as Okbang 5 (see Lee 2001), but according to the macrosettlement patterns, the study area properly belongs in the Eoeun (northern) ward rather than the Okbang (southern) ward of Daepyeong.

REFERENCES CITED

AHN, JAE-HO

- 1996 Mumuntogisidae jibrak-eui byeoncheon: Jugeoji-reul tonghan junggi-eui seoljeong (Change in settlements of the Mumun Pottery Period: The establishment of the Middle Period through houses), in *Seoko Yun Yong-jin Gyosu Jeongnyeon Twoeim Ginyeom Non-chong* (Papers in Honor of the Retirement of Professor Yun Yong-jin Seoko): 43–90, ed. Committee for Papers in Honor of the Retirement of Professor Yun Yong-jin. Daegu: Committee for Papers in Honor of the Retirement of Professor Yun Yong-jin.
- 2000 Hanguk nonggyeongsahoe-eui seongnib (The formation of agricultural society in Korea). *Hanguk Kogo-Hakbo (Journal of the Korean Archaeological Society)* 43:41–66.

BAE, DUCK-HWAN

- 2005 Cheongdonggisidae Yeongnamjiyeok-eui jugeo-wa maeul (Settlement and settlements of the Yeongnam region), in *Yeongnam-eui Cheongdonggisidae Munhwa* (The Bronze Age Culture of Yeongnam). Proceedings of the 14th Yongnam Archaeological Society Meetings: 71–108. Daegu: Yongnam Archaeological Society.

BALE, MARTIN T.

- 1999 Prehistoric Settlement and Production in the Nam River Valley, South Korea. Unpublished M.A. thesis. University of British Columbia, Vancouver.

BARNES, GINA L.

- 2001 *State Formation in Korea: Historical and Archaeological Perspectives*. London: Curzon.

BLANTON, RICHARD, GARY FEINMAN, S. KOWALEWSKI, AND PETER PEREGRINE

- 1996 A dual-processual theory for the evolution of Mesoamerican civilization. *Current Anthropology* 37(1):1–31.

BGNUM (Bugyeong National University Museum)

- 1998 *Sancheong Sawol-li Hwanho Yujeok* (The Ditch-Enclosed Settlement at Sawol-li, Sancheong). University Research Series 4. Busan: Bugyeong National University Museum.

BUSAN MUSEUM

- 1998 *Jinju Gwigok-dong Daechon Yujeok* (The Daechon Site in Gwigok-dong, Jinju). Busan: Busan Museum.

CHANG, K. C.

- 1986 *The Archaeology of Ancient China*. New Haven: Yale University Press.

CHO, YONG-JE

- 1998 Sacheon Bonchon-ni yujeok (The Bonchon-ni Site, Sacheon), in *Namgangdaem Sumoljigu-eui Balgulseonggwa* (Results of Excavations in the Namgang River Dam Floodway): 47–54. Proceedings of the 7th Meeting of the Yongnam Archaeological Society. Busan: Yongnam Archaeological Society.

CHON, YOUNG-NAI

- 1992 Introduction of rice agriculture into Korea and Japan: From the perspective of polished stone implements, in *Pacific Northeast Asia in Prehistory: Hunter-Fisher-Gatherers, Farmers, and Socio-Political Elites*: 161–169, ed. C. M. Aikens and S. N. Rhee. Pullman, WA: WSU Press.

CLARK, JOHN E., AND MICHAEL BLAKE

- 1994 The power of prestige: Competitive generosity and the emergence of rank societies in lowland Mesoamerica, in *Factional Competition and Political Development in the New World*: 17–30, ed. E. Brumfiel and J. Fox. Cambridge: Cambridge University Press.

CNRICH (Changwon National Research Institute of Cultural Heritage)

- 2001 *Jinju Daepyeong-ni Eoeun 2 Jigu Seonsa Yujeok I* (Locality 2 at the Eoeun Site, Daepyeong-ni, Jinju I). Research Series 14. Changwon: Gyeongsang Nam-do, CNRICH.

- 2002 *Jinju Daepyeong-ni Eoeun 2 Jigu Seonsa Yujeok I* (Locality 2 at the Eoeun Site, Daepyeong-ni, Jinju II). Research Series No. 17. Changwon: Gyeongsang Nam-do, CNRICH.
- 2003 *Jinju Daepyeong-ni Okbang 8 Jigu Seonsa Yujeok* [Locality 8 at the Okbang Site, Daepyeong-ni, Jinju]. Research Series No. 19. Changwon: Gyeongsang Nam-do, CNRICH.
- COSTIN, CATHY L.
1991 Craft specialization: Issues in defining, documenting and explaining the organization of production, in *Archaeological Method and Theory* (Vol. 3): 1–56, ed. M. B. Schiffer. Tucson: University of Arizona.
- CRAWFORD, GARY W., AND GYOUNG-AH LEE
2003 Agricultural origins in the Korean Peninsula. *Antiquity* 77(295): 87–95.
- DAUM (Dong-A University Museum)
2001 *Jinju Sangchon-ni Seonsayujeok* (The Excavation Report of Sangchon-ri Site, Jinju). University Museum Research Series 34. Busan: Dong-A University Museum.
- DEUM (Dong Eui University Museum)
1999 *Sancheong Sawol-li Yujeok* (The Sawol-li Site, Sancheong). University Museum Research Series 6. Busan: Dong Eui University Museum.
- ESP (Encyclopedia of Science Publishers)
1984 *Namgyeong Yujeok-e Gwanhan Yeongu* (A Study of the Namgyeong Site). Pyeongyang: Encyclopedia of Science Publishers.
- GARI (Gyeongnam Archaeological Research Institute)
2002 *Jinju Daepyeong Okbang 1–9 Jigu Mumunsidae Jibrak* (The Mumun Period Settlement at Okbang Localities 1 and 9 in Daepyeong, Jinju). Jinju: GARI.
2003 *Sacheon Igeum-dong Yujeok* (The Igeum-dong Site, Sacheon). Jinju: GARI.
- GICP (Gyeongnam Institute of Cultural Properties)
1999 Okbang 7 Jigu yujeok (The Okbang 7 site), in *Namgangyuyeok Munhwayujeok Balguldorok* (Cultural Remains of the Nam River): 124–142, ed. Bong-geun Sim. Busan: Gyeong-sang Namdo and Dong-A University Museum.
- GNM (Gwangju National Museum)
1992 *Yeocheon Wolnae-dong Goindol* (Wolnae-dong Dolmens). Report on the Research of Antiquities of the Gwangju National Museum, Vol. XXIII. Gwangju: Gwangju National Museum.
- GN-NRET (Gyeongsang Nam-do–Nam River Excavation Team)
1998 *Namgang Seonsa Yujeok* (The Nam River Prehistoric Sites). Jinju: Sinseong Gihwoek.
- GSNUM (Gyeongsang National University Museum)
1999 *Jinju Daepyeong-ni Okbang 2 Jigu Seonsa Yujeok* (The Prehistoric Site at Okbang Locality 2, Daepyeong-ni Jinju). University Museum Research Series 20. Jinju: Gyeongsang National University.
2001 *Jinju Daepyeong-ni Okbang 3 Jigu Seonsa Yujeok* (The Prehistoric Site at Okbang Locality 3, Daepyeong-ni Jinju). University Museum Research Series 24. Jinju: Gyeongsang National University.
2002 *Sancheong Oksan-ni Yujeok: Mokgwakmyo* (The Oksan-ni Site, Sancheong: Wood Coffin Burials). University Museum Research Series 24. Jinju: Gyeongsang National University.
- GUM (Gyeongnam University Museum)
1996 Sancheong Muggong-ni yujeok (The Muggong-ni site, Sancheong). Unpublished site explanation briefs. Masan: Gyeongnam University Museum.
- HAYDEN, BRIAN
1995 Pathways to power: Principles for creating socioeconomic inequalities, in *Foundations of Social Inequality*: 15–86, ed. T. D. Price and G. M. Feinman. New York: Plenum Press.
- HIRTH, KENNETH G.
1996 Political economy and archaeology: Perspectives on exchange and production. *Journal of Archaeological Research* 4(3): 203–239.
- IMAMURA, KEIJI
1996 *Prehistoric Japan: New Perspectives on Insular East Asia*. Honolulu: University of Hawai'i Press.
- ISSP (Institute of Social Science Publishers)
1964 *Geumtan-ni Wonsi Yujeok Balgul Bogo* (Report of the Geumtan-ni Site). Site Excavation Report 10. Pyeongyang: Institute of Social Science Publishers.

JNM (Jinju National Museum)

- 2001 *Jinju Daepyeong-ni Okbang 1 Jigu Yujeok I* (The Okbang 1 Site in Daepyeong-ni, Jinju I). Museum Site Excavation Research Series 14. Jinju: Jinju National Museum.
- 2002 *Cheongdonggi Sidae-eui Daepyeong, Daepyeong In* (Daepyeong, Organized Community of the Bronze Age). Jinju: Jinju National Museum.

KANG, BONG-WON

- 1990 A Megalithic Tomb Society in Korea: A Social Reconstruction. Unpublished M.A. thesis. Arizona State University, Tempe.
- 1995 The Role of Warfare in the Formation of State in Korea: Historical and Archaeological Approaches. Ph.D. diss. University of Oregon, Eugene. Ann Arbor: University Microfilms.
- 2000 A test of increasing warfare in the *Samguk Sagi* against the archaeological remains in Yongnam, South Korea. *Journal of East Asian Archaeology* 2(3-4): 139-197.

KIM, BYUNG-MO, KIM A-GAUN, AND PARK HEE-MYUNG

- 1999 *Jinju Sangchon-ni 2 Ho Jiseokmyo mit Seonsa Yujeok* (Report of the Archaeological Sites at Sangchon-ri, Jinju City). University Museum Research Series 34. Seoul: Hanyang University Museum.

KIM, JANGSUK

- 2001 Elite strategies and the spread of technological innovation: The spread of iron in the Bronze Age societies of Denmark and southern Korea. *Journal of Anthropological Archaeology* 20: 442-478.
- 2002 The Late Neolithic-Early Bronze Age Transition and Cessation of Island Exploitation in Central-Western Korea: The Spread of Territoriality into a Mobile Hunter-Gatherer Context. Ph.D. diss. Arizona State University, Tempe. Ann Arbor: University Microfilms.
- 2003 Chungcheongjiyeok Songgung-ni yuhyeong hyeongseong gwajeong (The development of the Songgukri assemblage in the Chungcheong area). *Hanguk Kogo-Hakbo (Journal of the Korean Archaeological Society)* 51: 33-55.

KIM, SEUNG OG

- 1996 Political Competition and Social Transformation: The Development of Residence, Residential Ward, and Community in Prehistoric Taegongni of Southwestern Korea. Ph.D. diss. University of Michigan, Ann Arbor. Ann Arbor: University Microfilms.
- 2003 Geumgang Sangyu Mumuntogisidae mudeom-eui hyeongsik-gwa byeoncheon (Typological classification and changes of the Mumun Period burials found in the Upper Kumgang River Basin). *Hanguk Kogo-Hakbo (Journal of the Korean Archaeological Society)* 49: 5-45.

KIM, SEUNG OG, AND JONG-CHEOL LEE

- 2000 Jinan Yongdam Daem sumoljigunae Yeoeuigokyujeok josagaeyo (A summary of excavations at the Yeoeuigok Site in the Yongdam Dam Floodway, Jinan), in *21 Segi Hangukdogohak-eui Banghyang* (The Direction of Korean Archaeology in the 21st Century). Proceedings of the 24th National Korean Archaeological Society Meeting: 101-132. Busan: Korean Archaeological Society.

KO, MIN-JUNG

- 2004 Namgang Yuyeok Mumuntogi Munhwa-eui Byeoncheon (Changes in the Mumun Pottery Culture of the Nam River Valley). Unpublished M.A. thesis. Gyeongbuk National University, Daegu.

KUM (Konkuk University Museum)

- 2001 *Jinju Sangchon-ni 3-8 Ho Jiseokmyo mit Seonsayujeok* (Prehistoric Sites at Sangchon, Jinju City). Report on the Research of Antiquities of Konkuk University Museum, Vol. 8. Seoul: Gyeongsang Namdo, Konkuk University Museum.

LEE, GEON-MU, C. G. CHOI, B. R. BAK, AND S. M. GIM

- 1985 Wolseong-gun Yeongil-gun jipyojosabogo (Field survey of Wolseong-gun Yeongil-gun), in *Gungnipbakmulgwan Gojeokjosabogo Jae 17 Chaek* (Report on the Research of Antiquities of the National Museum of Korea, Vol. 17): 103-157, ed. National Museum of Korea. Seoul: National Museum of Korea.

LEE, HYEONG-KOO

- 2001 *Jinju Daepyeong-ni Okbang 5 Jigu Seonsayujeok, Namgangdaem Sumoljiguyujeok Balguljosabogoseo* (Report of the Archaeological Site at Okbang 5 in Daepyeong-ni). Report on the Research of Antiquities, Vol. 6. Chungju: Sun Moon University and Gyeongsang Nam-do.

LEE, SU-HONG

- 1999 Jinju Daepyeong Okbang 1 Jigu Yujeok (Locality 1 at the Okbang Site, Daepyeong, Jinju), in *Namgang Seonsamunhwa Seminayoji* (A Seminar on Nam River Prehistoric Culture): 11-33. Busan: Dong-A University Museum.

LEE, SUNG-JOO

- 1998 *Silla-Gaya Sahoe-eui Giwon-gwa Seongjang* (The Rise and Growth of Society in Silla and Gaya). Seoul: Hakyeon Munhwasa.

LESURE, RICHARD

- 1999 On the genesis of value in early hierarchical societies, in *Material Symbols: Culture and Economy in Prehistory*: 23–55, ed. J. E. Robb. Carbondale, IL: Center for Archaeological Investigations, Occasional Paper 26.

LIU, LI

- 2003 “The products of minds as well as of hands”: Production of prestige goods in the Neolithic and early state periods of China. *Asian Perspectives* 42:1–40.

NELSON, SARAH MILLEDGE

- 1993 *The Archaeology of Korea*. London: Cambridge University Press.
1999 Megalithic monuments and the introduction of rice into Korea, in *The Prehistory of Food: Appetites for Change*: 147–165, ed. C. Gosden and J. Hather. London: Routledge.

NETTING, ROBERT MCC.

- 1982 Some home truths on household size and wealth. *American Behavioral Scientist* 25(6):641–662.

NMK (National Museum of Korea)

- 1979 *Songgung-ni I* (Songguk-ri Site I). Report on the Research of Antiquities, Vol. 11. Seoul: National Museum of Korea.
1992 *Hanguk-eui Cheongdonggi Munhwa* (The Bronze Culture in Korea). Seoul: Bumwoo.

NRICH (National Research Institute of Cultural Heritage)

- 1994 *Jinyang Daepyeong-ni Yujeok Balguljosa Bogoseo* (Excavation Report of the Daepyeong-ni Site, Jinyang). Seoul: National Institute of Cultural Properties.

PAI, HYUNG IL

- 1989 Lelang and the “interaction sphere”: An alternative approach to Korean state formation. *Archaeological Review from Cambridge* 8(1):64–75.

RHEE, S. N., AND M. L. CHOI

- 1992 Emergence of complex society in prehistoric Korea. *Journal of World Prehistory* 6:51–95.

SHODA, SHINYA

- 2004 Tamazaku kara bungyou wo kangaeru: Kankoku Jinju Daepyeong iseki-no bunseki kara (An approach to division of labor by the study of bead making: A case study of the Daepyeong-site, Korea). *Kōkogaku Kenkyū* (Quarterly of Archaeological Studies) 50(4):95–110.

SONG, MAN-YOUNG

- 2001 Namhanjibang nonggyeong munhwahyeongseonggi chwirak-eui gujo-wa byeonhwa (Structure and change in settlements of southern Korea during the formative period of agricultural societies), in *Hanguk Nonggyeongmunhwa-eui Hyeongseong* (Formation of Agricultural Societies in the Korean Peninsula). The 25th National Proceedings of the Korean Archaeological Society: 75–108. Busan: Korean Archaeological Society.

STARK, MIRIAM T.

- 1991 Ceramic production and community specialization: A Kalinga ethnoarchaeological study. *World Archaeology* 23(1):64–78.

UNDERHILL, ANNE P.

- 2002 *Craft Production and Social Change in Northern China*. New York: Kluwer Academic/Plenum.

WILK, RICHARD R.

- 1983 Little house in the jungle: The causes of variation in house size among modern Kekchi Maya. *Journal of Anthropological Archaeology* 2:99–116.

WILK, RICHARD R., AND WILLIAM RATHJE

- 1982 Archaeology of the household: Building a prehistory of domestic life. *American Behavioral Scientist* 25(6):617–639.

YICP (Yongnam Institute of Cultural Properties)

- 2005 *Cheongdo Jilla-ri Yujeok* (The Ancient Site at Jinra-ri Cheongdo). Research Report of Antiquities, Vol. 85. Daegu: Yongnam Institute of Cultural Properties.

ABSTRACT

This paper addresses the development of craft production in the Mumun Pottery Period (c. 1500 to 300 B.C.) of south-central Korea. Specialized craft production of greenstone ornaments, groundstone daggers, red-burnished pottery, and bronze objects was coeval with the onset of intensive agriculture. We examine the nature of this production in the settlement of Daepyeong, where social differentiation increased diachronically, notably in the Late Middle Mumun (700–550 B.C.). Specialized craft production appears to have originated as a supplement to intensive agriculture in the Early Middle Mumun (850–700 B.C.), when a mix of corporate and network strategies of competition between leaders existed but social differences between community members was deemphasized and consumption of prestige artifacts was limited. Evidence suggests that full-time leaders used the production and distribution of greenstone ornaments and long groundstone daggers in an incipient network strategy to gain power for themselves and their supporters in the Late Middle Mumun. **KEYWORDS:** archaeology, Korean Peninsula, specialized craft production, Mumun Pottery Period, social complexity, prestige artifacts, settlements.