

## ELITE ARTISTS AND CRAFT PRODUCERS IN CLASSIC MAYA SOCIETY: LITHIC EVIDENCE FROM AGUATECA, GUATEMALA

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*This report examines 10,845 lithic artifacts from the rapidly abandoned city of Aguateca, Guatemala, to elucidate elite artistic and craft production in Classic Maya society. The methods used include high-power microwear analysis. The results suggest that significant numbers of Maya elite, both men and women, engaged in artistic creation and craft production, often working in both attached and independent contexts. The royal family and other elite households produced many artistic and craft items, including wood carvings and hide or leather goods. The scribe inhabiting Structure M8-8 carved stelae for the ruler, and the high-status courtier/scribe living in Structure M8-4 emphasized the production of shell and bone objects and other royal regalia in a courtly setting. Clearly, Aguateca was a center of part-time production of both utilitarian and luxury goods as well as of consumption. Classic Maya elite men and women artists/craft producers possessed multiple social identities and roles, which in turn implies a more flexible and integrated system of Classic Maya elite participating in attached and independent craft production more than is usually proposed.*

*Estudiamos 10.845 artefactos líticos provenientes de la ciudad de Aguateca, Guatemala, que fue rápidamente abandonada, con el fin de analizar la producción artística y artesanal de las élites en la sociedad maya clásica. Entre los métodos empleados se usó el análisis de microhuellas de uso de alta resolución. Los resultados sugieren que una porción significativa de la élite maya, tanto hombres como mujeres, se dedicó a la creación artística y producción artesanal, trabajando frecuentemente en contextos de producción tanto dependiente como independiente. La familia real y otros grupos familiares de las élites produjeron muchas artesanías, incluyendo las de madera y cuero. El escribano de la Estructura M8-8 esculpió estelas para el gobernante, y el cortesano/escribano de alto rango de la Estructura M8-4 enfatizó la producción de objetos de concha y hueso con alto valor simbólico real en la corte. Claramente, la ciudad de Aguateca fue un centro de producción, de tiempo parcial, de bienes utilitarios y lujosos como de consumo. Los artistas/artesanos de las élites tuvieron múltiples roles e identidades sociales, lo que implica la presencia de un sistema más flexible e integrado en las élites mayas clásicas, con una mayor participación en la producción dependiente e independiente que la usualmente propuesta.*

**S**tudies of the organization of craft production and craft specialization are integral to a better understanding of daily activities, economic organization, political economy, technology, exchange, and the role of craft goods in social relations (Costin 2001). Inomata (2001:322) points out that craft specialization should be defined without reference to subsistence and proposes a useful definition of craft specialization (“production of alienable goods by a segment of the population for consumption outside the producers’ own households”) to facilitate comparison.

A critical dimension in the organizational context or political economy of craft production is the degree to which the artisans are attached to elite individuals or institutions rather than producing

independently (Brumfiel and Earle 1987). Luxury items and weaponry for the social elite or governing institution are generally produced by attached producers. In contrast, utilitarian goods for broader distribution are usually manufactured by independent craft producers. The categories of attached and independent production are useful heuristic devices and are most effective when used to locate producers in social space by describing the social relations of production (Costin 2001:300).

In this context, a particularly important issue is the nature of elite craft production. Based on iconographic and ethnohistorical data, several scholars have suggested that Classic Maya scribes carried out craft production and/or artistic work (Coe 1977; Coe and Kerr 1997; Fash 1991; Reents-Budet

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1994). This has been supported by recent epigraphic decipherments (Stuart 1993). Elite Maya scribes/artists sometimes acted as attached producers who manufactured, among others, art objects commissioned by their ruler (Inomata 2001).

Although archaeologists often omit women from their discussion, recent gender studies of archaeological materials from the Maya area have viewed men and women as individual agents in the creation of arts and other aspects of culture (Ardren 2002; Hendon 1996; Joyce 2000). Archaeological evidence of gendered elite craft production is limited, however. As Inomata (2001:329) points out, this is partly due to the durability and high value of scribal/artistic implements as well as low production output. Because most Classic Maya cities were abandoned gradually and valuable items taken away, such material remains are extremely subtle, making the investigation of the distinct practices of individual agents at those sites a difficult task.

Another major problem in identifying elite craft production in the Maya area has been the poor preservation of perishable craft items, such as wood products and textiles. Moreover, few researchers have conducted detailed analyses of stone-tool use by the Maya, particularly using the high-power approach developed by Keeley (1980). This technique has great potential for answering important questions regarding the organization of craft production as well as the domestic and ritual lives of the ancient Maya (Aldenderfer 1991; Aldenderfer et al. 1989; Aoyama 1995, 1999, 2001a; Lewenstein 1987, 1991; Sievert 1990, 1992; Stemp 2001, 2004).

This article examines data from 10,845 lithic artifacts from the rapidly abandoned city of Aguateca, Guatemala to explore the nature of artistic and craft production by men and women in elite Classic Maya households (Figure 1). I conducted high-power microwear analysis of lithic artifacts to increase our empirical data related to this topic. Rich artifact assemblages in burned structures at Aguateca represent the closest Maya Lowland parallel to Pompeii and provide a unique synchronic data set that allows more detailed to specific agents and activities at higher resolution than the few artifacts left at gradually abandoned sites. At Tikal, for example, evidence exists for stone carving as well as pottery manufacture and the production of

objects of obsidian, chert, and wood within the limits of the city (Becker 1973; Haviland 1974), although the data are insufficient to distinguish between full and part-time specialization.

Archaeologists distinguish between household production and extra-household, or “workshop” production. Because “workshop” implies a specific level of craft organization, more neutral terms such as production locus or production areas are more appropriate here (Costin 2001:296). It is difficult to locate primary production areas in major Maya cities, mainly due to two factors—spatial flexibility of production technology and site maintenance behavior (Moholy-Nagy 1997:294). It should be noted that even at Aguateca, the production and storage area assemblages were certainly disturbed prior to and at the time of abandonment and that continual stress under enemy threat may have altered patterns of daily lives to a certain degree. Assemblage disturbances also include the effects of seasonality and organic decomposition, as well as others.

This study summarizes the results of multidisciplinary research at Aguateca with reference to the lithic samples and methodology. Next, the data related to the procurement, production, and function of the lithic artifacts from Aguateca are presented, and the variability in artistic and craft production among agents belonging to different households is examined. Finally, I discuss the implications of the lithic data for understanding Classic Maya craft production in general.

### The Aguateca Archaeological Project

Aguateca, a fortified Classic Maya city in the Petexbatún region of Guatemala, was burned during an attack by enemies at the end of the Late Classic period. Elite residents of the central part of the site abandoned their homes so rapidly that they left most of their belongings behind (Inomata 1997; Inomata and Stiver 1998). The investigations of the Aguateca Archaeological Project First Phase (1996–2003), directed by Takeshi Inomata and his colleagues, focused on the extensive excavation of rapidly abandoned structures in the central part with the object of examining the domestic and political lives of Classic Maya elites (Figure 2).

Eight structures were excavated: four long multi-room buildings (Structures M7-34, M8-4,

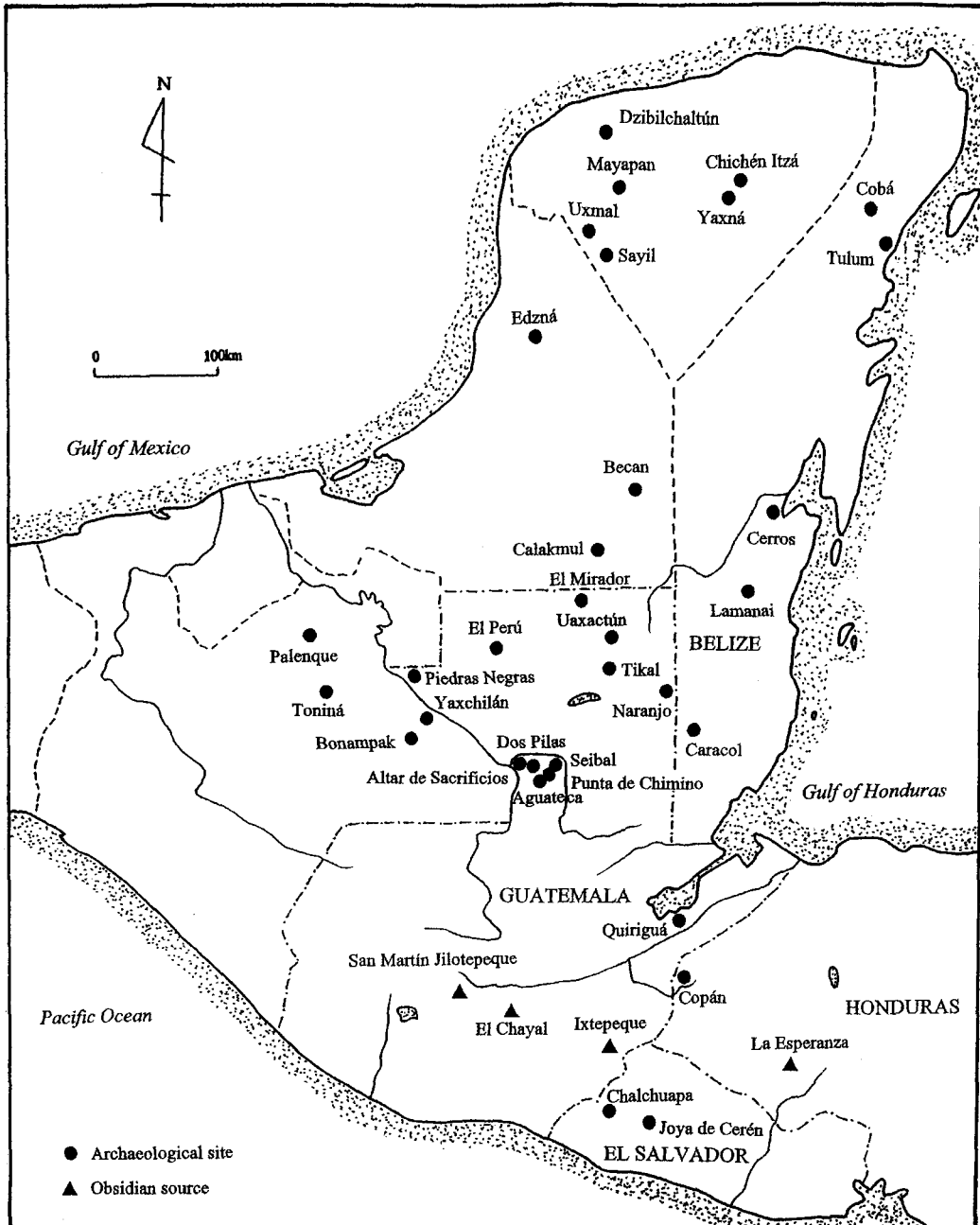


Figure 1. Map of the Maya area, showing the locations of Aguateca, other archaeological sites, and major obsidian sources.

M8-8, and M8-13) and two small, single-room buildings (Structures M8-2 and M8-3) in the elite residential area along the Causeway, and two large, vaulted buildings in the Palace Group (Structures M7-22 and M7-32). These excavations revealed the richest floor assemblages ever found at a Low-

land Classic Maya city (Inomata et al. 2002). Although most excavated objects were found in storage rather than in active use locations, their distribution patterns provide significant clues about the association of rooms and areas to specific activities and individuals.

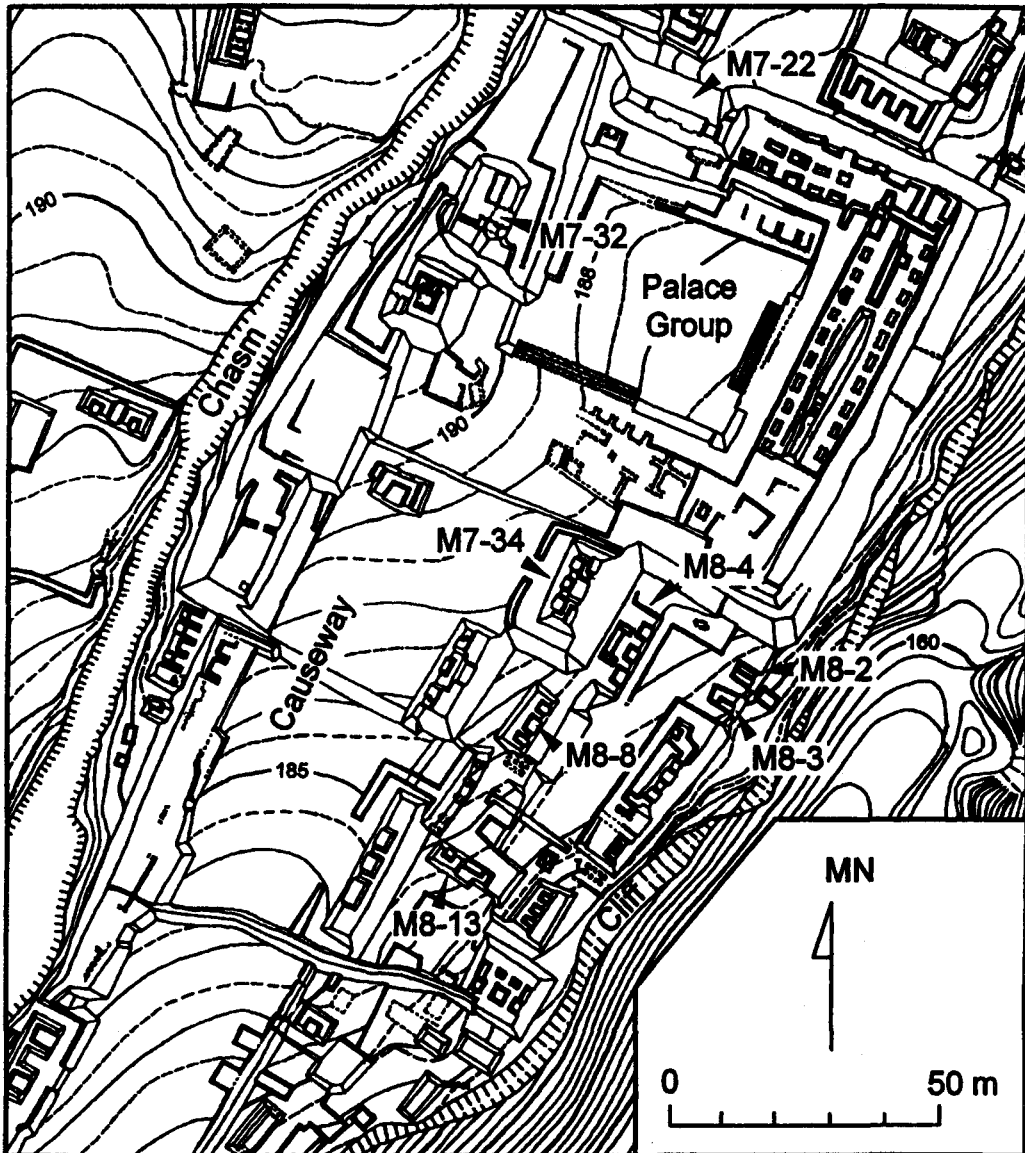


Figure 2. Map of the Aguateca epicenter, showing the locations of the structures that were extensively excavated by the members of the Aguateca Archaeological Project First Phase (modified from Inomata et al. 2002:Figure 2).

Our multidisciplinary studies (Inomata et al. 2002) indicate that Structure M7-34 probably served as a communal house, while Structure M8-13 was a lower-status residence, and Structures M8-2 and M8-3 appear to have been low-status residences. Structures M8-4 (“the House of Mirrors”) and M8-8 (“the House of Axes”) were the residences of high-status scribes; tools related to scribal work, such as palettes, mortars, and pestles, were recovered from them. Both structures apparently were

occupied by nuclear families. Each residence was used for a wide range of domestic activities, including food storage, preparation, and consumption, with a relatively clear division—but not strict segregation—of male and female spaces (Inomata et al. 2002:324). The north rooms of the structures, for example, which contained objects for food and textile production, were closely associated with females. The central rooms were to receive visitors and to hold political meetings, among other uses.

Structures M7-22 and M7-32 of the Palace Group most likely represent the royal residential complex of Aguateca, which was likely evacuated by the royal family before the final fall of this city. Afterwards, the victorious enemy appears to have conducted termination rituals there (Inomata 2003).

### Lithic Samples and Methodology

From 1998 to 2003, I classified the 10,845 lithic artifacts recovered from Aguateca according to their raw material and conducted a technological analysis. Of the total, 8,322 artifacts were chipped stone and the remaining 2,523 pieces were polished stone and other kinds of stone artifacts. A total of 6,153 chipped stone artifacts were manufactured from chert, while 2,169 were made from obsidian. In terms of recovery contexts, only 146 artifacts were collected from construction fill. The remaining 10,699 artifacts were found in the final occupation layers, which likely corresponded to the reign of Ruler 5 of Aguateca, Tahn Te' K'inich, possibly the last king of the city. The chipped stone assemblages from the eight extensively excavated structures presented in Tables 1 and 2 are those from final occupation layers. I extensively refit chipped stone artifacts from different structures to examine how production and distribution patterns varied between residential groups.

There are nearby chert sources, including in the town of Sayaxche, some 10 km from Aguateca. The ancient inhabitants of Aguateca brought in chert nodules as large as 15–30 cm in diameter. I visually analyzed all obsidian artifacts by comparing them with reference samples that exhibit the full range of optical variability of the known pre-columbian obsidian sources in Mexico, Guatemala, and Honduras. The accuracy of my visual analyses was confirmed by a blind test of 100 obsidian artifacts from the region of La Entrada, Honduras using the NAA technique conducted by Michael D. Glascock at the University of Missouri, which indicated a 98 percent accuracy rate (Aoyama 1999:29). More importantly, independent scholars have demonstrated that, at least for certain collections of Maya obsidian artifacts, visual sourcing is both reproducible and accurate (Braswell et al. 2000).

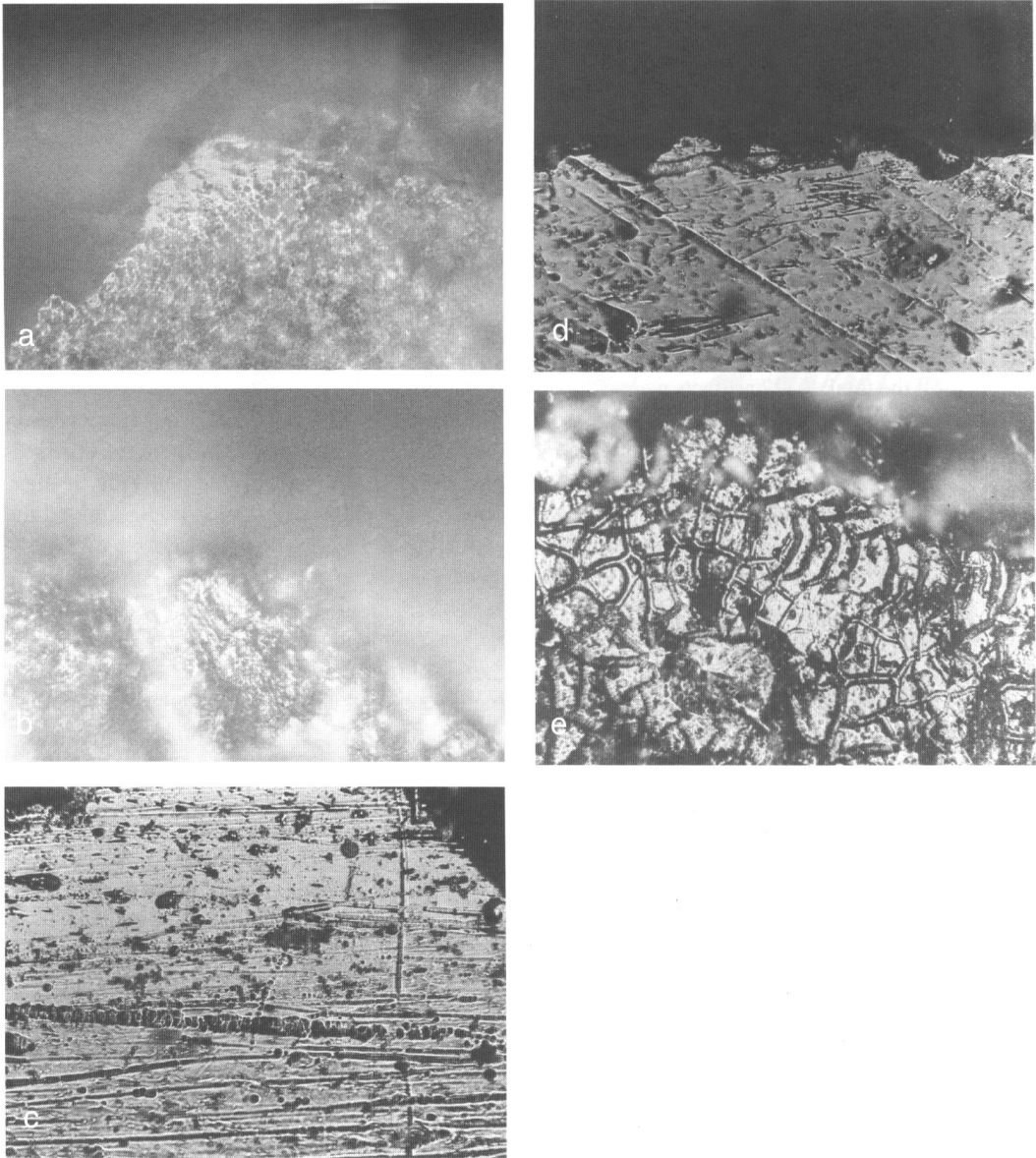
I randomly selected 2,919 chipped stone artifacts, of obsidian ( $n = 1,151$ ) and chert ( $n = 1,768$ ),

from different structures and contexts for high-power microwear analysis to study tool use. These samples, comprising 35.1 percent of the total chipped stone collection, provided the basis for a statistically controlled estimate of proportions of activities performed with chipped stone artifacts. Three non-chipped chert tools and 39 of 46 polished greenstone celts were also analyzed. In total, microwear on 2,961 lithic artifacts was analyzed.

In 1987, I conducted an intensive experimental use-wear study of obsidian and chert artifacts in Honduras to establish a framework for the interpretation of Maya stone-tool use (Aoyama 1989). The results of 267 replicative experiments conducted using a range of worked materials (including silica-rich grass, wood, meat, hide, leather, bone, antler, shell, soil, and stone) permitted the identification of use-wear patterns using high-power microscopy. I independently controlled three variables: (1) direction of use, (2) worked material, and (3) number of strokes. Motions parallel to the working edge were sawing, cutting, and grooving, while transverse actions included scraping, whittling, and chopping, based on contact angle differences (Aoyama 1999:Figure 2.4).

Recent microwear studies indicate that the correlation between polish type on chert and worked material is not absolute; that is, both the type of action and number of strokes, as well as the contact material, can influence polish formation (Aldenderfer et al. 1989; Aoyama 1989, 1999; Vaughan 1985). In the face of such difficulties, following the Tohoku University Microwear Research Team in Japan (Serizawa et al. 1982), I identified 11 basic polish types on chert, including Types F1 and F2 that often appear at early use stages that culminate in more diagnostic polish Types A, B, C, D, or E that, after 500 strokes, became distinguishable in my 267 replicative experiments (Aoyama 1999:38). Because obsidian is a volcanic glass and striations form more readily on its surface than on that of chert, I classified use-wear on the obsidian tools into 11 patterns based on combined observations of surface striations, polish, and tiny pits (Aoyama 1989, 1995, 1999:39–47).

Following the experiments, I analyzed microwear on 3,232 chipped stone artifacts from the Copán Valley and the region of La Entrada, Honduras (Aoyama 1995, 1999). This framework forms the basis for the lithic use-wear studies on



**Figure 3.** Examples of usewear on lithic artifacts from Aguateca (200x). (A) D2C type polish and parallel striations on a lateral edge of chert bifacial point used to cut shell or bone from Structure M8-3. A complex of different polish types is described by a combination of a principal type and a secondary type. The polish surface of Type D2 appears convex in section owing to the presence of clear striations, while that of Type C is rough, with numerous tiny pits. (B) Type Y polish and perpendicular striations on polished greenstone celt used to carve stone from Structure M8-8. The polish is poorly developed and forms as a bright smoothing of high spots, as described by Lewenstein (1987:111 and Figures 60-62). The striae are short and shallow. (C) Usewear pattern *b* and parallel striations on obsidian prismatic blade proximal segment used to cut wood from Structure M8-4. The polish surface is bright and very smooth. Associated striations are long, bilateral band along the margin. A large numbers of tiny pits are observable in the polish surface. (D) Usewear pattern *f* and parallel striations on obsidian prismatic blade proximal segment used to cut hide from Structure M8-2. The polish is poorly developed, with short striations and numerous tiny pits observable on a limited area near a lateral edge. (E) Severely burned surface of obsidian prismatic blade medial segment from Structure M7-22.

artifacts from Aguateca (Figure 3). I used a metallurgical microscope of 50–500x magnification with an incident-light attachment (OLYMPUS BX60M). Magnification of 200x was the most frequently used. Use-wear patterns were documented with an Olympus photomicrographic system PM-10M attached to a camera (OLYMPUS C-35DA-2).

### Lithic Procurement and Production at Aguateca

The Late Classic inhabitants of Aguateca imported obsidian from at least three sources: El Chayal, Ixtepeque, and San Martín Jilotepeque in the Highlands of Guatemala. The great majority of obsidian came from the El Chayal source (96.1 percent,  $n = 2,084$ ). Only 85 pieces originated at Ixtepeque (2.7 percent,  $n = 59$ ) and San Martín Jilotepeque (1.2 percent,  $n = 26$ ).

El Chayal obsidian was imported to Aguateca primarily as polyhedral cores for prismatic blade production. Evidence for this includes exhausted polyhedral core fragments ( $n = 44$ ), a few percussion-related core-blade products, such as a macroblade ( $n = 1$ ) and small percussion blades ( $n = 9$ ), a low percentage (.6 percent,  $n = 13$ ) of cortex-bearing El Chayal obsidian artifacts, and an overall high percentage (86.4 percent) of pressure blades, including both initial pressure blades ( $n = 50$ ) and prismatic blades ( $n = 1,750$ ).

Prismatic blades dominated the obsidian assemblage found on the floors as well as in the topsoil and wall-fall layers of all structures; many blades appear to have been stored originally in higher locations, including in the thatch of roofs, as Payson Sheets (2000:219) found at Joya de Cerén, El Salvador (Table 1). Although precise blade production locations are unknown, small concentrations of non-pressure blade artifacts and blade manufacturing debris, including exhausted polyhedral core fragments, were found in the termination ritual deposits of Structures M7-22 and M7-32 in the Palace Group (Inomata 2003:57), on the south side of Structure M8-8, and in the north room of Structure M7-34. Their distribution suggests on-site manufacture of prismatic blades and demonstrates elite access to blades. Some elite household members may have manufactured obsidian prismatic blades in or near their residences.

Most blades were intentionally snapped into two or three segments for use. The largest number of refitted blades was found in the elite residences of Structures M8-4 ( $n = 29$ ) and M8-8 ( $n = 22$ ), where I was able to refit a total of 64 prismatic blade segments. This pattern suggests that elite scribes/artists who resided in those structures had greater access to obsidian blades than did lower-status individuals.

While the great majority of refits ( $n = 58$ ) involved multiple segments from the same structure, I was able to refit six blade segments found in different structures. The first example involved a nearly complete blade from Structure M8-4 and a distal segment of the same blade from Structure M8-13, a lower-status residence (Figure 4:1, 2). The results of microwear analysis indicate that the former was used for cutting wood, and the latter for cutting meat or hide. The second refit included a distal segment from Structure M8-4 and a medial segment from a small hut associated with Structure M7-91 in front of Structure M7-34. The former was used for cutting meat or hide, whereas only microscars were observed on the latter. The third case matched a distal segment from Structure M8-4 with a proximal segment from Structure M7-34. The segment from Structure M8-4 was used for cutting meat or hide and an unidentified material, while no usewear was observed on the segment from Structure M7-34. I argue that the residents of Structure M8-4 allocated the blade segments to these structures. In any event, the obsidian data from Aguateca are consistent with the interpretation that the procurement and allocation of Mesoamerican obsidian blade cores were under elite control (e.g., Aoyama 1994, 2001b; Clark 1988; Sheets 1983; Spence 1984).

In the case of chert artifacts, expedient flake tool production was dominant in each household (Table 2). Several flakes could be refitted to flake cores recovered from the same structures. Moreover, various kinds of hammerstones were recovered from all eight extensively excavated structures. The production of chert oval bifaces and bifacial points took place intensively at Aguateca (Figure 5). The percentage (17.9 percent,  $n = 1,100$ ) of bifacial thinning flakes among chert artifacts at the site core of Aguateca is considerably higher than in the Late Classic period Copán Valley (4.1 percent; 109:2,652), where chert bifacial points were pro-

Table 1. Obsidian Artifacts from Aguateca, Guatemala.

	M7-22	M7-32	M7-34	M8-4	M8-8	M8-13	M8-2	M8-3	Others	Total
Macroblades	0	0	0	0	0	0	1	0	0	1
Small percussion blades	0	0	0	2	1	0	0	0	6	9
Initial pressure blades										
Complete blades	0	1	0	0	0	0	0	0	1	2
Proximal segments	8	1	10	3	3	1	0	0	8	34
Medial segments	1	0	2	1	0	0	1	0	4	9
Distal segments	0	0	2	2	0	0	0	0	2	6
Prismatic blades										
Complete blades	4	1	2	1	1	0	0	0	0	9
Nearly complete blades	0	0	0	0	6	2	0	0	2	10
Proximal segments	81	12	83	135	72	43	38	25	73	562
Medial segments	147	31	181	236	95	57	63	38	169	1017
Distal segments	20	6	47	38	34	12	11	5	45	218
Prismatic blade points	0	1	2	3	2	1	3	1	5	18
Polished discs on blades	10	0	0	0	0	0	0	0	0	10
Polyhedral core fragments										
Proximal fragments	0	0	0	1	0	0	1	0	1	3
Medial fragments	6	10	1	5	1	1	7	2	3	36
Distal fragments	0	0	1	0	1	0	0	0	3	5
Hinge removal flakes	0	1	2	3	0	0	1	1	0	8
Flakes from polyhedral cores	6	1	1	2	4	0	3	1	9	27
Bifacial points	1	0	0	0	0	0	0	0	1	2
Bifacial thinning flakes	5	0	0	0	0	0	0	0	0	5
Scrapers	0	0	1	0	0	0	0	0	0	1
Polishing flakes	2	0	0	0	0	0	0	0	0	2
Large percussion flakes	0	1	2	0	0	2	2	0	2	9
Small percussion flakes	46	11	39	8	12	5	3	1	30	155
Flake cores	0	0	0	0	0	0	1	0	0	1
Chunks	4	2	3	1	0	0	0	0	0	10
<b>Total</b>	<b>341</b>	<b>79</b>	<b>379</b>	<b>441</b>	<b>232</b>	<b>124</b>	<b>135</b>	<b>74</b>	<b>364</b>	<b>2169</b>

*Note:* The table lists the artifacts that appear to have been used or stored by the residents or users of each building at the end of Late Classic period. "Others" include artifacts that appear to have been refuse or ones found in middens, fills, open areas away from structures, or other excavated areas.

duced but not oval bifaces (Aoyama 1999:Table 8.1). This indicates the diversity of Maya lithic tool production. In sum, it is safe to say that at least some nobles, including scribes/artists at Aguateca, were stone knappers who manufactured mainly utilitarian tools on a part-time basis.

### Activities Performed with Lithic Artifacts

Because Aguateca was attacked and its epicenter was burned (Inomata 1997), patterns of thermal damage on the lithic artifacts were an important issue for the microwear analysis. Detailed observation of surfaces through a high-power microscope permitted me to establish that thermal damage on the lithic artifacts was much less than expected. Only 82 artifacts, 78 of obsidian and four of chert, were burned so severely that microwear could not be identified. Furthermore, post-depositional sur-

face modifications (PDSM) on the analyzed tools, such as patina, soil sheen, and bright spots (Levi-Sala 1986) were not substantial ( $n = 34$ ).

Of the 2,845 lithic artifacts not severely burned or affected by PDSM, microwear was identifiable on 1,485 artifacts (52.2 percent). At least 952 obsidian artifacts (88.7 percent) were used in prehispanic times, and interpretable microwear was observed on 492 chipped chert artifacts (28.4 percent). I also observed microwear on three non-chipped chert artifacts and all polished greenstone celts except for the poll end of one celt (Figure 6). The microscopic examination of lithic artifacts provides additional unequivocal evidence of fire at sites like Aguateca where carbon and other evidence is easily lost due to shallow deposits (Figure 3E). In other words, fire detection is an added benefit of microwear analysis on stone tools (see below).



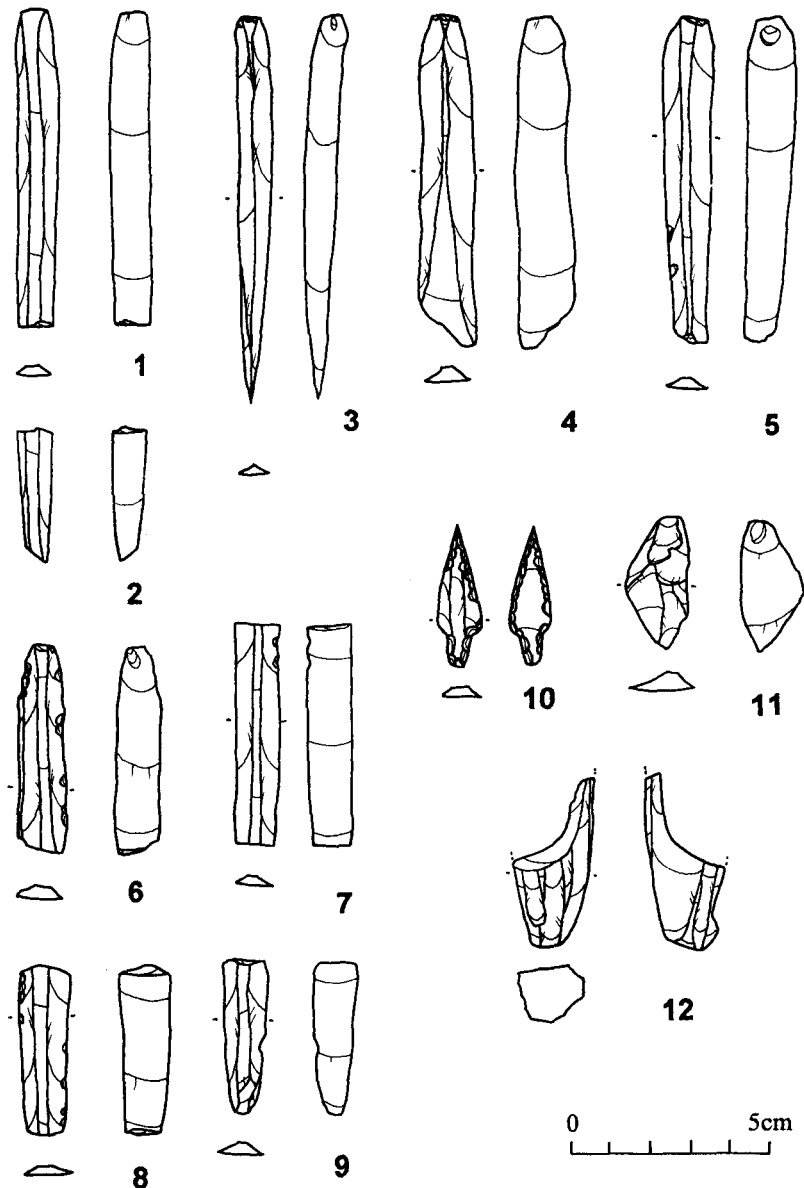


Figure 4. Obsidian artifacts from Aguateca: (1, 5) nearly complete prismatic blades; (2, 9) prismatic blades, distal segments; (3, 4) complete prismatic blades; (6) prismatic blade, proximal segment; (7, 8) prismatic blades, medial segments; (10) prismatic blade point; (11) small percussion flake; (12) polyhedral core distal fragment. Drawings are in Japanese technical style. Each illustration shows the sequence of flake scar detachment. Flake scars, fissures and ripple marks demonstrate the relationships of adjacent flake scars.

Following Vaughan (1985:56–57), each portion of a lithic artifact with interpretable use-wear was counted as an “independent use zone” (IUZ). A total of 2,948 IUZ were identified on the Aguateca artifacts (Table 3). Comparison of the results of microwear analysis of obsidian and chert artifacts shows clear differences between the assemblages.

The analyzed obsidian artifacts (IUZ = 2,188), which mainly consisted of prismatic blades (IUZ = 2,065), were used mainly for wood carving and meat or hide processing, and to a much smaller degree for carving shell or bone. The great majority of obsidian prismatic blades from Aguateca were utilitarian tools used for a variety of craft pro-

Table 2. Chert Chipped Stone Artifacts from Aguateca.

	M7-22	M7-32	M7-34	M8-4	M8-8	M8-13	M8-2	M8-3	Others	Total
Oval bifaces	43	13	31	63	34	32	19	15	44	294
Partially polished oval bifaces	4	1	1	2	5	1	3	0	2	19
Recycled oval bifaces	1	0	0	3	1	1	1	0	1	8
Unfinished oval bifaces	1	0	1	1	1	0	0	1	3	8
Bifacial points	39	8	27	36	28	42	16	13	26	235
Bifacial manufacturing failures	1	0	0	0	0	0	0	0	0	1
Bifacial picks	2	0	2	6	1	1	1	0	1	14
Eccentrics	3	0	0	0	0	0	0	0	1	4
Triangle bifaces	0	1	0	0	0	0	0	0	0	1
Bifacial thinning flakes	370	19	68	263	27	77	66	35	175	1100
Scrapers	9	0	12	12	3	10	7	0	14	67
Notched flakes	0	0	0	1	1	0	1	0	1	4
Denticulates	1	0	1	5	2	1	1	2	5	18
Drills	0	1	0	9	0	3	6	0	6	25
Small points	0	0	0	2	2	0	0	0	0	4
Primary flakes	69	11	30	74	8	34	12	6	251	495
Secondary flakes	128	37	51	147	43	71	43	25	608	1153
Tertiary flakes	223	57	130	459	139	148	90	46	1097	2389
Chunks	17	1	8	34	17	31	6	1	55	170
Flake cores	11	4	10	24	11	19	9	3	35	126
Recycled flake cores	1	0	0	7	1	0	1	1	7	18
Total	923	153	372	1148	324	471	282	148	2332	6153

*Note:* The table lists the artifacts that appear to have been used or stored by the residents or users of each building at the end of Late Classic period. "Others" include artifacts that appear to have been refuse or ones found in middens, fills, open areas away from structures, or other excavated areas.

duction and domestic tasks. Chert artifacts were employed for an even wider range of activities. Meat or hide processing was the most common activity, followed by bone or shell carving, stone working, wood carving, cutting grass, and digging in the soil.

Table 4 presents activities performed with chert casual flakes, bifacial thinning flakes, oval bifaces, and bifacial points. I identified evidence of use on 7.5 percent of the primary flakes, 17.6 percent of the secondary flakes, and 25.5 percent of the tertiary flakes. In total, at least 161 of 767 chert unretouched flakes had been used (21 percent). They were "informal tools" used frequently for multiple functions. More than half of the identified activities performed with these flakes were meat or hide processing, followed by shell or bone carving, wood carving, and stone working. Similarly, 14.6 percent of the analyzed bifacial thinning flakes were used for a wide variety of tasks, such as meat or hide processing, shell or bone carving, and wood carving. Chert oval bifaces were utilized mainly for shaping stone but also for other tasks, such as meat or hide processing, wood working, cutting shell or bone, and digging in the soil.

The microwear analysis indicates that chert bifacial points were used not only as weapons but also for the production of shell and bone ornaments, bone tools, wood carving, and other domestic activities (Table 4). A total of 166 IUZ were identified. Distal tips (IUZ = 58) were used for piercing or boring unidentified material (75.9 percent), meat or hide (22.4 percent), and shell or bone (1.7 percent). Lateral edges were used for a wider range of activities (IUZ = 108). Cutting meat or hide (51.9 percent) was the most common activity, followed by cutting wood (23.1 percent), cutting shell or bone (13.9 percent), cutting grass (4.6 percent), cutting unidentified material (3.7 percent), grooving shell or bone (1.9 percent), and whittling shell or bone (.9 percent).

The royal palace and the residences of elite scribes/artists each contained some 30 to 40 chert bifacial points (Table 2). Notably, most chert bifacial points were snapped or otherwise broken (Aoyama 2005). They were scattered more or less evenly across the structures, as one would expect as if they had been shot in and around the structures. I argue that the residents of Aguateca, including elite scribes/artists, shot most of the chert

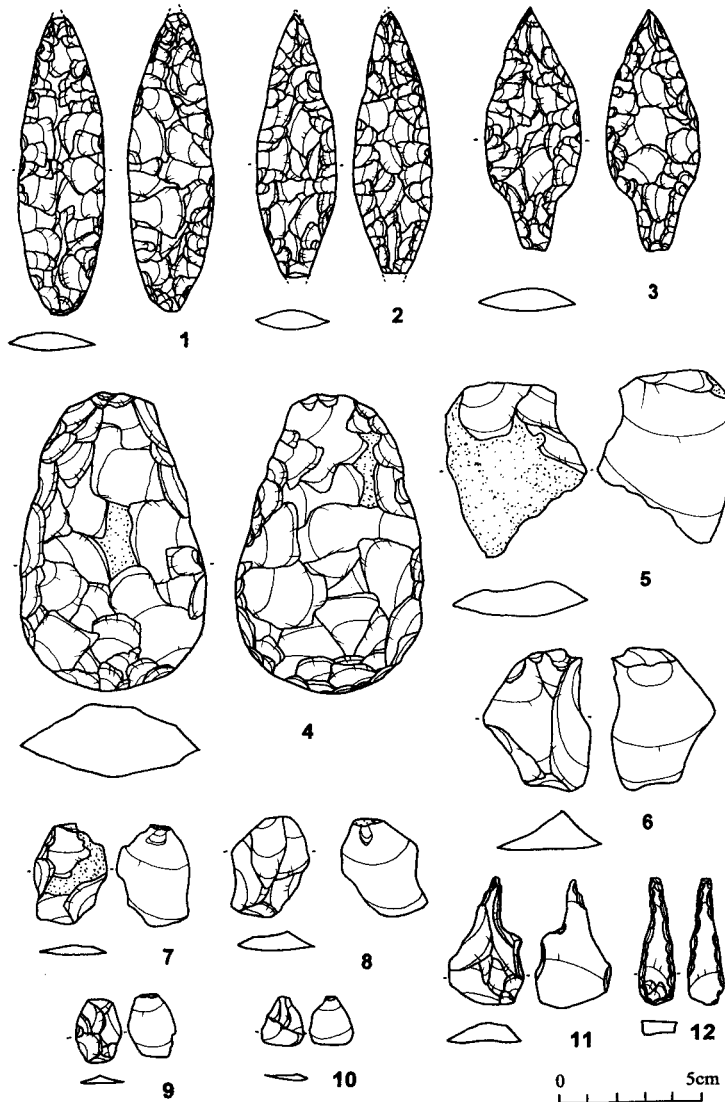


Figure 5. Chert artifacts from Aguateca: (1-3) bifacial points; (4) oval biface; (5) primary flake; (6) tertiary flake; (7-10) bifacial thinning flakes; (11, 12) drills. Drawings are in Japanese technical style. Each illustration shows the sequence of flake scar detachment. Flake scars, fissures and ripple marks demonstrate the relationships of adjacent flake scars.

bifacial points during the final defense of the city. The attackers may have shot some of the points used exclusively as weapons, however. Without exception, every excavated structure in the epicenter of Aguateca burned to the ground at the time of abandonment. Together these data strongly suggest that many broken spear and dart points were deposited in battle.

The total number of chert bifacial points ( $n = 235$ ) collected by the Aguateca Archaeological Project First Phase from 1996 to 1999 alone (of which

233 came from the final occupation layers) is larger than all the chert bifacial points ( $n = 217$ ) collected by the Yaxchilan Archaeological Project between 1973 and 1991 (Kaneko 1998:261). Of all chipped chert artifacts (both formal tools and irregular flakes) from the eight extensively excavated structures 5.5 percent are bifacial points, likely a response to the stress of impending and actual attack. In the Copán Valley, for example, this percentage is .5 percent (Aoyama 1999:Table 8.1), while in the La Entrada region of Honduras, it is .6

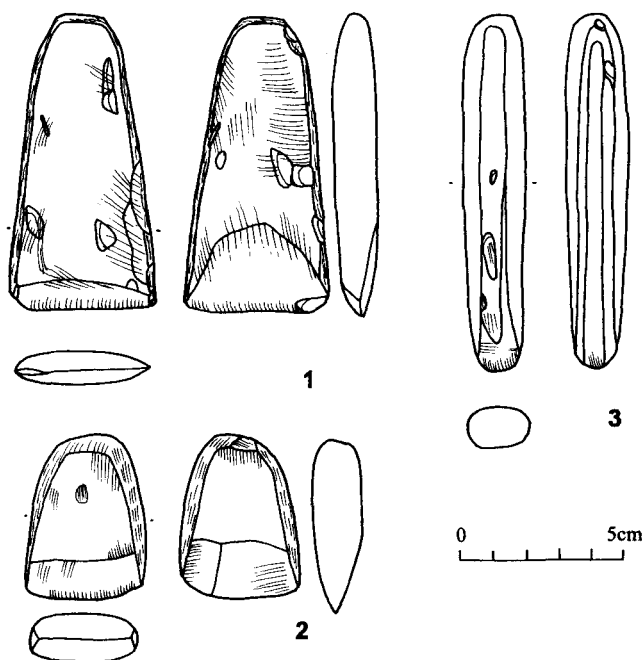


Figure 6. Polished greenstone celts from Structure M8-8, Aguateca: (1) medium, wide celt; (2) small, wide celt; (3) large, narrow celt. Drawings are in Japanese technical style.

percent (Aoyama 1999:Table 8.3). Although the higher ratio of bifacial points at Aguateca is partly due to its rapid abandonment, I argue that this is another line of evidence indicating that Aguateca declined due to the intensification of warfare during the Late Classic period.

An important implication is that the ruler and elite scribes/artists (quite possibly males) at Aguateca were also warriors. The Aguateca lithic evidence matches Kevin Johnston's (2001) iconographic study of captured Classic Maya scribes and finger breaking during warfare at Piedras Negras, Bonampak, and Palenque. In other words, both the ruler and elite scribes/artists/warriors of Aguateca were targeted by the enemy. The large number of bifacial points used as weapons by elite scribes/artists/warriors strongly indicates they were not passive victims but fiercely engaged in warfare.

#### Variability in Artistic and Craft Production at Aguateca

Table 5 presents the materials contacted by lithic artifacts from the different structures at the epicenter of Aguateca at the end of the Late Classic

period. In general, wood carving and meat or hide processing were more common than other activities. Stone working was identified in eight excavated structures, and bone or shell caving in six. Far less-common activities included cutting grass in three structures, and digging in the soil in two structures. The following discussion focuses on the analytical results on artifacts from four multi-room residential structures (Structures M7-22, M8-4, M8-8, and M8-13) to examine the variability in artistic and craft production among different households and, where possible, to interpret individual agents. I then compare them with the data from two residential structures (Structures L8-62 and L8-70) of the Granada group outside the epicenter.

#### Structure M8-13

Structure M8-13 was smaller and more poorly constructed than Structures M7-22, M8-4, and M8-8. It had artifacts related to essential domestic activities, such as food preparation and storage, but lacked almost all prestige goods, such as jade beads and fine shell ornaments. Structure M8-13 was probably a lower-status residence (Inomata et al. 2002:321), and had fewer obsidian artifacts ( $n =$

Table 3. Activities Performed with Lithic Artifacts from Aguateca, Guatemala.

	Obsidian	Chert	Polished Celts	<i>n</i>	%
<i>Meat or hide</i>					
Cutting meat or hide	619	188	0	807	27.4
Scraping hide	104	101	0	205	6.9
Boring hide	1	22	0	23	.8
Sub-total	724	311	0	1035	35.1
%	33.1	43.1	0		
<i>Wood</i>					
Cutting	660	43	0	703	23.8
Whittling	235	8	0	243	8.2
Grooving	0	4	0	4	.1
Chopping	0	1	0	1	.03
Boring	0	1	0	1	.03
Sub-total	895	57	0	952	32.3
%	40.9	7.9	0		
<i>Stone</i>					
Chopping or chiseling	0	112	38	150	5.1
%	0	15.5	100		
<i>Shell, bone, or antler</i>					
Cutting	2	64	0	66	2.2
Whittling	1	42	0	43	1.5
Grooving	0	16	0	16	.5
Boring	0	4	0	4	.1
Sub-total	3	126	0	129	4.4
%	.1	17.5	0		
<i>Grass</i>					
Cutting	0	6	0	6	.2
%	0	.8	0		
<i>Soil</i>					
Digging	0	3	0	3	.1
%	0	.4	0		
<i>Unidentified material</i>					
Cutting	461	28	0	489	16.6
Whittling	83	0	0	83	2.8
Piercing	10	46	0	56	1.9
Grooving	0	2	0	2	.07
Boring	0	1	0	1	.03
Scraping or whittling	0	30	0	30	1.0
Unidentified motion	12	0	0	12	.4
Sub-total	566	107	0	673	22.8
%	25.9	14.8	0		
<b>Total IUZ</b>	<b>2188</b>	<b>722</b>	<b>38</b>	<b>2948</b>	<b>100.0</b>

Note: In terms of chert artifacts, 719 IUZ were identified on chipped artifacts while three IUZ were on non-chipped artifacts.

124) than Structures M8-4 and M8-8 (Table 1). Only two polished celt fragments were recovered, which might have been retained for polishing pottery vessels or other tasks. It should be kept in mind, however, that Structure M8-13 formed a patio group with Structure M8-10 (the House of the Scribe), the residence of a nuclear family headed by an elite male scribe (Inomata and Stiver 1998:441), and that the Structure M8-13 residents

were closely tied to the courtly lives of the elites.

With the lithic artifacts from Structure M8-13, wood carving, hide processing, and bone or shell carving was carried out, in addition to other domestic activities, such as food preparation (Table 5). Moreover, I identified evidence for subsistence activities, such as cutting grass and digging in the soil on the lithic artifacts from Structure M8-13 but not on those from Structures M7-22, M8-4, and

Table 4. Activities Performed with Chert Artifacts from Aguateca, Guatemala.

	Casual flakes	Bifacial thinning flakes	Oval bifaces	Bifacial points
<i>Meat or hide</i>				
Cutting meat or hide	57	35	17	56
Scraping hide	57	25	3	0
Boring hide	3	1	0	13
Sub-total	117	61	20	69
%	56.3	51.7	15.9	41.6
<i>Wood</i>				
Cutting	9	4	5	25
Whittling	3	0	3	0
Grooving	2	2	0	0
Chopping	0	0	1	0
Boring	1	0	0	0
Sub-total	15	6	9	25
%	7.2	5.1	7.1	15.1
<i>Stone</i>				
Chopping or chiseling	2	0	86	0
%	1.0	0	68.3	0
<i>Shell, bone, or antler</i>				
Cutting	19	19	4	15
Whittling	21	14	0	1
Grooving	5	5	0	2
Boring	0	0	0	1
Sub-total	45	38	4	19
%	21.6	32.2	3.2	11.4
<i>Grass</i>				
Cutting	0	0	0	5
%	0	0	0	3
<i>Soil</i>				
Digging	0	0	3	0
%	0	0	2.4	0
<i>Unidentified material</i>				
Cutting	8	6	4	4
Whittling	0	0	0	0
Piercing	0	0	0	44
Grooving	2	0	0	0
Boring	0	0	0	0
Scraping or whittling	19	7	0	0
Sub-total	29	13	4	48
%	13.9	11	3.2	28.9
<b>Total IUZ</b>	<b>208</b>	<b>118</b>	<b>126</b>	<b>166</b>

M8-8. This may also relate to the lower-status of the residents of Structure M8-13.

I noted a high percentage of traces of bone or shell carving on lithic artifacts from M8-13. The carving was carried out with lithic artifacts found in the west room, central room, and in front of and behind the structure. Intriguingly, Kitty Emery (Emery and Aoyama 2007) identified a similar distribution pattern for bone working remains, i.e., in the form of both primary reduction, secondary reduction, and finishing (mainly of utilitarian bone perforators and blanks) in the west room, in front

of the structure, and behind it. This correlation strongly suggests that the residents of this structure were involved in bone tool production from the early reduction stages through finishing.

#### *Structure M8-8 (The House of Axes)*

Structure M8-8, named “the House of Axes” because of the many polished celts associated with the building, had three main rooms (north, central, and south rooms) and additions to the north and the south. It was the residence of an elite scribe and his nuclear family (Inomata et al. 2002:318–320).

Table 5. Worked Materials on Lithic Artifacts from Aguateca, Guatemala.

Structures	Meat/hide	Wood	Stone	Shell/bone	Grass	Soil	Unidentified	Total
M7-22	128	82	16	0	0	0	59	285
%	44.9	28.8	5.6	0	0	0	20.7	
M7-32	21	70	2	0	2	0	19	114
%	18.4	61.4	1.8	0	1.8	0	16.7	
M7-34	123	121	10	10	0	1	128	393
%	31.3	30.8	2.5	2.5	0	.3	32.6	
M8-4	167	215	39	55	0	0	123	599
%	27.9	35.9	6.5	9.2	0	0	20.5	
M8-8	184	142	31	14	0	0	89	460
%	40	30.9	6.7	3	0	0	19.3	
M8-13	95	89	17	28	2	2	61	294
%	32.3	30.3	5.8	9.5	.7	.7	20.7	
M8-2	95	75	19	7	0	0	43	239
%	39.7	31.4	7.9	2.9	0	0	18	
M8-3	32	39	3	2	2	0	34	112
%	28.6	34.8	2.7	1.8	1.8	0	30.4	
L8-62	21	15	0	0	0	0	19	55
%	38.2	27.3	0	0	0	0	34.5	
L8-70	19	26	0	0	0	0	19	64
%	29.7	40.6	0	0	0	0	29.7	
Others	150	78	13	13	0	0	79	333
%	45	23.4	3.9	3.9	0	0	23.7	
Total	1035	952	150	129	6	3	673	2948
%	35.1	32.3	5.1	4.4	.2	.1	22.8	

Note: Each portion of a lithic artifact with interpretable use-wear was counted as an "independent use zone" (IUZ).

Remarkably, polished celts were strongly associated with elite residences at Aguateca (Figure 7). No polished celts were found in Structures M8-2 and M8-3, which were likely either residences of low-status individuals or manufacturing areas. The

number of polished celts ( $n = 22$ ) from Structure M8-8 is much greater than other excavated structures. These include 17 complete wide celts (widths = 2.9 - 6.2 cm, mean =  $4.1 \pm .9$  cm,) and a bit fragment of a wide celt, as well as three complete chisel-

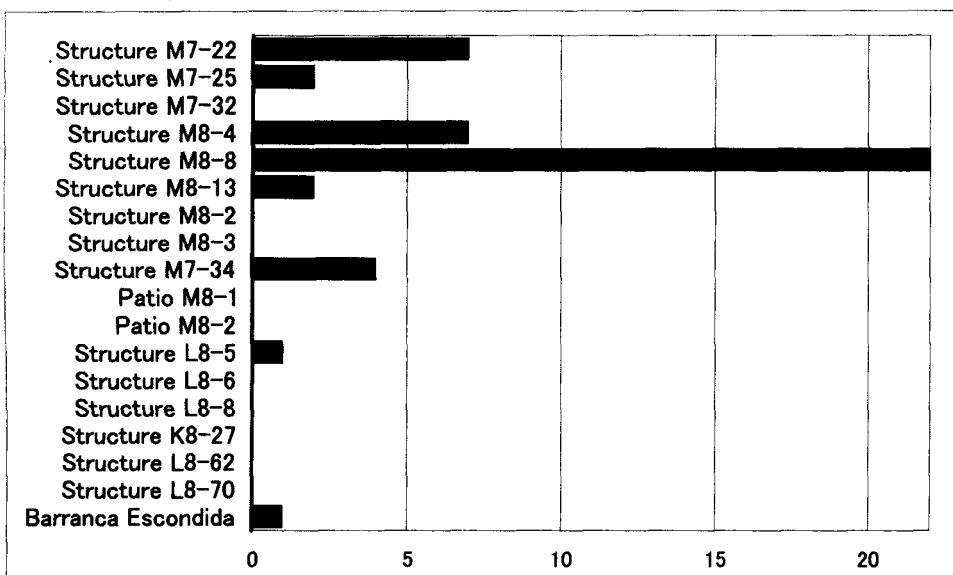


Figure 7. Polished celts from different structures and other excavated areas, Aguateca.

shaped narrow specimens (widths = 1.8, 1.9, 2.0 cm) and a poll fragment of a narrow celt (width = 1.7 cm). Complete wide celts were classified into large (lengths = 14, 11.5, 11.9 cm,  $n = 3$ ), medium (lengths = 8.3, 9.2 cm,  $n = 2$ ), small (lengths = 5.1 - 7.1 cm, mean =  $6.1 \pm .6$  cm,  $n = 11$ ), and very small (length = 4.7 cm,  $n = 1$ ) categories. Narrow complete specimens include a large narrow celt (length = 11.1 cm) and two small ones (lengths = 5, 5.3 cm). In total 11 complete polished celts, including a large narrow one, were found in the north addition and eight more were uncovered within ( $n = 2$ ) and in front ( $n = 6$ ) of the north room. Three more celts were in the central room, the south room, and behind the structure.

The microwear analysis suggests that *all* polished celts were used for stone carving. The polish is not well developed, with short and irregular striations perpendicular to the bits (see Lewenstein 1987:Figures 60–62). Usewear is completely different from the polishing marks of production and sharpening, which closely resemble stone abrasion microtraces (Aldenderfer et al. 1989:Figure 2C) as well as Vaughan's "ripply polish" and "flat polish" (Vaughan 1985:134). The celts varied in size and shape indicating delicate and fine carving and incising rather than stone quarrying and rough shaping. Moreover, the most prominent stone sculptures found at Aguateca are stelae (Inomata 2001:328). I believe that the scribe of Structure M8-8 mainly carved stelae and possibly other stone monuments raised in the Main Plaza for Ruler 5 of Aguateca, Tahn Te' K'inich. The straight-line distance from Structure M8-8 to the Main Plaza is 250 m.

In sum, the polished greenstone celts of Structure M8-8 were from a stela carver's tool kit. Twenty-one specimens were manufactured from hard metamorphic greenstone and one from light green jade. I argue that the Maya elite selected these raw materials not only because of their hardness but also for their color, which has cosmological significance, i.e., the center of the Maya universe (Miller and Taube 1993:65). In other words, the scribe/stelae carver used the polished greenstone celts with symbolic and ideological meanings to record the deeds of the ruler.

A small group at Copán, 9M-22, may have been a "house of sculpture," as indicated by a carving on the building showing the use of a sculpting tool and an emblem for sculpture (Houston 2000:150).

As Houston (2000:150) proposes, Structure M8-8 may have been another "house of sculpture," but more precisely, a "house of carving." Such a stela carver may have had very high social status, as suggested by epigraphic studies (Stuart 1993:323).

Lithic artifacts from Structure M8-8 suggest a wide variety of activities, including meat or hide processing and wood carving were carried out (Table 5). The percentage of bone or shell carving was relatively low, however. In sum, the scribe and other household members who lived in this structure engaged in not only stelae carving but also in other artistic creation, and craft production.

Structure M8-8 contained the most complete or nearly complete blades of the eight extensively excavated structures, suggesting the elite scribe/artist of Structure M8-8 had greater access to obsidian blades than did lower-status individuals. Three nearly complete blades were on the bench surface in the central room. Microscars without polish and striations on them indicate that these blades were likely not heavily used and were in storage for future use. Based on their cultural context and usewear patterns, I suggest that they were intended for a single use in bloodletting rituals. A particularly important piece of evidence is an imitation stingray spine made of bone and long obsidian blades which appear to have been placed close together on the bench of the central room of the elite residence of Structure M7-35 (Inomata and Stiver 1998:442). It is likely that the central room of Structure M8-8 was a storage place for such ritual objects. Organic residue analysis on the blades could help to test this hypothesis.

The north room housed numerous ceramic vessels, including large storage jars and serving vessels. A large metate, probably for grinding corn, was placed in front of this room. These objects suggest food storage and preparation inside and in front of the north room. In addition, excavators found far more textile production tools, such as needles and spindle whorls, in and around the north room than in other areas of Structure M8-8 (Inomata et al. 2002:318). Researchers have suggested that in Classic Maya society, women prepared food and produced textiles (Hendon 1996; Joyce 2000). The north room of Structure M8-8 was closely associated with a female, such as the wife of the scribe. Other female or male household members might also have been involved, however.



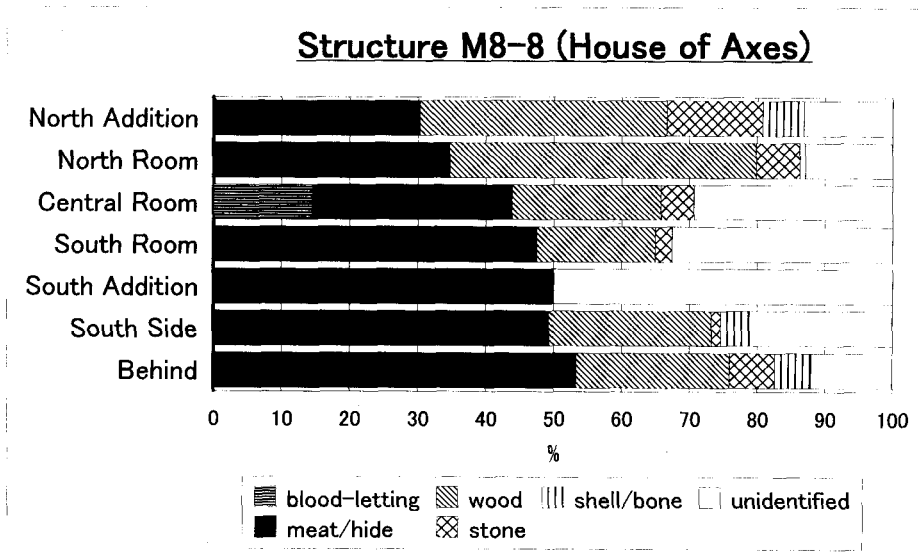


Figure 8. Worked materials on lithic artifacts from Structure M8-8.

The lithic artifacts associated with the north room include 54 obsidian artifacts (a complete prismatic blade, 52 prismatic blade segments, and a flake), and 74 chert artifacts (six oval bifaces, four bifacial points, a denticulate, a bifacial thinning flake, a primary flake, 11 secondary flakes, 36 tertiary flakes, nine chunks, and five flake cores). A hammerstone, 13 quartzite pebble smoothers, a stucco smoother, a faceted smoother, and eight polished greenstone celts were also present.

Although the male members of the household or servants appear to have shared the domestic space and craft activities, assuming that a female household member, such as the wife of the scribe, used at least some of the lithic artifacts associated with the north room, she likely used some obsidian prismatic blades and chert tertiary flakes for processing meat or other food preparation, as well as cutting, scraping, and boring hide (Figure 8). The female household member probably also used some obsidian prismatic blades and a chert tertiary flake for wood carving. She may have used a chert denticulate from the north room for bone or shell carving. She also may have manufactured chert casual flakes and other stone tools using the hammerstone. In sum, I entertain the hypothesis that the female household member was engaged in wood carving and other craft production, in addition to food preparation and textile production.

#### *Structure M8-4 (The House of Mirrors)*

Structure M8-4, adjacent to the Palace Group, appears to have been occupied by a high-status courtier/scribe and his nuclear family (Inomata et al. 2002:310–318). The structure consisted of three main rooms and the north addition. Structure M8-4 is called “the House of Mirrors” because more than 300 pieces of mosaic pyrite mirrors were uncovered in the south room. Stone mortars and pestles that the courtier/scribe probably used for the preparation of pigments were found in the central room and in front of the south room. Two bone artifacts uncovered in the central room carved with the Aguateca emblem glyph indicated the high-status of the residents. The north room and nearby areas appear to have been associated with food preparation and storage.

The number of obsidian artifacts ( $n = 441$ ) and chipped chert artifacts ( $n = 1,148$ ) from Structure M8-4 is considerably higher than from the other extensively excavated structures (Tables 1 and 2), indicating that the residents of the structure were wealthy and had the ability to store chipped stone artifacts for future consumption and exchange concomitant with their considerable involvement in craft production. I observed a total of 599 IUZ on the lithic artifacts from Structure M8-4 (Table 5). Compared with Structure M8-8, craft production in and around this building was oriented more to wood and shell or bone carving. Wood was more

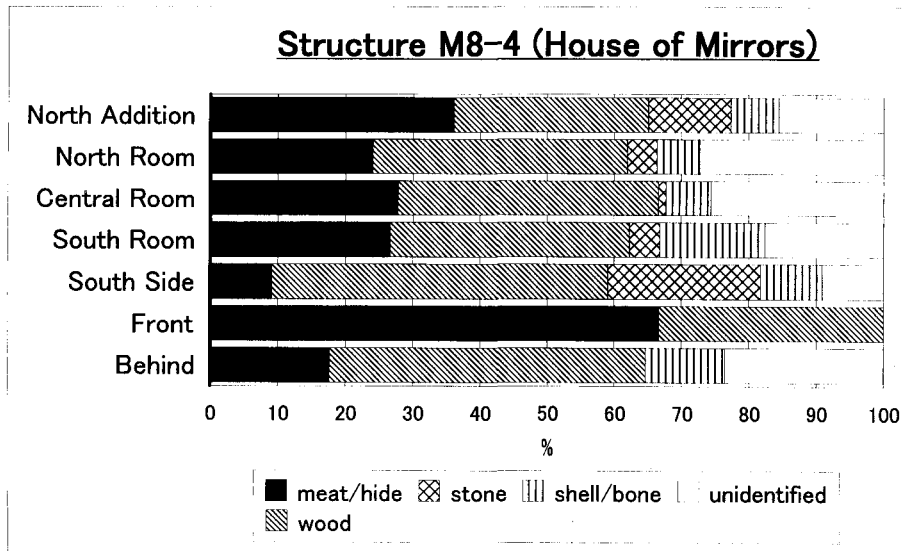


Figure 9. Worked materials on lithic artifacts from Structure M8-4.

frequently worked with lithic artifacts than was meat or hide. I also noted a high percentage of shell or bone carving.

A total of seven polished greenstone celts were recovered from Structure M8-4 (Figure 7), including four complete celts (a medium and two small wide celts and a small narrow celt), and two bit fragments and one poll fragment, all from wide celts. The results of microwear analysis on them indicate that the household head of Structure M8-4 was also engaged in stone carving.

Figure 9 shows the percentages of materials worked with the lithic artifacts from different parts of Structure M8-4. Microwear related to wood and meat or hide was observed on artifacts from all locations. I found no evidence for shell or bone carving and stone working on the lithic artifacts from the rear part of the central room, however. Inomata et al. (2002:316) have hypothesized that the high-status courtier/scribe may have used this room for political meetings and receiving visitors. This hypothesis can be strengthened by the scarce evidence of craft production.

In addition to pyrite mirrors, carved alabaster ornaments and square alabaster plaques that formed a Jester God headband, a royal adornment, were found on a bench in the south room (Inomata 2001:328). A similar piece appears as part of Tahn Te' K'inich's regalia on Aguateca Stelae 7 and 19. The excavated ornament may have been worn by this

last king. Some mosaic mirror pieces were in the process of being reworked by cutting and polishing them into parts of possible composite ornaments (Inomata et al. 2002:315). A high percentage of the lithic artifacts (22.7 percent) was used for stone working from a vacant space just south of the south room. Numerous faceted smoothers and pebble smoothers, possibly used for stone polishing, were also recovered from the central room, the south room, and to the south of Structure M8-4. The high-status courtier/scribe who mainly used the south room likely used these artifacts to refurbish royal regalia.

Ten pieces of worked bone, each measuring roughly 2 cm long, found on the same bench about 1 m from the Jester God diadem, were also probably parts of the composite royal adornment (Inomata et al. 2002:315). The lithic artifacts found in this room include: 89 obsidian artifacts (an initial pressure blade and 88 prismatic blade segments), 304 chert artifacts (six oval bifaces, a recycled oval biface, six bifacial points, a bifacial pick, 81 bifacial thinning flakes, two scrapers, three drills, two small points, 15 primary flakes, 30 secondary flakes, 145 tertiary flakes, seven chunks, and five flake cores), two polished greenstone celts, two stucco smoothers, three palettes, a hammerstone, 23 pebble smoothers, and five faceted smoothers.

The percentage of shell or bone microwear on lithic artifacts from the rear part of the south room of Structure M8-4 (26.7 percent) is the highest in

the present study. The high-status courtier/scribe who was the household head of this structure most likely used chert bifacial points, drills, bifacial thinning flakes, secondary flakes, tertiary flakes, and even chunks from the south room for producing shell and bone objects. Consistent with this interpretation are the remains of shell ornament finishing and bone plaque reduction in the south room (Emery and Aoyama 2007). Shell production and finishing debitage is also found along with chert tools used for cutting bone/shell behind the south part of the structure. Although shell or bone carving was conducted on a part-time basis, the scribe living here may have engaged in a variety of artistic works as an attached producer serving the ruler, including the skilled low-volume production of shell and bone objects of high symbolic value as royal regalia. As Inomata (2001:324) asserts, such objects made by a skilled elite craftsman were probably highly valued and the act of craft production itself was also heavily loaded with ideological meaning. I also detected a marine shell ornament production workshop dump in such a royal court setting at Copán (Aoyama 1995).

Like the north room of Structure M8-8, food storage and preparation in the north room of Structure M8-4 are indicated by the many ceramic vessels, including storage jars and a large plate, and the presence of a large metate and nine manos. Excavators also unearthed a concentration of needles and spindle whorls in this room (Inomata et al. 2002:312–313). Again, the wife of the high-status courtier/scribe likely produced and stored food as well as producing textiles inside and in front of the room, although it is also possible that other female or male household members or a servant shared the room and craft activities.

The lithic artifacts associated with this room include: 130 obsidian artifacts (three initial pressure blades, 114 prismatic blade segments, two prismatic blade points, five polyhedral core fragments, four flakes, a hinge removal flake, and a chunk), 376 chert artifacts (18 oval bifaces, two partially polished oval bifaces, a recycled oval biface, 11 bifacial points, five bifacial picks, 100 bifacial thinning flakes, a scraper, a notched flake, two denticulates, four drills, 21 primary flakes, 43 secondary flakes, 150 tertiary flakes, 11 chunks, four flake cores, and two recycled flake cores), four hammerstones, 30 pebble smoothers, 12 faceted smoothers, and four polished

greenstone celts.

A female household member, such as the wife of the high-status courtier/scribe, also may have used some obsidian prismatic blades as well as chert bifacial thinning flakes, drills, and secondary and tertiary flakes for processing meat or other food preparation, as well as for hide or leather working. Obsidian prismatic blades and polyhedral core fragments found in the north room were used for the craft production of wood, while chert bifacial thinning flakes, a drill, bifacial picks, and tertiary flakes served for carving shell or bone objects. Matching these observations, Emery recovered evidence of shell production, and bone reduction in the north room along with evidence of the butchering of a large mammal and skinning animals (Emery and Aoyama 2007). Chert recycled flake cores, oval bifaces, and a bifacial pick as well as polished greenstone celts were used for shaping stone. Therefore, I believe that the female household member most likely assisted the scribe in artistic and craft production, or possibly engaged in artistic creation.

Based on the lithic artifacts associated with the north room, the female household member may also have knapped flake tools using the hammerstones. Some of the hammerstones might also have been involved with ground stone tool manufacture or maintenance. Although not all bifacial thinning flakes represent manufacturing debris, the largest concentration of bifacial thinning flakes in Structure M8-4 was found in the north room. This suggests that she may have been devoted to bifacial tool manufacturing. Apart from 30 quartzite pebble smoothers, 12 faceted smoothers from the north room were formed of several kinds of raw materials: five of chert, three of limestone, two of sandstone, and two of basalt. Ethnographic research on native potters of Amatenango, Chiapas, indicates that rounded quartzite pebbles are used for burnishing pots (Clark 1988:166). It should be noted that round reworked sherds caked with burnt clay were found in the north addition and in the area south of Structure M8-4, which may be related to a chunk of burned clay found on the south side (Inomata et al. 2002:316). The female household member who occupied Structure M8-4 may have used the pebble smoothers and faceted smoothers for pottery making or other tasks related to the use of clay.

Notably, four of seven polished greenstone celts were associated with the north room. The male

Table 6. Heat Damaged Obsidian Artifacts from Aguateca, Guatemala.

Structures	Sample	Partially burned	%	Severely burned	%	Total	%
M7-22	159	67	42.1	25	15.7	92	57.9
M7-32	38	7	18.4	2	5.3	9	23.7
M8-4	180	57	31.7	3	1.7	60	33.3
M8-8	202	14	6.9	20	9.9	34	16.8
M8-13	91	12	13.2	8	8.8	20	22.0
M8-2	88	35	39.8	6	6.8	41	46.6
M8-3	46	16	34.8	4	8.7	20	43.5
M7-34	184	12	6.5	10	5.4	22	12.0
Others	163	4	2.5	3	1.8	7	4.3
Total	1151	224	19.5	81	7.0	305	26.5

scribe may have used all of them. Alternatively, I entertain the hypothesis that a female household member may have used some of the celts. It is worth noting that eight pieces of polished greenstone celts were also found inside and in front of the north room of Structure M8-8 that was closely associated with female activities. Classic Maya elite women may have engaged in stone carving in collaboration with noble men.

#### *Structure M7-22 (The Royal Palace)*

Structure M7-22 is a vaulted structure in the Palace Group, the largest residential complex at Aguateca that appears to have been a royal palace (Inomata 2003:52). The abandonment pattern of this complex was different from that of other elite residences along the causeway. Structures M7-22 and M7-32 in the Palace Group did not have rich floor assemblages or reconstructible objects. The analysis of excavated materials suggests that the royal family evacuated the center when they felt the threat of the imminent enemy attack. Later, the enemy conducted termination rituals around these buildings. Only the easternmost room of Structure M7-22 was sealed. It contained numerous objects in situ, including two thin ceramic ceremonial masks, which were probably part of the theatrical regalia of Ruler 5 of Aguateca, Tahn Te' K'inich.

The usewear data on the obsidian artifacts strongly support Inomata's (2003:57) interpretation that the enemy carried out a termination ritual at Structure M7-22 and burned it to the ground. More obsidian artifacts from Structure M7-22 show traces of burning than those from the other structures (Table 6). The percentage of surface modifications caused by fire and heat on obsidian artifacts from Structure M7-22 (57.9 percent) is the highest (mean for eight structures =  $32.0 \pm 15.1$ ). Of these,

24 artifacts (15.7 percent) were burned so severely that microwear cannot be identified (mean =  $7.8 \pm 3.9$ ).

Because of the gradual abandonment of the Palace Group and post-abandonment termination rituals, it is difficult to associate rooms and areas with specific individuals and activities. The lithic artifacts that had been originally sealed inside the easternmost room of Structure M7-22 provide some clues about the activities that the royal family performed with them. They include: 57 obsidian artifacts (four complete prismatic blades, 44 prismatic blade segments, a medial fragment of a bifacial point, and eight polished disks) and 72 chert artifacts (eight bifacial points, 10 oval bifaces, a recycled oval biface, 12 bifacial thinning flakes, eight secondary flakes, 31 tertiary flakes, a chunk, and a flake core). In addition, four polished greenstone celts, a thick pestle, a barkbeater, a pebble smoother/hammer, and three pebble smoothers were recorded. Among them, 1.2–1.3-cm-diameter polished discs of El Chayal obsidian were clearly non-utilitarian, possibly served as inlaid pieces of other royal regalia.

Figure 10 shows the percentages of materials worked with the lithic artifacts from different parts of Structure M7-22. Among those from the easternmost room, obsidian prismatic blades were used for meat or hide processing. In the same room, a deer bone was found with several skinning marks that correlate well with the lithic use-wear evidence, as well as bone perforators possibly used in hide processing (Emery and Aoyama 2007). Obsidian prismatic blades as well as chert bifacial points and oval bifaces served for wood carving. Thus, the members of the royal family appear to have engaged in wood and hide craft production as well as food preparation. Importantly, the microwear

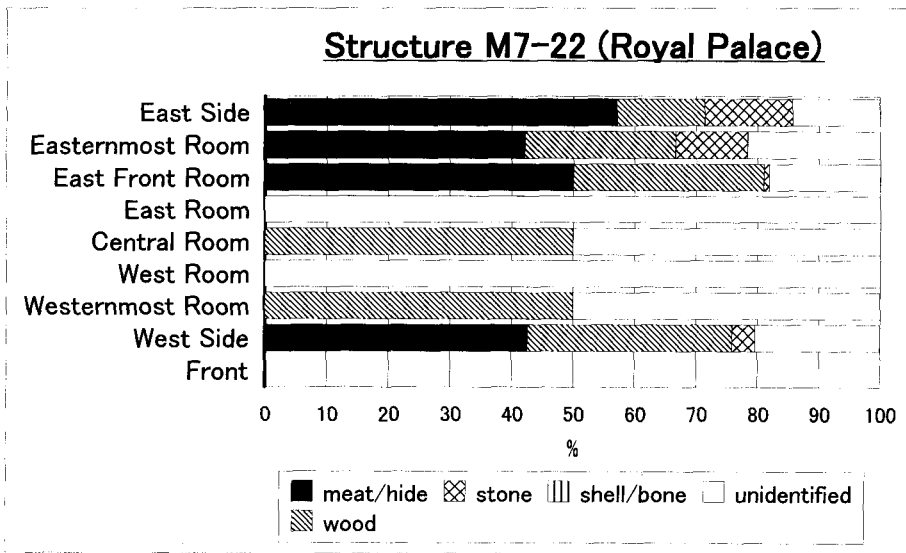


Figure 10. Worked materials on lithic artifacts from Structure M7-22.

analysis showed no evidence of shell or bone carving, in spite of the numerous bone and shell artifacts recovered from this structure.

None of the analyzed lithic artifacts from other parts of Structures M7-22 and M7-32 show use-wear related to shell or bone carving. The lack of evidence may be partly due to the gradual abandonment of the Palace Group. Alternatively, I argue that the royal family did not manufacture shell or bone objects, but received finished artifacts from other households, such as the residents of Structure M8-4. If this interpretation is correct, it implies a socioeconomic difference in craft production, between households, i.e., elite attached producers working for the ruler.

I also noted a relatively high percentage of stone carving for the easternmost room (11.8 percent). The microwear analysis indicates that chert oval bifaces and polished greenstone celts were both used for this task. The number (7) of polished greenstone celts from Structure M7-22 is the second highest in the study (Figure 7). Four were recovered from the easternmost room. Accordingly, the members of the royal family were involved in stone carving at some level.

#### *Structures L8-62 and L8-70 (Granada Group)*

Two residential structures of the Granada Group beyond the epicenter of Aguateca were tested. They

provide an interesting counterpoint to the evidence provided by the four residential structures discussed above. In total, 1,233 chipped stone artifacts (50 obsidian and 1,183 chert) were collected from Structure L8-62. The percentage of obsidian artifacts among all chipped stone artifacts (4.1 percent) is considerably lower than the mean percentage of the eight extensively excavated structures in the epicenter ( $33.5 \pm 8.6$  percent). Although the excavated area was small ( $1 \times 1 \times .25$  m), chert density (4,732 pieces or 9,915.6 g per  $m^3$ ) is the highest registered in this study. There were few formal tools, such as oval bifaces, a bifacial point, scrapers, and a drill as well as bifacial thinning flakes. Casual flakes (primary, secondary, and tertiary flakes) dominated the chipped chert artifacts.

While virtually all obsidian artifacts were used, it is notable that the percentage of used chert artifacts from Structure L8-62 (2.9 percent) was considerably lower than the mean of the percentage for the eight extensively excavated structures ( $36.8 \pm 15.5$  percent). With the lithic artifacts from Structure L8-62, meat or hide processing was the most common activity, followed by wood carving; there was no evidence for shell or bone carving (Table 5).

In total, 486 chipped stone artifacts (61 obsidian and 425 chert) were collected from Structure L8-70. Again, the percentage of obsidian artifacts

among all chipped stone artifacts was relatively low (12.6 percent). Casual flakes dominated the chert chipped stone artifacts. While virtually all obsidian artifacts had been used, it is noteworthy that the percentage of used chert artifacts from Structure L8-70 (2.7 percent) is the lowest in the study. The lithic artifacts from Structure L8-70 indicate that wood carving and meat or hide processing occurred there (Table 5).

In sum, both the lithic assemblage and the results of microwear analysis from Structures L8-62 and L8-70 indicate that the residents engaged in chert casual flake production and wood carving. The lithic artifacts from both structures also provide evidence of meat or hide processing but no evidence for bone or shell working. This combination is most likely the signature of domestic meat processing.

### **Conclusions: Implications for Understanding Classic Maya Craft Production**

The results of this study suggest that although under external threat, a significant portion of Maya elites, both men and women, engaged in artistic creation and craft production at the Classic Maya city of Aguateca and that they were often involved in independent and attached production. Artistic and craft production appears to have been a common pursuit among Classic Maya elites at Aguateca, including courtiers of the highest rank and even members of the royal family. The same elite artists and craft producers worked in both attached and independent contexts and manufactured not only luxury goods and weaponry but also utilitarian items for intra-household and extrahousehold consumption at the epicenter of Aguateca. Importantly, such manufacturing was carried out in domestic settings.

The present study provides clear evidence for similarities and differences in elite craft production and domestic activities. Both the royal family and elite households produced many artistic and craft items, including wood carvings and hide or leather goods, and engaged in food preparation. Consequently, several kinds of craft production overlapped in various households. At the same time, particular households and individuals emphasized specific artistic creation and craft activities. For example, the scribe living in Structure M8-8 carved stelae for the ruler, and the high-status courtier/scribe of Structure M8-4 emphasized the

production of shell and bone objects of high symbolic value and other royal regalia in a courtly setting on a part-time basis.

Although the present study does not provide conclusive archaeological evidence of gendered activities, it does suggest that Classic Maya elite women may have actively participated in artistic and craft production, in addition to food preparation and textile production. The female household members of Structures M8-4 and M8-8 seem to have manufactured hide or leather goods as well as wood and shell or bone objects. While the female household members of Structure M8-4 may have made pots and chert bifacial tools, the women of both structures likely manufactured chert casual flakes and other utilitarian stone tools. Moreover, these women may also have engaged in stone carving in collaboration with noble men. I believe that Classic Maya elite men and women participated collaboratively in many aspects of artistic and craft production. Classic Maya elite women may have played a more important role in artistic creation and craft production than previously thought. Artistic creation by noble men and women as well as the garnering of ideological, religious, and esoteric production knowledge were important in exclusionary tactics and elite identity at Late Classic period Aguateca.

Second, although there is no evidence for large-scale, full-time craft production at Aguateca, part-time production of both utilitarian and luxury goods occurred within the city. Clearly, the Classic Maya city of Aguateca was a center of artistic and craft production as well as of consumption.

Third, based on the lithic data from Aguateca, I suspect that there was an even larger portion of Classic Maya elites, both men and women, engaged in artistic and craft production than previously believed. Payson Sheets (2000:219) indicates that each commoner household at Joya de Cerén had approximately 13 obsidian artifacts, including some six obsidian prismatic blades, one or two macroblades, and a few scrapers; most obsidian artifacts were stored in the thatched roofs. By contrast, the elite households at Aguateca had approximately 230 to 440 obsidian prismatic blade fragments and other artifacts (Table 1). The straight line distance from Joya de Cerén to Ixtepeque (80 km) is considerably shorter than from Aguateca to El Chayal (180 km). The greater obsidian con-

sumption by elites of Aguateca may relate not only to their higher-status but also to their greater involvement in the inter-regional exchange of obsidian and craft production. The role of craft production in the sociopolitical development at more gradually abandoned Classic Maya cities, such as Tikal (Moholy-Nagy 1997) and Copán (Aoyama 2001b), may have been greatly underestimated.

Finally, the lithic data of Aguateca strongly support Inomata's (2001:330) assertion that elite scribes/artists possessed multiple social identities and roles. The work of Classic Maya elite scribes and artists at Aguateca was not highly specialized. Some were also warriors. At the same time, an elite Maya man could have conducted various activities, such as stone knapping, carving wood, shell, bone or stone, as well as administrative, diplomatic, and ritual duties in and outside the residence. Furthermore, an elite Maya woman may have engaged in different kinds of artistic creation and craft production, in addition to domestic and other activities. In conclusion, Classic elite men and women artists and craft producers at Aguateca possessed multiple social identities and roles. As in many other preindustrial cities in other parts of the world, the Classic Maya city of Aguateca lacked true full-time production. This, in turn, implies a more flexible and integrated system of Classic Maya elite participating in attached and independent craft production than is usually proposed in the literature.

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Old World. Thanks to his academic legacy, I have been able to conduct my lithic study in the Maya area since 1986. Any errors remain entirely my own responsibility.

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