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DOMESTIC OBSIDIAN PRODUCTION AND CONSUMPTION AT THE MIDDLE PRECLASSIC SITE OF LA BLANCA, SAN MARCOS, GUATEMALA

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By

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ABSTRACT

DOMESTIC OBSIDIAN PRODUCTION AND CONSUMPTION AT THE MIDDLE PRECLASSIC SITE OF LA BLANCA, SAN MARCOS, GUATEMALA

By

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The La Blanca Obsidian Project analyzed material changes in household economy as a response to the development of centralized political authority in an early complex society in Ancient Mesoamerica. The collection studied came from the excavation of domestic contexts at the site of La Blanca, San Marcos, Guatemala dating to the Middle Preclassic Period, ca 900-600 BC.

This study analyzed how various forms of obsidian were obtained through long-distance exchange, how obsidian was worked in households, and how the finished tools were utilized. La Blanca was a stratified society and thus the archaeological sample includes households of different socio-economic levels; the data represents differing economic strategies and the development of social inequality amongst elite and non-elite households in regards to a fundamental resource. In the case of this project domestic obsidian production and consumption.

CHAPTER I: INTRODUCTION

The research area for La Blanca Obsidian Project (La BOP) is that of Mesoamerica, specifically the Western Pacific Coast of Guatemala. The research in question was focused on the Middle Preclassic (950-600 B.C. uncalibrated) site of La Blanca in the San Marcos Department of the Socononusco region, Guatemala. Over the course of prehistory this area would see the transition from a complex chiefdom during the Middle Preclassic to an early state level society during the Late Preclassic (Love 2007). Such societal change is a powerful yet stringent process that requires increased organization and a centralization of power, particularly over the areas of economics and resource control. The interplay between the households of the average 'commoner' and 'elite' at the site of La Blanca, afford us the opportunity to analyze to what extent these hierarchical social groups had access, control, and/or influence over the production and/or consumption of a basic economic and functional resource, in this case obsidian tool stone (Love and Guernsey 2011). What sort of manifestation did these social relationships assume? What did it mean for the political and economic access of the participants of this culture and to what effect is this represented in the archaeological record? Ultimately what affect did this manifestation have on the general trend towards increasing social complexity in the area?

La BOP has taken these abstract notions of social and political organization, which often are idealized into definitive categories (such as chiefdom, state, etc.), and has attempted to attach them firmly to some sort of physical representation in the form of artifact classes. In the case of this project, that class is lithics, which includes the stone-tools and the debitage generated from their use, maintenance, and production. Utilized as the fundamental tool for household activities, lithics would have been vital for even the most mundane everyday actions of a Middle Preclassic residence (Webster et al. 1997). This study will be analyzing the tool-stone artifacts from the site. This will mainly comprise of debitage, or debris that results from manufacture, use and discard. Also included in this analysis were partial, complete, and/or fully exhausted tools coming from the Middle Preclassic occupation of La Blanca. The site itself is demarcated in Figure 1, and was surrounded by several other large and contemporaneous sites throughout the Guatemalan coast.

Figure 1: Sites of the West Coast of Guatemala [highlighted in black is the site of La Blanca] (After Love 2011).

The following Chapter outlines the theoretical background utilized in this project. The excavations at La Blanca focused on the domestic residences, as such, the implementation of household archaeology will be discussed in this section. The process of conducting archaeology at the household level and the potential results will be theoretically connected to a broader discussion of evolving social complexity. The effect of these political/economic changes on society at a domestic level is the primary question of this project. There will be a further discussion on political economy and how it might be viewed within the archaeological record at the individual residence level. The subunit of each houselot will be further considered through the theoretical lens of craft specialization and issues related to this project concerning production and consumption.

In Chapter Three Operationalizing Theory, the lithics aspect of the project will be discussed and connections will be made with the previous theoretical section. The two major industries encountered at La Blanca prismatic blades and the expedient technology will be the focus of this section. The mechanics of both industries will be demonstrated and comparisons between the two will be drawn.

In Chapter Four the archaeological and historical background of the site of La Blanca will be covered. The site will be situated both geographically and chronologically within the broader Mesoamerican world. Previous archaeological research conducted at the site will also be considered. Attention will be given to other previous projects conducted with the La Blanca artifacts.

Chapter Five will illustrate the methodology for this project. Both the methods used in the field for excavation and the laboratory methodology for the analysis and data acquisition of the stone artifacts.

Chapter Six will present the data and the results found. The evidence for both the prismatic blades and the expedient technology consumption and production rates will be discussed. The house-lot operations will be compared and the distribution of obsidian at the site, both in terms of source and type, will be highlighted.

Finally in Chapter Seven the project will be brought to a conclusion and an attempt will be made to connect the data and results from Chapter Six to the theory from Chapter Two.

CHAPTER II: THEORETICAL BACKGROUND

Household Archaeology

Household archaeology is a powerful strategy available to the modern archaeologist. It permits the analysis of an entire cross section of society that in the past has widely been ignored. Household archaeology presents history as a culmination of joint experience, one that is comprised of a multitude of individual social actions (Hirth 2009:1). Everything from how a house is constructed, the materials used, to its orientation and the food that is consumed there; these and other decisions made in the past encompass a bountiful suite of information available to the archaeologist that wishes to study as many aspects of a culture as possible (Robin 2004). The archaeological remnants of these past actions can be statistically compiled into comparative models that describe processes of social stratification, economic and political power struggles, identity, ritual and local versus regional relationships, …etc. Household archaeology is being employed at many of the major sites around the world to help connect the high arching theory of social and political power relations to the "on the ground" realities of the people of the past (e.g., Ashmore 1981; Blanton 1994; Lohse and Valdez 2004; Sheets 1992; Wilk and Ashmore 1988). In other words, these domestic data have the potential of highlighting not only the development of social complexity, but its effect on people's lives.

Following the arguments of Flannery and collaborators in *The Early Mesoamerican Village* (1976), researchers have shown that the excavation of individual households and a subsequent analysis of their cultural remains provides evidence for the cultural, social, and political patterns of a particular site across time. As Aldenderfer and

Stanish (1993) suggest, excavations of numerous households can be expensive; but such extensive investigations are crucial to realizing the full impact of residential analysis, especially since residential architecture in many areas is constructed of ephemeral material and does not leave evidence of building outlines on the surface. Some questions simply cannot be answered solely with a survey methodology: household archaeology often requires the use of shovel and trowel (Aldenderfer and Stanish 1993:215). Archeological sites can be very different and formation processes may vary: one site may have *in situ* de facto refuse, another may be filled with garbage from later occupations, and both kinds of deposition may be present at the same site (Aldenderfer and Stanish 1993:223). At smaller sites, this procedure can be especially useful as researchers may be able to describe typical domestic patterns replicated in different structures or within a structure to understand the household units or the relative size of the co-residential group (e.g., Stanish 1989).

Dwellings

Wilk and Rathje (1982) explain that archaeologists do not excavate households, but rather the remains of dwellings. A great deal of effort is needed to bridge the gap between dwellings and households, but this effort is required if archeologists want to understand the social, economic, or political composition of a society (Wilk and Rathje 1982: 224).

Dwellings vary and thus there are several middle-range aspects essential to household archaeology. First, household archaeology requires a material definition of a dwelling. The dwelling may be composed of one or more structures and includes indoor and outdoor spaces. The definition of a dwelling includes the architecture, the features, and the suite of domestic activities. Second, since the composition of the co-residential group varies, it is important to determine whether a dwelling contains a single set of domestic activity areas or several. In other words, by looking for multiple hearths, grinding tables, and storage bins one may determine that a dwelling was occupied by more than one social unit or a group of subunits (Wilk and Rathje 1982: 224-225). The third crucial aspect is determining what types of production (craft specialization, political activity, or religious activity) may occur in some dwellings, but not all. Knowing which types of specialization occur in houses and which may occur in special-purpose areas is necessary for modeling the settlement's economy.

Households are flexible and innovative social units that can intensify production of their own volition, making changes as necessary (Hirth 2010). It is the aim of this chapter to tease out from the existing data patterns that relate to social and political relationships between these ancient households and the larger social spheres they interacted with. These relationships tie into a larger discussion on political economy and how these societies might have affected one another in the past.

Political Economy

"The goal of household archaeology is to understand, as best as archaeology permits, the basic social unit in a community or the array of social units in a society, with the presumption that this social unit is also the basic unit of economic and political interaction" (Wilk and Rathje 1982:225).

The concept that best helps us to define these changes is social evolution. This political order allows archaeologist to compare social groups. Yet the question remains, why should household archaeology be brought into such a debate, what information can it provide on the burgeoning state?

Political Economy is a useful tool for understanding the economic and trade-based interrelations of a society. Neo-Evolutionary models describe households as building blocks or as units at the foundation of polities. It is the ability of households to produce surpluses that allow specialization and the emergence of leadership; further households provide extra labor to build states (Earle 1997; Feinman 1991; Kristianse 1991; Orans 1966; Stanish 1994; Webster 1985; Yoffee 2005).

One of archaeology's goals is to provide a better understanding of the past, and one aspect of this past is how social and political powers evolved to the level of the state. Since it is understood that Mesoamerica did not develop in a vacuum, it is equally important to consider relationships both within the society and amongst other regional powers. The concept of trade networks is particularly useful, because trade is both a provider of new influences and a promoter of further interaction on a regional scale. In the archaeology of economics what is most often found to be of greatest statistical importance are the material imports, the trade goods. Trade goods are material evidence of interaction and their presence, as well as absence, can highlight the growing pains of an evolving society. As for household archeology, often times this material evidence can be uniquely seen in the individual domiciles, as thin slices of time can show periods of wealth and of drought. The desire to acquire certain material goods can promote entire societies to reach out to far distant lands for trade. These interchanges are not unidirectional. Craft specialization can help to better frame the arguments of political economy, by defining specific trade goods and raw materials that are traceable within the archaeological record and connecting this evidence to the industries and networks involved in their production and transmission.

Craft Specialization

"Craft production is materialization, as craft producers take ideas about daily maintenance, social identity, and power relations and express them in physical objects that can be experienced by others"(Costin 2005). It is often "crafts" in a domestic context that best represent social interaction at the household level. It is only natural to assume that every household had to go about acquiring food stuffs, clothing, and shelter for basic survival, but it is the peculiar and rare items that catch the attention of researchers. Because special items denote deviations from the norm, at the ground level of society it is the consumption of goods and the production of goods that can illuminate a myriad of social dimensions.

Hirth (2010) takes the concept of craft production and includes it within the broader model of domestic economy, which refers to the organization of a household and how it fulfills its physical and social needs. This is important to discussion at hand as it provides the "why" that drives these ancient households to undergo the trouble of producing material goods in the first place. Crafting at the domestic level allows the household to generate material wealth that can in turn be utilized for the better social and political positioning of the overall household and family. Hirth places a great emphasis on the domestic economy as the real backbone of the larger social economy and the true underlying driving force for social development.

Costin (2007) has shown that crafting was an important economic element of complex societies and that it provides an important action through which local households are able to interact with the broader economic and political relationships. Thus, craft specialization is the notion that certain manufacturing processes in the past may have occurred within the confines of the domestic residence area. These processes are visible within the archaeological record since the people in the past were producing items that can be distinguished as 'special' or as involving some unique construction or technique. These 'specialized' items can then be traced through the archaeological record, connecting individual houses with a myriad of other economic and political levels in a society (e.g., trade networks, raw material sources, tools, political relationships, etc.)

The primary goal of households is to reproduce themselves; to do so they employ a variety of subsistence strategies (Hirth 2010:14). Households utilize craft production as a means to supplement the overall economy of the family group and for assuring the attainment of subsistence goods.

Hirth identified four major fallacies in the analysis of craft production: 1) is a classification system focused on time. This is the full- and part-time craft production dichotomy, with today's view being that to arrive at full-time artisans a society must exceed the previous level of skill and specialization held by part-time artists with a corresponding temporal commitment. The fundamental problem is that time is not an accurate measure of an economic system, better would be an analysis of the quantity of the goods produced and the diversity of the types of goods made. Further, this dichotomy does not focus on the important question of how craft production fits into the broader subject of the domestic contexts?; 2) The low productivity of domestic craft production; a household has to produce enough resources to meet both physical needs as well as social requirements. “The Mesoamerican data indicate that craft production developed hand-in-hand with sedentary village life, well before population pressure or shortages in agricultural land would have created resource stress” (Hirth 2010:15). This is directly opposed to previously standing notions that craft production developed as a result of the economic stresses of hard times; 3) A misconception is that of elite involvement. Craft production is often viewed as being attached to elite households. One quote from this section sums up the counter argument to this assumption: “I do not consider my plumber, the neighbor boy who mows my lawns, or a part-time, retired handyman to be attached to my household simply because I occasionally use their services”(Hirth 2010:16); 4) the final challenge is that archaeological evidence supports a very involved and sophisticated craft production sequences were already in place by the Early and Middle Formative periods of Mesoamerica.

What is presented here is a new updated vision of craft specialization that utilizes a domestic economy approach, to develop a unique and specific understanding of each social context. Craft production within a household provides an opportunity of diversification, to be able to produce goods with both social and economic value. It is likely that crafting became essential for the survival of the household family unit. It provided the domestic residence with a means of generating durable wealth that is absent in the form of agricultural goods that spoil and cannot be stored indefinitely. Furthermore, a household focused mainly on agriculture can provide an economic buffer for the artisan so that he or she is not solely reliant on the commercial sale of their trade goods for subsistence.

This latter observation returns us to the old full-time/part-time dichotomy expounded above, and the result is that craft production was most likely always a part-time endeavor. As such it is both safer and more predictable than the fluctuating returns associated with full-time craft activity (Hirth 2010:16). These activities can be viewed as intermittent crafting, which refers to discontinuous or periodic craft production that takes place within domestic contexts alongside other subsistence pursuits. This view takes into account that the amount of time invested by each individual household can vary greatly. But this also should not diminish the economic importance of crafting, as it is the foundation for an advanced market system.

Within the broader argument for political economy craft specialization provides the basis of the domestic economy which not only assisted with the subsistence strategies of the individual households but had a direct feedback effect on the larger societal economic and political interactions (Hirth 2010). "It was safer and more productive for craft production to remain in the household where it was buffered from risk by other subsistence activities" (Hirth 2010). The most important notions with craft production should be how does it tie into the overall subsistence strategy, while maximizing productivity and minimizing risk. It is more important to look at the overall structure and organization of the society in question and how the changing complexity in the region might have had an effect on the individual household economy and vice versa.

Social Complexity

How is statehood achieved, and what was the impetus for its development? As Service (1975) highlights theoretical conversations on this subject have gone through several stages. This section discusses the changing outlook on social evolution in the broader archeological debate; these notions of differing levels of social complexity will then be juxtaposed to the historical evidence for the area in question. Further this will all be considered for the intentions of the project and its relations to the political economy of the area and the craft specialization of the households.

One of the earliest theories concerning social evolution is that of social contract; in essence this theory purports that the general populace submits to authority out of the overall good for the group (Hobbes 1660). This is rapidly dismissed, as Service states that the more complex organization of government that is put in place, the more repressive that government is towards its own populace. Hegmon was likewise inclined to agree, for "social inequality rarely contributes to the greater good" (Hegmon 2005:224). What is seen to follow is essentially the opposite theory, that if an evolved social organization is not for the good of society, then it is for the maintenance of social inequality.

This concept is most notably observed in the theory of historical materialism as conceived by Karl Marx, he saw the state as a repressive structure and that its purpose was in the maintenance of class (strata) inequality. The major difference between Marx and Service is that the former is inherently materialistic placing the main focus upon the economic aspect of culture; while the latter focused on the inequality of differential access to political power. Political power is represented in decision-making and is manifested not only economically (as in Marxist accounts) but also in status and prestige for the individual. Both aspects of political power have the potential of material representation within the archaeological record at the household level.

Anthony Giddens (1984) defines inequality as unequal access within a society to the authoritative and allocative resources, which includes a wide spectrum from material goods and productive capacity to knowledge and leadership roles.

Elman Service was not the first to develop the concept of social evolution, but he was the constructor of a version truly fit for the field of anthropology. What is unique about Service's approach is that he chooses to focus on the variable of political organization to attempt to explain how hierarchical political structures developed in the first place. As with Carneiro (1981), Service saw the stage of chiefdom as being all-important for the chain of social progress, as this is the level of society, that develops the necessary mechanisms to support statehood. As Classen and Skalník (1978) argue there can be a multitude of variables that can be considered at the different social levels, these variables, as Service points out, make the differences "between chiefdoms and states as much quantitative as they are qualitative"(Service 1975).

By selecting to define social organization through the use of a single variable (political power) Service was able to demarcate clear and marked differences between social levels; this facilitates the conversion of the archaeological data into a manageable and discrete form that can then be easily applied to cross-cultural comparison. "What is consistent from culture to culture is not the institution; what is consistent are the social problems. What is recurrent from society to society are the solutions to these problems"

(Service 1975:9). This quote serves to highlight the need for a comparative approach that can generalize social organizational patterns.

Sanders and Webster (1978) were willing to question Service's terminology, in an effort for better utilization. In *Unilinealism, Multilinealism, and the Evolution of Complex Societies,* the authors state that social evolutionary theory has been inadequate at explaining variability "present in the specific sequences of complex social evolution"(Sanders and Webster 1978:249). They state that the variation seen in the archaeological record cannot be explained in universal terms. Solely considering the political aspect of society, as Service does, only takes into consideration the resulting manifestation, but that this type of investigation does not speak to the factors that led to the development of one particular form of political organization over an alternative. They state that the natural process, of population increase, generates various small groups, rather than a single larger more complex group arising. It is the additional factors of competition and cooperation that function to stimulate social integration rather than social fission. By including concepts such as competition and cooperation, Sanders and Webster have allowed for a theoretical discussion of the factors that have an affect upon social evolution. This is a key component of the theoretical basis of this project, it is not enough to merely define the social evolutionary stages of each culture, for this would be no better than the past narratives of culture-history, but must move beyond classification to arguments of why these stages were achieved in some societies and what factors were inhibiting/missing to prevent their attainment in other past societies.

Service chose to focus on political power as the main variable for determining a society's social organization; future researchers would argue that this is only a single facet of human culture and that other variables should be taken into consideration. In *Point Counterpoint: Ecology and Ideology in the Development of New World Civilizations* (1992), Carneiro presents how ideology can be an impetus for cultural change as well. Carneiro sees ideology as dividable along a spectrum on one side the cultural materialist outlook of Leslie White; on the other side the 'relations of power' and the superstructure of society developed by Karl Marx (Carneiro1992:176). The article was written because archaeology had come to be divided along these two theoretical camps, and Carneiro wanted to bring their different viewpoints into communication, to create a dialogue for archaeological theory.

It is understood through Carnerio's arguments that an aspect of ideology must be included in some fashion to relate to all aspects of social organization. Archaeologically, this ideology is seen in the artistic depictions and the aesthetics associated with major public works. They represent a message; a message whose meaning is often crafted to suit the individuals and groups who reside at the privileged end of the social spectrum; a message that is to be consumed, often by those at the lower end of the same spectrum. Ideology may not have played a "major role in the origin of chiefdoms and states" (Carneiro 1992). But it does play a developmental role in the establishment of a state, in the calculated command of its citizens.

By the 1990's the field has progressed in the wake of Carneiro, viewing states and chiefdoms no longer as simple single variable classes, but as comprised of a multitude of characteristics that must be acknowledged. Timothy Earle was interested in how chiefdoms achieved and maintained their power. He wanted to identify the economic conditions that required a central management for proper operation, versus lower forms of social organization. The three criteria he focuses on are: the scale of development (simple vs. complex chiefdoms), the basis of finance (staple vs. wealth), and the overall structure of the chiefdom (group oriented or individualizing) (Earle 1991:13). The overarching concentration of their research was politics rather than ecology or the economy.

Social Complexity in Pacific Guatemala

For the south west coast of Guatemala rapid changes came in the 1000-900 BC mark, and with it came increased population density and radical jumps in social and political control. The elites in charge quickly set about laying the foundations of La Blanca and Takalik Abaj and their ability to govern was immediately tested. The site of La Blanca saw the immediate construction of the immense public work Mound 1, rising to twenty-five meters in height with a base of one hundred by one hundred and fifty meters wide, it was a massive pyramid of rammed earth capped in a dense clay (Love and Guernsey 2011). This was a monumental structure of a size that was never surpassed in Pacific Guatemala. For Service this would have been a token of strong political influence by the leaders of La Blanca over the amassing of a significant workforce. While this is probably true, Carnerio's concept of ideology should equally be considered, as not only did Mound 1 dominate the site of La Blanca but also the surrounding areas, it would have been visible up to twelve kilometers away. Thus the definitions of what constitutes as a true state or chiefdom, should present some joint form of ideology and political power that promotes the status of allegiance unto it from its citizens and conquered territories. Regardless, these new power relations would have a significant 300-year reign before power in the area would shift again. At about 600 BC another regional power emerged, just 12 km east of La Blanca: the site of Ujuxte (Love 2002b).

To summarize the theoretical section, the important driving question is why social and political systems developed into ever more complex forms. This project has chosen to look at the Preclassic site of La Blanca. The site developed a multifaceted governing system that was agriculturally self-sufficient with the possibility of a rich domestic craft specialization industry. La Blanca was not isolated on the Pacific coast, instead the theory of political economy shows that it can be expected to have operated within a large and far-reaching economic network of trade with multi-site interactions. Trade that may have been driven by the demand and supply of local craft industries in regards to both raw material and desired trade goods. The economic repercussions of such a network cannot only be generalized as city-to-city interchanges, but also are archaeologically prominent within the domestic sphere at all hierarchical levels. The theories of craft production and domestic economy help to situate the individual households as not only participant consumers within the broader economic networks, but also as active producers helping to drive the economic engine, which it is proposed, ultimately culminates in new levels of political complexity. The fundamental question of cultural change is at the root of this project. As illustrated above in the social complexity section, there has been a long-standing debate over the casual factors to societal organizational change. It is possible that data from the Middle Preclassic site of La Blanca can illuminate some subtle nuances of this anthropological issue.

CHAPTER III: OPERATIONALIZING THEORY

This section will attempt to outline the two major lithic industries and some of their implications for the Preclassic era. The production sequences for both technologies are directly relatable to processes of craft specialization in a domestic context and to the broader social relationships of political economy. The variable levels of access and production of this economic staple impacted the domestic economy of each household. A strong understanding of Mesoamerican lithic industries will be important for the subsequent analysis of the data derived from the lithic artifact class and the ultimate connections that can be drawn to the broader social questions illustrated in Chapter Two.

A comparison between the Specialized and Expedient Industries

It is important to provide a general understanding of lithic technology, and its formation as a concept of reliability amongst similar projects across the globe. Works such as Patten (1999) are very useful as references and provide the distinction for standard terminology and definitions. The main industries of La Blanca are prismatic blade production, and bi-polar reduction, which will be classified as the expedient industry. This rudimentary classification of lithic artifacts based on production is an important consideration for the project. As something like bifacial technology is not seen at the site of La Blanca and thus coding for bifacial reduction would be inefficient use of analysis time. A comparison between the two industries can be made on the basis of multiple differing variables that will be outlined below (production requirements, skill level, raw material requirements, desired end products, energy and time input, etc.)

Prismatic Blades

Mesoamericans practiced the general reduction process of transforming raw obsidian into the form of a prismatic core, designed much like a cylindrical cone with a flat top. These cores are worked/reduced in the round, with the repetitive action of separating 'blades' form the working face of the core in a downward fashion. These blades are long thin slivers of essentially glass-like material with razor sharp edges; they are generally twice as long as wide. The process is a highly economical way of reducing stone, that can be developed into a decidedly regularized process, that can be controlled, and is usually performed by highly skilled individuals. This technology is able to produce a commodity (blades) in a dependable and accountable fashion. These are all unique aspects of this particular lithic industry that lends themselves nicely to the political and economic control of highly stratified societies, such as Preclassic La Blanca.

The first subsection, is of course the most diagnostic of a Mesoamerican culture group, blade production. The works presented under this heading, presents manageable ways of assessing the different typologies of the overall blade production schema. An example is the process taken by Hirth and Heath (2009) dealing with the material derived from the major Late Formative site of Kaminaljuyu, where they have evidence of blade production workshops. A similar approach was incorporated for this project, but amended to include bi-polar material. The identification of this secondary class of artifact is important, but as the authors show, the stage of reduction (or removal) is equally informative on the processes that are taking place at the site. It should be noted that the authors were looking at a specific workshop setting, while La BOP has analyzed material from domestic sources, which will result in a distinct difference in the type of data produced.

There are three major methods for modifying stone and shaping it to fit the desired purposes seen at La Blanca. These are percussion, punch, and pressure methods.

Percussion, also known as hard hammer technique, is the use of a stone or other hard implement (such as shaped antler, bone, or hard wood) held in the hand that is then struck against the target rock one is attempting to alter, generally in a swooping arc motion. This can be done from almost any position, but generally while sitting down. It is a quick process and the required force input is quite variable (determined by the composition of the target stone, the density of the hammer, the desired end result, and the removal of a large or small flake, etc.) This method is widely available to all humans and is utilized in many industries (Patten 1999:53-66).

Another method seen at La Blanca is that of pressure technique. This method uses an implement with a tip that generally can be held in the hand, but the length may extend much further to beyond the shoulder to provide the greatest amount of leverage. Pressure flakers, as they are called, can be composite tools, but are generally made up (partly or completely) of bone or a very hard wood. The intention is to have the pointed tip be placed against the stone at the location of the desired removal. Force is then applied to the area in a downward motion. This force is applied in an increasing manner until either the material fails or a sudden outward force is applied to cause its failure and the removal of the flake or blade. This method requires a fair amount of setup as the tool utilized in the process must be created and maintained (Whittaker 1994:219-237).

The third method for the removal of blades at the site of La Blanca is the use of punch (intermediate flaking). This is a sort of mixture between pressure and percussion technology. In this instance a punch (usually made of bone or hard wood) is placed against the target stone at the point where the desired removal should originate. A hammer (usually another stone) is then swung by the other hand to strike the punch and apply the force necessary to generate the removal, much like pressure this method is highly controllable and provides accurate results, yet also requires more time than hard hammer percussion and requires time for setup and the acquisition and maintenance of the tools (Whittaker 1994:219-237).

Blade Production

Illustrated in Figure 2 is the general process from which prismatic blades are derived from raw material obsidian. From the personal experience of the author, the general breakdown is as follows: 1) a nodule of raw obsidian is obtained either quarried or collected from the source or outcrops. The size and overall shape of the nodule can be highly variable, as such the flintknapper (the individual working the stone in the present or past) must shape the raw nodule into a core preform; 2) the shape of this preform is dependent on numerous variables, such as the skill of the worker, the desired end products, the quality of the material, and the initial starting size of the raw material. Aspects of this process include the fact that it is conducted for the most part at or very close to the quarry site and it is conducted with mainly percussion techniques, the resulting debitage from this process are generally large and not uniform. These removals will carry cortex, which is the outer surface of the raw obsidian, much like the outer skin of an orange, the cortex is the part of the obsidian nodule that was exposed to the elements, wind and water, and is highly distinguishable from the unexposed interior (this distinction is important for analysis);

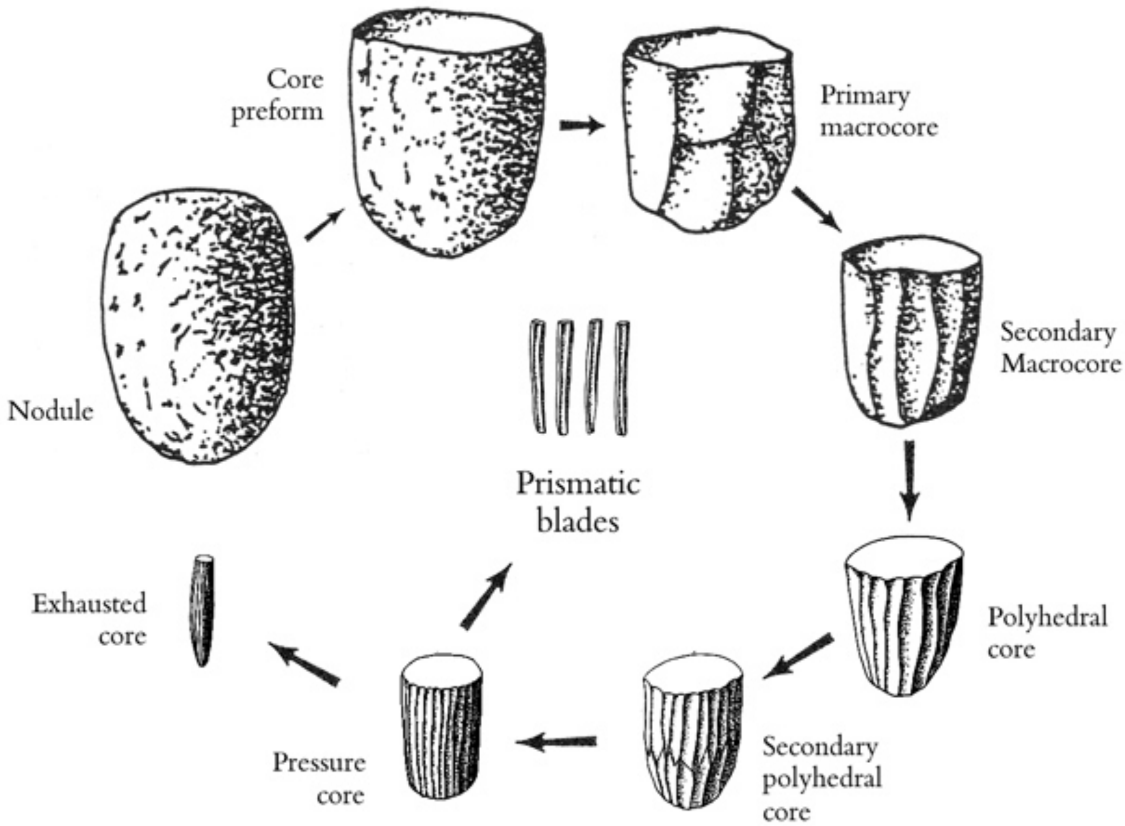


Figure 2: Stages of Reduction (After Hirth and Andrews 2002).

3) after initial shaping, the flintknapper produces the macro core by setting up and removing a platform spall. This removal gives the core its characteristic flat top or soda can appearance. The platform provides the working face from which blades will be removed (above illustrated as the sides of the cores with the ridges traveling vertically in Figure 2. These initial removals from the macro core result in large percussion-made macro blades. They are not true prismatic blades, but serve the important purpose of

setting up the vertical ridges along the working face of the core. It is these ridges that all subsequent blade removals will follow; 4) Once the ridges are in place and the flintknapper is satisfied with the overall morphology of the core, blade removals through the use of pressure can begin (this allows for greater and more accurate application of force, and the highest level of control of removal). These removals are early stage blades (referred to in this project as stage one removals) and results in a polyhedral core. As the reduction continues, with the flintknapper removing further series from the working face of the core, the blades themselves become more and more regularized until the point illustrated above as a pressure core is reached; 5) which results in the removal of prismatic blades (highly regularized and even, the ridges and edges are generally straight and parallel, the edge is extremely sharp, this is referred to in this project as stage three blades); 6) naturally, this process results in the removal of more and more material from the core, till eventually the core itself diminishes to a size where further removals are no longer possible. The core is now considered exhausted. When this process is conducted by a competent flintknapper, with minimal errors, it can result in the production of hundreds of blades, the exact number being solely reliant on the initial size of the nodule used. Blade production is a highly skilled craft that is extremely efficient of raw material.

The framework of Clark and Bryant (1997), particularly their notion of $1^{st,}$ $2^{nd,}$ and 3^{rd} series blades that are produced during the pressure reduction of blade cores, will be followed in this project. This framework will help to account for the full spectrum of lithic debitage created in blade production, it provides a temporal aspect to the reduction process that will allow the material to be placed within its proper context along the *chaine operatoire* from harvesting of raw material to production to discard (Sellet 1989).

The level at which the material falls out of use along this chain is significant in terms of down the line trading.

Expedient Technology (Bi-polar Technology)

In stark contrast to the refined blade technology is the bi-polar technology, which would have been available to anyone with two hands. It is not specialized, and is often termed “expedient.” Bi-polar reduction served the simple function of rapidly producing cutting edge from minimal starting material. It is not regularized or controllable in any fashion, and usually denotes either a lack of starting material of significant size, or a lack of adequate amounts of tool-stone.

Traditionally, the method for producing bi-polar flakes is outlined as: 1) starting with a piece of stone of almost any size or configuration, minimally one that is at least large enough to be held within two fingers; 2) the stone to be struck is placed atop another stone or boulder usually the flatter the surface the better, this will be utilized as an anvil. A third rock or other hard implement is held in the other hand and is used as a hammer; it is struck against the target stone; 3) this causes energy to be transferred to the target stone splitting the target stone generally in half, but this process is highly variable and can result in many outcomes, including everything from no fracture at all to the utter disintegration of the target stone into a multitude of smaller pieces. As stated it is a process that is not very controllable. The general idea is illustrated in Figure 3.

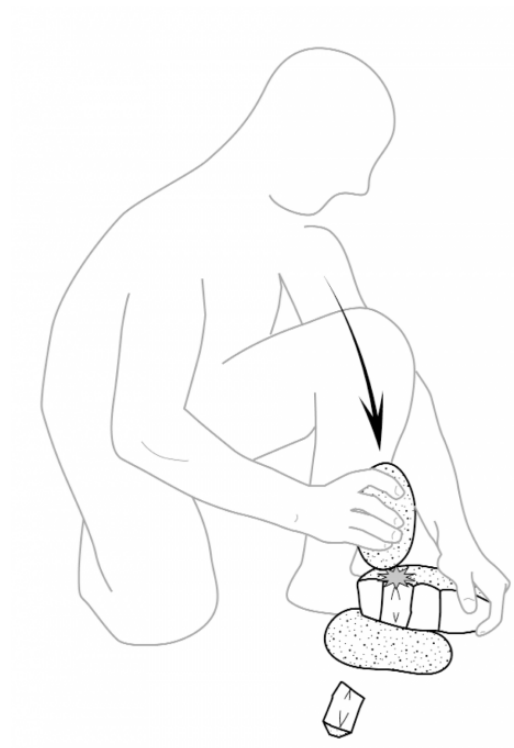


Figure 3: Expedient Bi-polar Technology (After Mourre et al. 2009)

The processes of manufacture implemented in these two industries are quite varied and the desired end products may have had a multitude of uses. These two industries can be distinguished through the variables of skill, time, and resources required. The intention of the laboratory methodology section in Chapter Five is to tease out these differences between the two industries and the subsequent analysis will highlight some of the past social actions taken in regards to these domestic processes. Which is important for connecting the subsequent data from the analysis to the broader theoretical problems espoused in Chapter Two.

CHAPTER IV: HISTORICAL AND ARCHAEOLOGICAL BACKGROUND OF LA BLANCA

Site of La Blanca

La Blanca is predominately a Middle Preclassic site located in the country of Guatemala, roughly 175 km southeast from the modern day capital of Guatemala City. It is located in the Department of San Marcos that shares a border with Mexico's state of Chiapas. The archeological site is found mostly on private plantain fields and is not far outside the boundaries of the modern day town that shares the name of the site (refer to Figure 1). The site lies less than 12 km from the Pacific Ocean and had direct access to the highlands. The site itself was founded on relatively flat and rich agricultural lands. La Blanca is in an almost direct line of sight with the volcano Tajumulco some 60km northeast of the site, which is the highest peak in Central America.

Previous Research at La Blanca

The first investigation at La Blanca was a salvage operation conducted in 1972 by Edwin Shook. The need arose since the site itself was in danger from the construction of an asphalt road, route CA-9, which can be seen in Figure 5. A separate rescue project was also taken on by the Instituto de Antropología e Historia de Guatemala (IDAEH), under the direction of Guillermo Folgar. To this date neither of the two reports have been published. The overall outcome of the construction was one of major destruction to the site, particularly with the razing of the large Mound 1 (seen in figure 5 and 6), after the construction the mound stood only 2 meters in height, while previously it stood at a height of 25 meters with a base of 100 by 150 meters. (Love 2011) The core of La Blanca is a ceremonial precinct of about 100 hectares. Low habitation mounds extend over at least 300 ha, but surface materials are found over nearly 300 ha, stretching from 1 km north of Mound 1 to over 1.4 km south.

What is dynamic about Mesoamerica is that it boasts a plethora of societies, which throughout history have achieved a variety of social levels and corresponding complexity. The Classic period has been noted as the pinnacle of Mesoamerican society in terms of economics, politics, art, and social complexity; and thus garnered much archaeological attention. Recently, this trend has changed, and current researchers have turned to focus on the Formative Period as it presents the groundwork and development of social control over resources and decisions by a successively stratified society. This transition is directly relatable to the site of La Blanca, which over the span of 300 years, gained control of its surrounding environment and grew to an immense size, before it would collapse and be replaced by another regional super power. These are all qualities of the history of the site of La Blanca that are quite pertinent to the theoretical arguments for social complexity raised in Chapter Two.

This phenomenon of political cycling in the area has led many researchers to question the driving force for this type of rapid growth and to seek a better understanding of how these large epicenters were controlled, contested, and idealized (Love and Guernsey 2011). Michael Love was the first researcher to work at the site of La Blanca with these types of questions in mind. He conducted his doctorate research at the site in 1983 and 1985. Since then, he has returned to the site for numerous field seasons as recently as 2011 and has continued with the intention of developing the best overall understanding of the site's history.

Chronology of La Blanca

Speaking generally about the history of the area, the Archaic Period is marked by mobile hunter-gatherer groups that seem to move throughout the region, utilizing food resources wherever available. The first evidence of maize comes from this time period and it was grown in a horticultural system.

The transition to the Early Formative period saw the introduction of pottery and sedentary villages, which seems to display early social complexity. They are separated into a hierarchical settlement pattern, and are considered to be at the level of simple chiefdoms.

The Middle Formative period follows around 1000 B.C. Political power is strongly centered in Guatemala, and the two major sites are Takalik Abaj and La Blanca (see Figure 1). Both carried Olmec-style sculpture, elite residences, and pottery decorated with clear examples of ideology, "low habitation mounds [at La Blanca] extend over at lease 200ha, but surface materials are found over nearly 300ha, stretching from 1km north of Mound 1 to over 1.4km south" (Love and Guernsey 2011). This period is marked with the construction of the large Mound 1 (seen in Figures 5 and 6), increased consumption of corn, and protein in the form of domesticated dog and deer. It also saw evidence for feasting possibly utilized by the elites to gain greater favor and control.

The construction of Mound 1 (Figure 6) begins shortly after 900 B.C., a large earthen work pyramid made of rammed earth and capped in clay, it would rise to 25m in height. This large mound dominated not only the site itself but would have been visible up to a distance of 12 kilometers. The site itself seems to be structured around this mound, with subsequent mounds to the north and south built in the line of site of the major construction; all of them in line with the volcano Tajumulco.

Figure 5: Aerial Map of the Site of La Blanca, San Marcos, Guatemala (After Love and Guernsey 2011)

Figure 6: La Blanca Mound 1 in 1972 (After Love 2011)

By 600 B.C., La Blanca would decline in power and size to approximately 20ha; it was surpassed in regional dominance by El Ujuxte.

La Blanca's rise to prominence began at about 900 BC (uncalibrated) with the decline of Ojo de Agua, the last capital within the Mazatán district, located northeast in the present day state of Chiapas. At that time the center of demographic, political, and economic events shifted east of the Río Suchiate, although the reasons for this shift at present cannot be deduced (Love 2013).

There is not much known archaeologically about the history of Ojo de Agua, yet it seems clear that the rise of La Blanca was a clear transition from the past (Love and Guernsey 2011). La Blanca's overall size and scale of construction mark it as one of

Mesoamerica's most important sites in the Middle Preclassic period and an important part of the Olmec interaction network (Love 2007).

Although there is a lack of many specific data for the time period immediately before La Blanca, its rise is marked by greater centralization of political power, greater social distance between elites and non-elites, economic intensification, and new ideological structures. Economically and politically, the Conchas phase marked a time when elites gained greater power as indicated by their ability to mobilize labor on a scale that was much greater than previous polities. The basis of the increased social power wielded by La Blanca's elite was two-fold, resting on economic and ideological pillars (Love 2002). Economically, an intensification of the economy was carried out by a great focus on high-yield subsistence resources, especially maize and dogs. Ideologically, elites at La Blanca, along with those in other regions linked to the Olmec network of interaction, created a system of rulership based upon perceived abilities to manipulate supernatural forces and communicate with other levels of the Mesoamerican cosmos (Love 2013).

Previous Obsidian Studies at La Blanca

The first project to tackle the obsidian blades at the site of La Blanca was that of Roger Nance and Katharine Kirk. Their project analyzed 431 prismatic blades that had been excavated from the site in 1985 by Love (Nance and Kirk 1991). Utilizing the ceramic chronology developed by Love for the site, they were able to compare the blades through time. The authors' major finds were that: the prismatic blades themselves tend to become "smaller and more fragmentary" through time, and that there was an increase of the use of bi-polar technology and overall edge rejuvenation of the blades by the inhabitants of La Blanca as the levels became younger (Nance and Kirk 1991:371).

The work of Jackson and Love (1991) has shown that obsidian prismatic blades were present at the site of La Blanca since its inception. They utilized X-ray florescence to reveal the specific geological sources for the raw material from which the blades are fashioned. These types of results are important as they assist with the arguments for trade networks and regional interactions. They found an overall propensity at the site for the use of El Chayal obsidian and posit shifts through time as possible changes in trade relationships (Jackson and Love 1991).

Mesoamerica is dotted with numerous volcanic sources of obsidian of varying qualities, thus their use was dependent upon multiple factors not limited to quality but also ease of access, desirability and anticipated use. An excellent example of this type of selective use of obsidian sources can be seen in the Formative period site at La Blanca; during this time period the inhabitants used four main obsidian sources (Refer to Figure 7): El Chayal, San Martin Jilotepeque, Ixetepeque and Tajumulco (see Tabares et al. 2005 on Guatemalan obsidian sources).

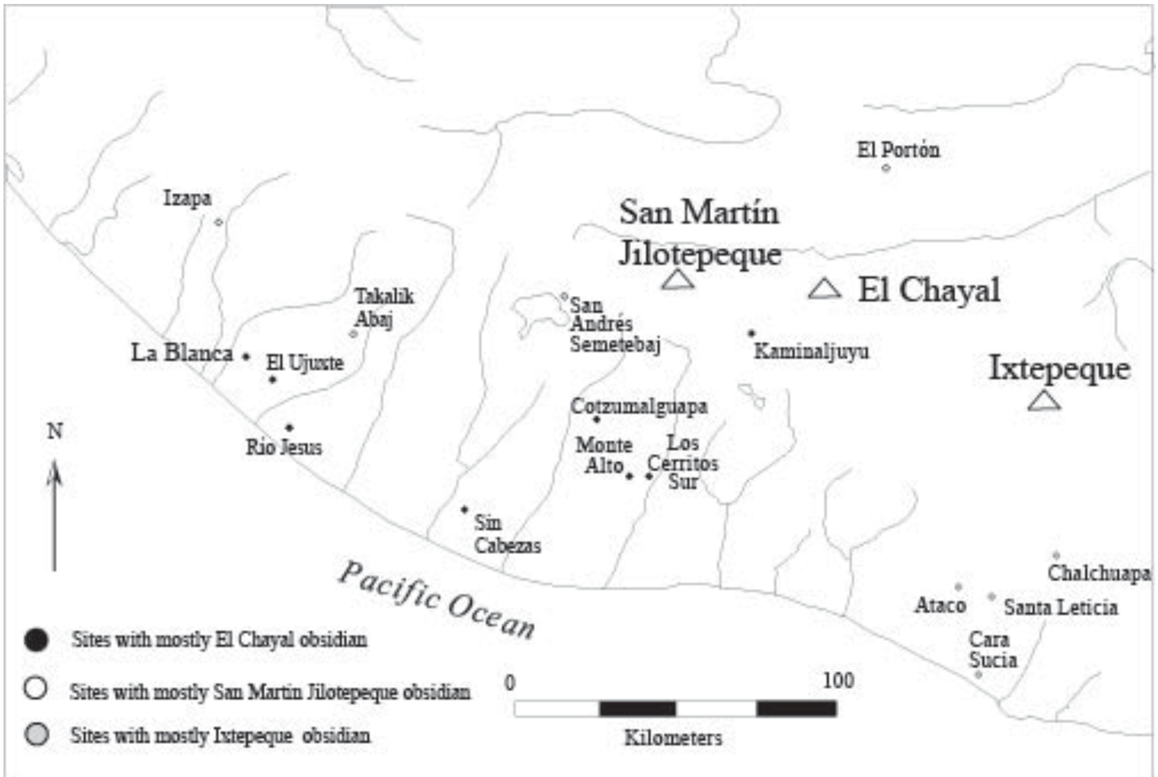


Figure 7: Map of the Major Guatemalan Obsidian Sources (Modified from Love 2011)

The volcano Tajumulco is located in the Department of San Marcos and is the closest source of tool stone, the peak itself lies roughly 60 km northeast of La Blanca. Even though it is physically near to the site, it is also the poorest quality stone of the four main sources. This source seems to have been highly avoided in past times, as it was filled with numerous inclusions leading to unpredictable knapping results, it is also impossible to use for the production of prismatic blades.

The most desirable lithic material used at La Blanca was the uniquely stripped obsidian from the Volcano El Chayal, located roughly 200 km east of the site in the Department of Guatemala (Jackson and Love 1991). The obsidian from this source was of high quality and preferable for prismatic blade production.

The San Martin Jilotepeque source is also highly useful for fine obsidian work, yet is distinct due to the numerous small particles trapped in the volcanic glass giving it a smoky appearance, it is found in the department of Chimaltenango and is about 150 km due east from the site.

The finest obsidian found at the site is the completely transparent glass-like tool-stone from the volcano Ixetepque found in the Department of Jutiapa. This source is over 250 km southeast, and is the furthest from the site.

There is a high range of variability of quality in these four sources and in the laboratory methodology section of Chapter Five, the visual and qualitative variability of these sources will be further discussed, as such all of these factors must be taken into account when considering issues of raw material attainment and limitations and how these might have affected the domestic economy at La Blanca. Furthermore, analysis of tool-stone sourcing rates will assist in checking the findings of this project. These rates serve as a tool for comparison between this project and the above listed previous obsidian studies at the site of La Blanca.

CHAPTER V: METHODOLOGY

Field Research Methods and Data Collection at La Blanca

La BOP was undertaken with the intention of working with an existing collection held in curatorial storage. The lithic debitage was derived from various operations across the site of La Blanca, which span various field seasons. As for the data in question, quoting from Love and Guernsey 2011 describing the collection method utilized:

> The strategy pursued at La Blanca has been to sample house lots, rather than to excavate houses. The data collection strategy defined each low mound as a house-mound and its environs as a house lot. We drew a stratified random sample from a 400 m^2 area, centered on the highest point of each mound. House lots were divided in five units: the center of the mound and four quadrants, and a random sample was drawn from each of the five areas. Those five 2x2 units constitute the primary sample within each house lot, but additional units were excavated if time permitted, or if they were needed to expose important features. The excavated matrix from the primary sampling units was wet-screened through 3mm mesh, with 10 liters from each sample reserved for flotation and screening though 1mm mesh.

An example of such a house lot is illustrated in Figure 9, which represent nine units in total. Figure 8 demonstrates a map of the site overall that illustrates the different operations that were conducted around the site, each operation equaling a house-lot, and the specific operations analyzed for lithic material are: 31, 32, 34, 35, 36, 37 and 38; they comprise the overall sample for La BOP.

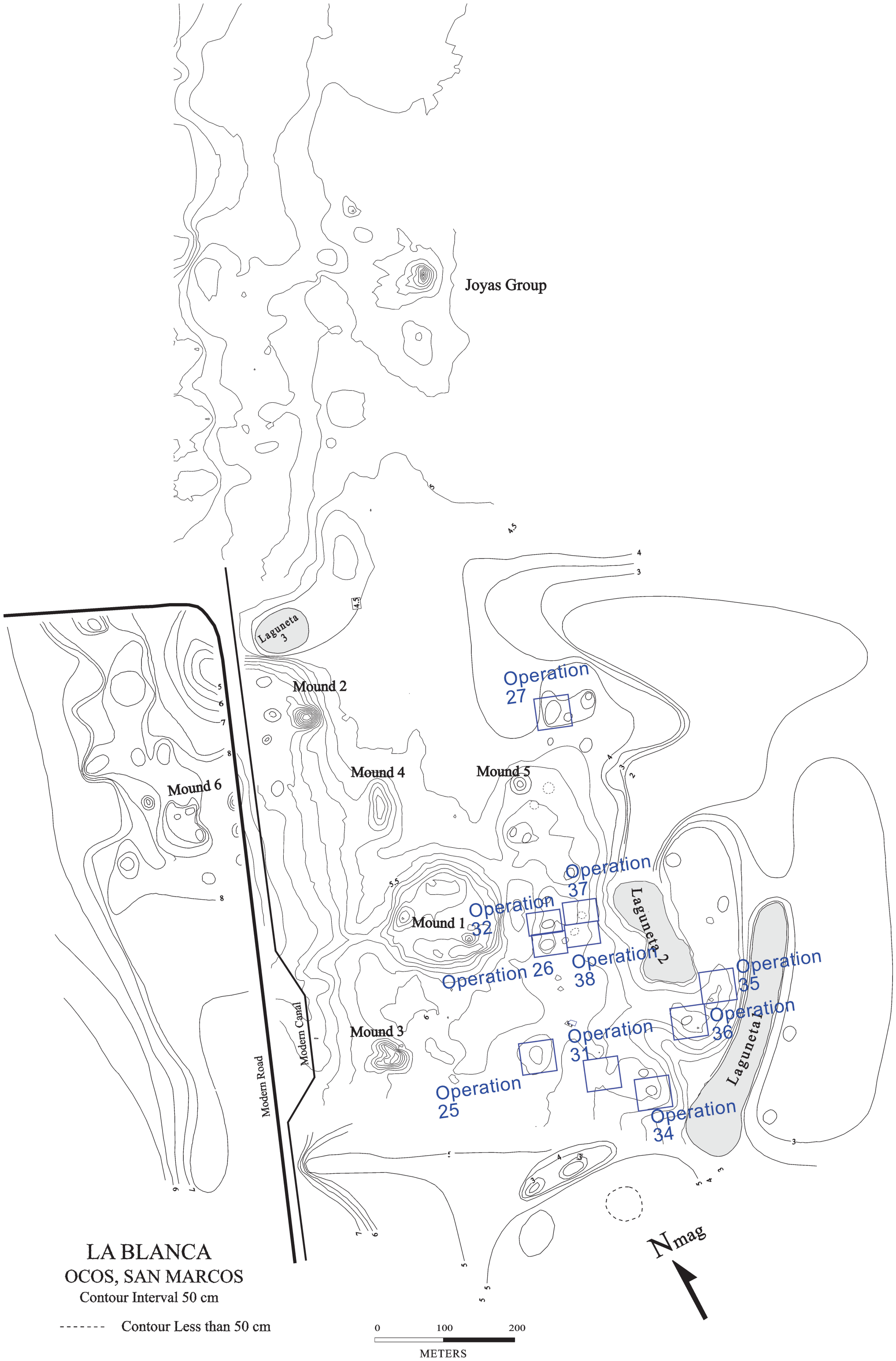


Figure 8: The Site of La Blanca with Excavation Units Highlighted, conducted by Dr. Love and his Teams (After Love and Guernsey2011)

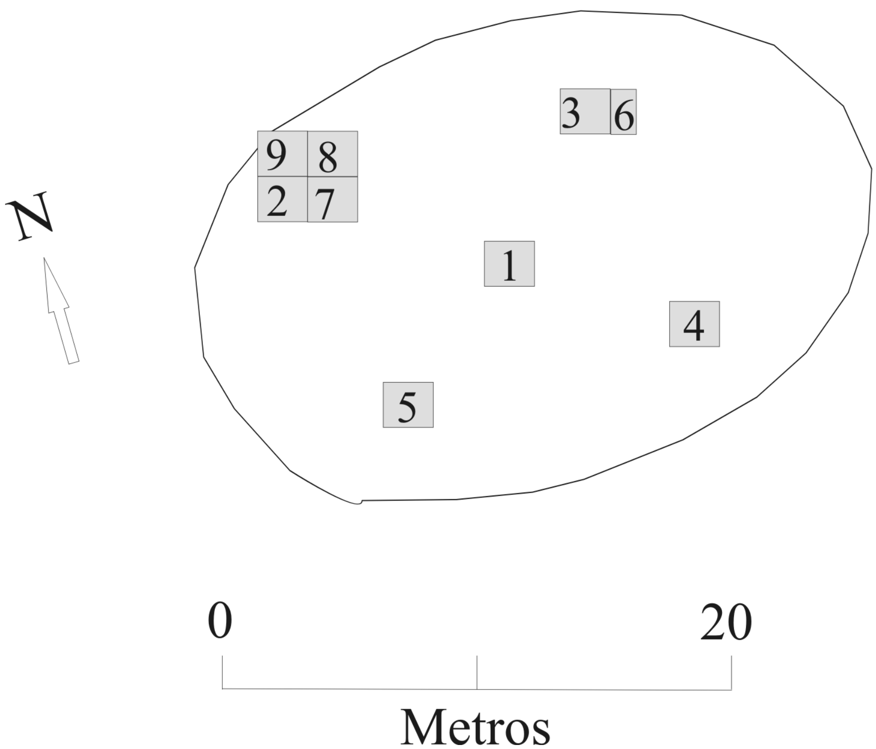


Figure 9: An Example of House Sampling Strategy, above are illustrated the units for Operation 32, and elite Conchas phase residence (After Love and Guernsey 2011)

Laboratory Methodology

Within the contexts of La BOP the concentration has been placed on the analysis of the lithic debitage and stone tools, which have been isolated from the above mentioned contexts. The analysis looked at a wide range of debitage forms, to make inferences about past behaviors at the site as a whole. A typological analysis of debitage was utilized to assign the debitage to groups or types based upon one or more morphological characteristics. This style of analysis has been conducted in many different ways, but depends most centrally on the needs and questions of the researcher. Typologies have been developed to distinguish the kind of hammer used, the stage of reduction, the type of artifact produced or worked, and the technology used. The advantage of this methodology is the immediate behavioral inference gained from the recognition of a single piece of debitage (Andrefsky 2005).

La BOP used the existing collections from the respective field seasons 2003, 2004, 2005, 2007, and 2008 of the Proyecto La Blanca/Ujuxte (PROBLALUX). The materials themselves were collected from sampled house lots, and cover a variety of temporal phases and economic shifts of the history of the site. As such, the methodology for La BOP required a general and broad set of classes for the lithic analysis. It was deemed most useful to separate the distinct features of the data set; mainly through developing a rigor for the two major technological classes present at the site, those of prismatic blades and expedient technologies (which Includes bi-polar and general direct precession).

Variability of Artifact Classes

The data coding process used in the present study is similar to that taken by Hirth and Heath (2009) dealing with the material derived from the major Late Formative site of Kaminaljuyu. The simple identification and noting of metrics for this particular class of artifact is important; but as the authors show the stage of reduction is equally informative on the processes that are taking place at the site.

Careful note was made of material sourcing (through unaided visual sourcing technique) in order to derive information about supply of tool stone to the different house lots. Clark and Bryant (1997) developed a specialized terminology to account for the full spectrum of lithic debitage created in blade production.

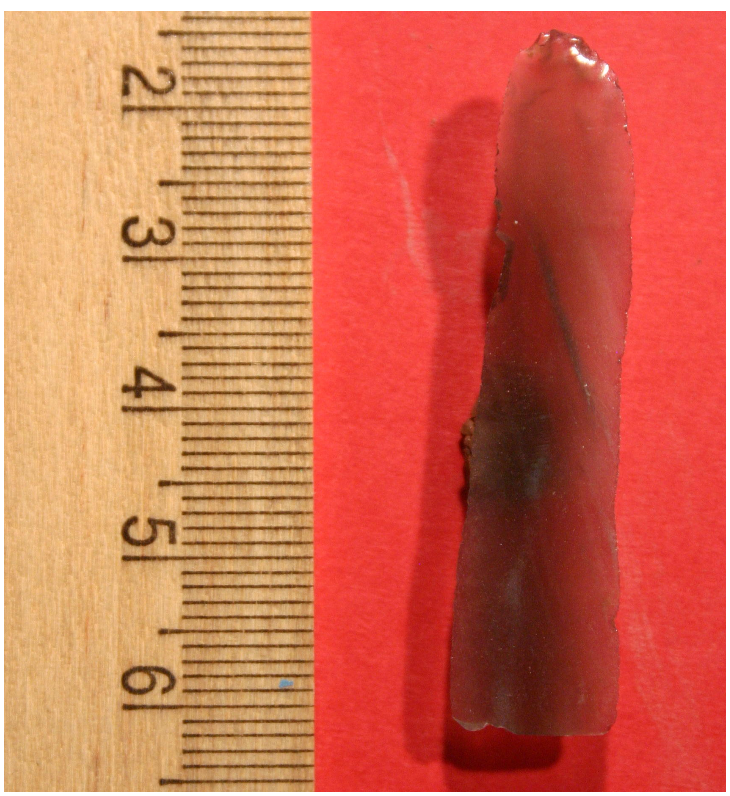
The stages of the blades were determined as follows:

Stage 1 blades (see Figures10-11) consist of the earliest aspects of blade production and the general setting up of the core, it is particularly noted by large percussion blades and very uneven ridges that generally tend to follow the curvature of early flaking scars.

Stage 2 blades (see figures 12-13) are produced through pressure and punch technique no longer through the sole use of percussion, they are still irregular but are approaching uniformity with a much better width to thickness ratio closer to fine prismatic blades, at this stage they can hold multiple facets and ridges although the ridges do not have to be in line with one another.

Stage 3 blades (see figures 14-15) are the true prismatic blades produced through pressure and punch techniques they are highly uniform and with the straightest ridges and edges. They are removed from the working face in series and thus will hold evidence on the dorsal side of the blade of previous blade removals.

Figures10-11: Examples of Stage One Removals



Figures 12-13: Examples of Stage Two Removals

Figures 14-15: Examples of Stage Three Removals

Any unique pieces that are strikingly diagnostic of a process, technology, or action are subject to further scrutiny and analyzed according to the criteria stated above for blades, and tools.

The greatest benefit of utilizing generally accepted methodologies such as those purported by Andrefsky (2005) and Bradbury and Carr (2001) is that they will also facilitate comparative archaeology. The work of Webster et. al. (1997) provides an excellent outline of the usefulness of a comparative methodology. Looking at two distinct sites, Ceren and Copan, located in different countries; they are able to compare the distinct data in a meaningful and unique way. The authors found that through a comparative approach one can always add to the overall story being told. That being said no single site can speak to all aspects of the residential life, regardless of the preservation levels. This comparative framework has been taken under consideration for the present project, by creating a methodology that incorporates the broad spectrum of typological features available to Eastern Mesoamerica as a cultural whole, not solely what is directly present at La Blanca. This allows for a discussion of not only what is present at the site, but for what is not present, which can be equally significant.

To summarize this portion, every blade and tool was analyzed in detail, coding for: stage of reduction, amount of completeness, number of dorsal scars with an average width taken for those possessing two or more, platform and preparation, general metrics (width, length, thickness, and weight measured in millimeters and grams respectively), the associated phase of the level the artifact is derived from, and a note was made of modifications or use wear on each specific artifact (refer to Figure 16).

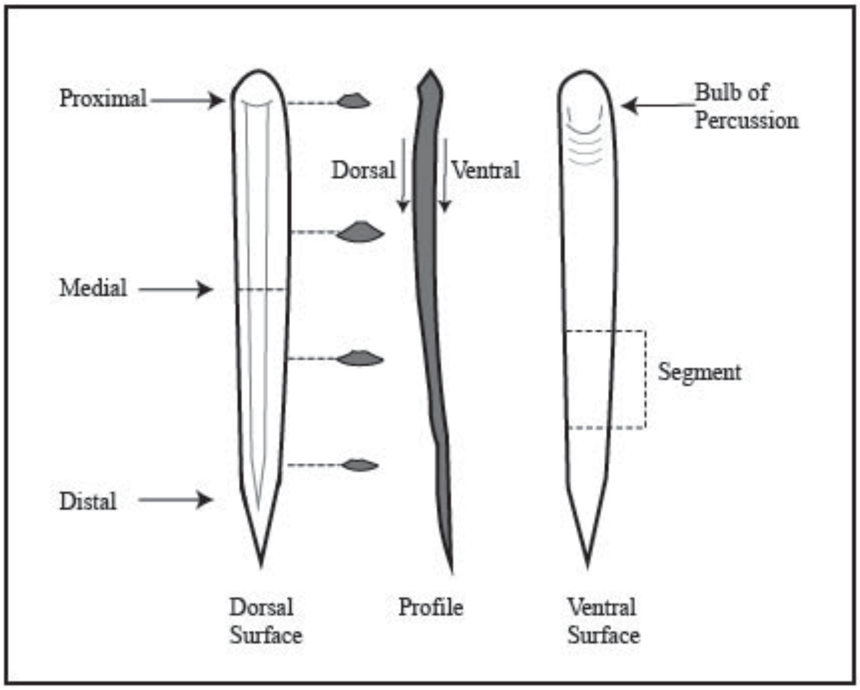


Figure 16: Morphology of a Prismatic Blade (Modified after Carpio and Román 1993)

All other artifact classes encountered during analysis were more generally noted. This would include general debitage, which is comprised of: basic hard hammer direct percussion reduction and that of bi-polar reduction through the use of an anvil technique. The majority of this material was separated by material source type, and then was grouped according to debitage type (percussion flakes, bi-polar flakes, flake-core, bi-polar core, angular shatter, bi-polared blades, isolation flakes, burin spalls, and other unpredicted lithic types). Each of these classes was weighed in bulk (grams) for compassion to weight and distribution amongst levels and between house lots.

Visual Sourcing Techniques

The ability to visually source the obsidian sources was developed though a special set of 101 chemically sourced comparative blades. These blades had been chemically sourced using Laser Ablation Inductively Coupled Plasma-Mass Spectrometry (LA-ICP-MS) in a previously unpublished project (personal communication Love 2013). This group was used as a reference for understanding the nuances between the geological sources available to the ancient people of La Blanca. Geoffrey Braswell et al. (2000) also support the ability of a trained researcher to distinguish these types of obsidian sources using just the naked eye within a good confidence level. Table 1 has been modified from this article and illustrates some of the differences between the three major obsidian sources used in the Preclassic. The fourth source missing is that of Tajumulco, yet this source is so poor in quality and inclusions that are so large and obvious, that it is easily distinguished from rest with a 100% confidence.

Source	Color (under Natural light)	Inclusions	Luster and Texture of Surface	Similarity with other Sources
El Chayal	Medium Gray, waxy or milky. Sometimes clear.	Mostly as black or dark gray bands. Occasionally inclusions appear s dust.	Similar to frosted glass. Glassy when clear or cola. Surface is generally smooth. Normally medium luster, although can be high occasionally	Samples with cola hue and very shinny could sometimes be mistaken with those from Ixetepeque. At times inclusions may make samples look similar to those from San martin
San Martin Jilotepeque	Black to dark gray. The color depends on the amount of inclusions.	Abundant more than in the other two sources. Inclusions grade from dusty to sand size, and appear all over the sample or distributed in clouds.	Surface is normally pitted because of inclusions giving an 'orange skin' aspect. Samples present an oily sheen and some samples may be glassy. Medium to low luster.	Samples with fewer inclusion than usual and a grayish color may be confused with those from El Chayal
Ixtepeque	No color.	Rare	Very glassy, more than in the other two sources. Luster is high and the surface is very smooth.	Some samples may be confused with El Chayal.

Table 1: Visual Attributes of Guatemalan Obsidian Sources (Modified after Braswell et al. 2000).

CHAPTER VI: OBSIDIAN ARTIFACTS FROM DOMESTIC CONTEXTS AT LA BLANCA

The lithic analysis described in this project was intended to gain a more in-depth understanding of the processes taking place at each household and at the site as a whole. In total 3,860 obsidian artifacts were analyzed and their combined weight was just over 2,492 grams they were all derived from the excavations of 7 operations comprising 243 10 cm levels.

Expedient Technology and Diagnostic Debitage

The expedient industry consists of general percussion flaking, which is commonly found at all residences regardless of rank. The use of hammer and anvil technique is generally implemented in the splitting of small nodules of obsidian. At La Blanca there was a tendency to apply this method to almost any piece of obsidian, including fine obsidian prismatic blades. There are many instances in which they were able to successfully split a prismatic blade horizontally separating the original dorsal and ventral surfaces and in the process generating new cutting edge. (Operation 31 had 18 such blades, Operation 32 has 11 such blades, Operation 34 had 9 such blades, Operation 35 had 11 such blades, Operation 36 had 22 such blades, Operation 37 had 5 such blades, and Operation 38 had 5 such blades) What this shows is that each house sampled had bi-polared blades, meaning it was a phenomena that was occurring across the site, of the 822 blades analyzed 13.51% of the blades were bi-polared. This seems to be one of the preferred methods of edge rejuvenation and was readily accessible to everyone who lived at the site. The other aspect of this technology that has complicated analysis of the overall collection is that the ancient people were most likely bi-polaring not only the blades, but also perhaps even the other by-products from blade production such as platforms, initial ridges, and large percussion shaping flakes.

For the operations excavated the average number of obsidian artifacts per operation is 683.4 weighing on average 416.78 grams. Of this material 78.7% of the count was comprised of artifacts pertaining to the expedient or bi-polar class, yet even more striking is that the overall weight of the material is 96.09% bi-polar or expedient. This signifies that the majority of the obsidian artifacts that are encountered through excavation are derived from percussion techniques. The grand majority of the obsidian coming into La Blanca either in a raw or finished form was being further reduced through percussion methods before their discard.

Prismatic Blades Consumption and Production

While every piece of obsidian available was analyzed at least briefly the greatest attention was given to the prismatic blades. The excavations produced 822 obsidian prismatic blades (for their full listing and morphology refer to the Appendix) their spread is demonstrated in Figure 17.

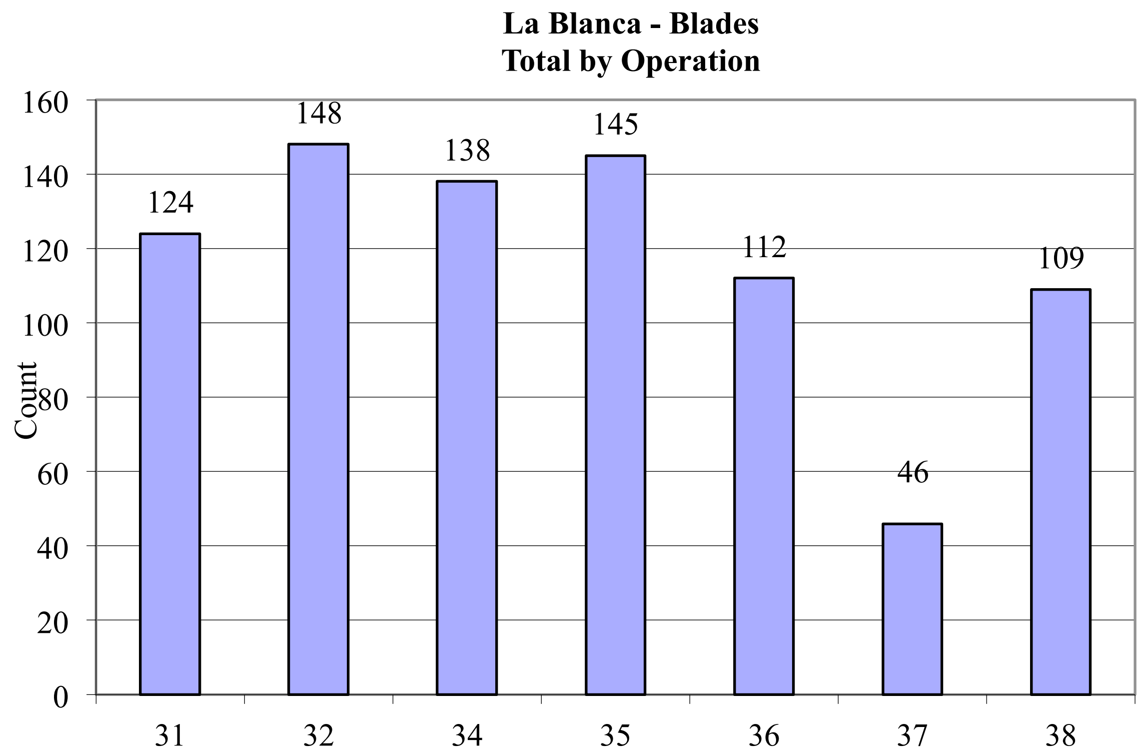


Figure 17: Total Number of Prismatic Blades per Operation

While the prismatic blades only comprise 3.91% of the overall weight of obsidian artifacts they account for 21.30% of the overall 3,860 artifacts coming from the 7 operations. As can be seen in Figure 17 the spread of blades is evenly distributed across that site. The average number of blades per operation came out to 117 with a standard deviation of plus or minus 35, this is rather large given the skewness of -1.66 caused by the low count coming from Operation 37. Operation 37 had a much lower overall volume of artifacts than the other operations. If Operation 37 is removed from the equation a more logical mean of 129 blades is derived with a smaller standard deviation of 16.8 blades. Given these data and excluding the low count of Operation 37 a 95% confidence interval can be built that illustrates that any future domestic operations at La Blanca should yield somewhere between 112 and 147 prismatic blades with similar excavation volumes. While it may seem a bit variable this is useful as a base line of comparison amongst the houses. It also should be noted most of the operations are within this range. The 7 operations fall within one standard deviation of the mean, with the exception of Operation 37. Operation 37 is the sample with the greatest distance from the mean at -2.2 standard deviations.

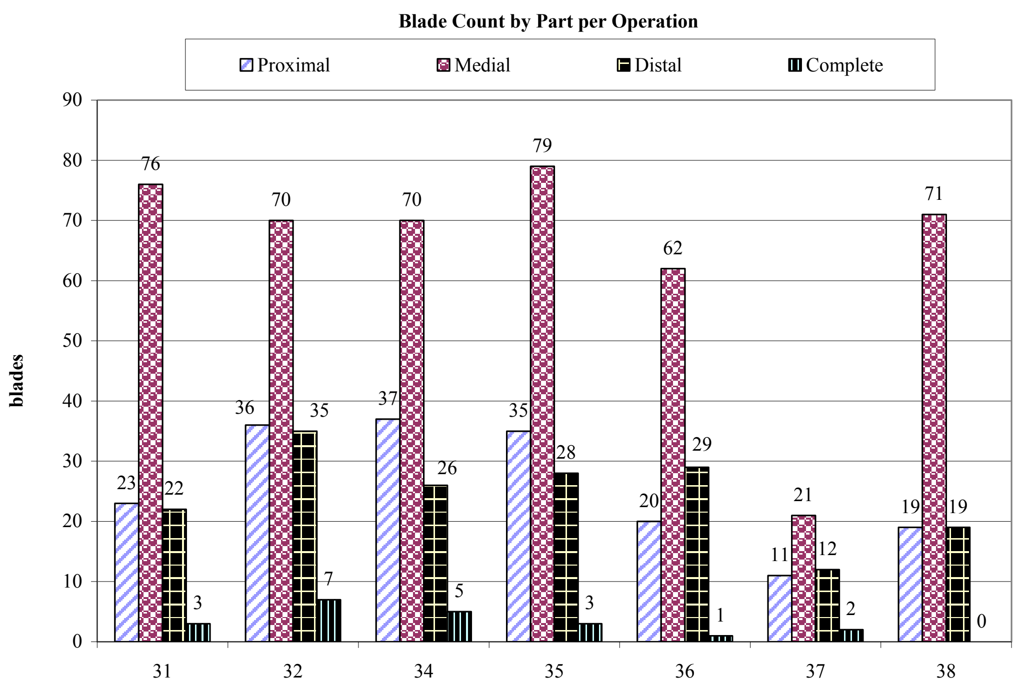


Figure 18: Blade Count by Part per Operation

Figure 18 illustrates the spread of obsidian blades across the site. The numbers are quite uniform, Operation 37 having the lowest number. The medial segments are the highest represented with the proximal and distal segments being roughly equal. There is a very minimal showing for complete blades (complete from platform to distal termination). The percentage of complete blades across the site is less than 3%. The averages across the site can be viewed in Figure 19 with more than half of the blades for the site overall (54%) being medial segment blades.

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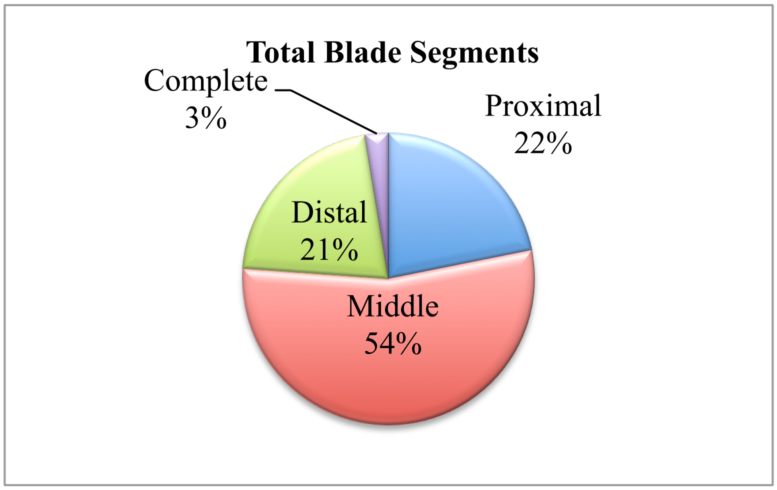


Figure 19: Percentages of Blade Segments for all Blades

Blade Production

The blade industry was most likely not accessible to all of the inhabitants of La Blanca. The on-site locus of production for the fine prismatic blades has yet to be determined. The analysis has coded for aspects of blade production and overall blade characteristics, use, and morphology. Three clear examples of blade production have appeared during analysis. The most definitive example was from Unit 36 (Figure 20 and 21) a platform rejuvenation over-shot flake. It carries a portion of the working face, which holds the evidence of four previous blade removals. What is evident on this piece are the numerous step fractures and the crushed platform to the point of rounding. This damage would have prevented any further blade removals from the working face.

Figure 20: Artifact 36-2-14-192 Dorsal Surface of Platform Rejuvenation Flake

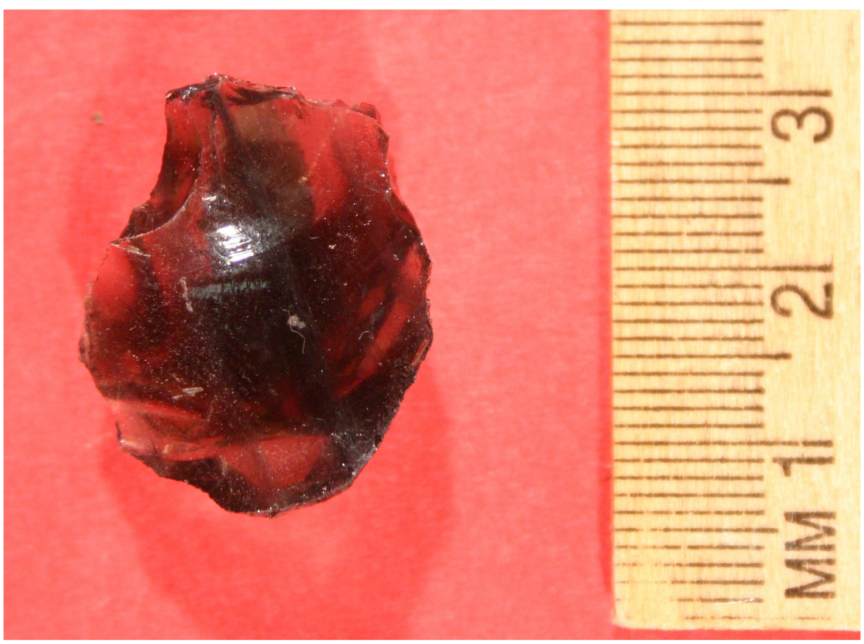


Figure 21: Artifact 36-2-14-192 Ventral Surface of Platform Rejuvenation Flake.

This damage is the reason why the ancient flint knapper chose to correct the core by initiating the flake from the opposite face directly opposed to the errors. The flake covers the original platform of the core completely, from initiation to termination. Thus, the overall circumference of the original working core at this stage was roughly 2 cm in diameter.

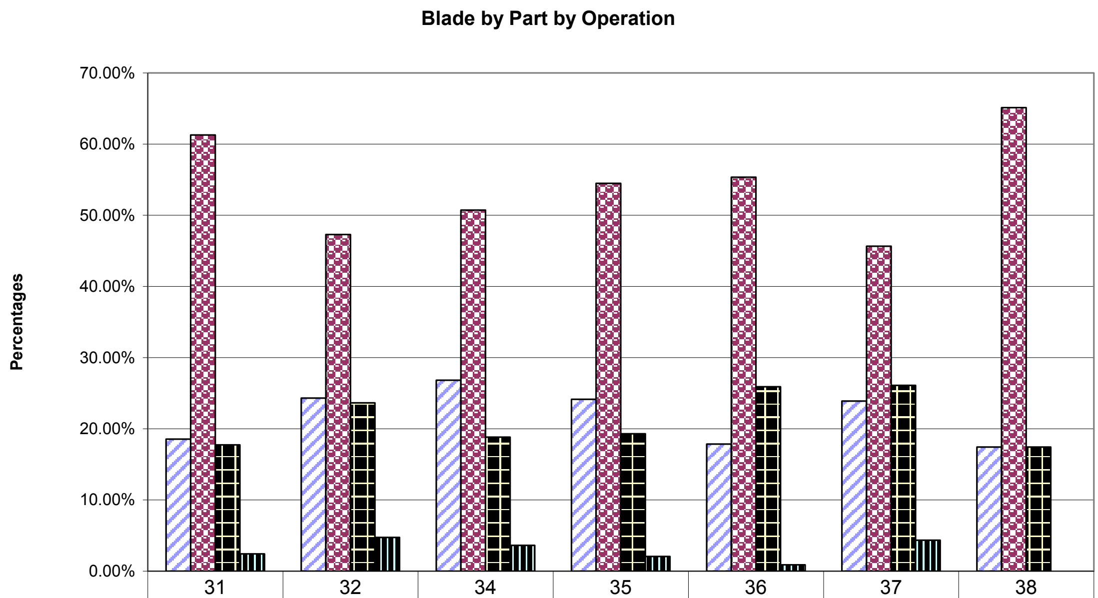
Another example is one from Unit 31 (artifact 4-5-113) it was also a small platform spall of about 2 cm in width. The working surface of the core was greatly battered and damaged which is likely the reason for its removal.

The final example is from Unit 32 (artifact 5-13-58) it represents a very small tablet spall, removed from the original core to generate a fresh platform, for further removal of blades.

The key component of these three examples is that they all share a very small diameter of 2cm. This small size indicates that the cores present at the site were in actuality quite little. These cores would be considered quite far along in their use-life, and cannot account for the majority of the prismatic blades found at the site. While this evidence indicates at least the presence of a few cores at the site of La Blanca, it does not suggest that the prismatic blades found at the site were produced there.

Blade Consumption

Up to this point the actual use of the blades themselves has yet to be determined. For instance, of the 148 prismatic blades found to come from the excavations at Operation 32, 47.30% of the blades were medial sections. This means that the ancient people of this household purposely chose to segment almost half of their blades breaking off the proximal and distal ends of the original blades.



	31	32	34	35	36	37	38
Proximal	18.55%	24.32%	26.81%	24.14%	17.86%	23.91%	17.43%
Medial	61.29%	47.30%	50.72%	54.48%	55.36%	45.65%	65.14%
Distal	17.74%	23.65%	18.84%	19.31%	25.89%	26.09%	17.43%
Complete	2.42%	4.73%	3.62%	2.07%	0.89%	4.35%	0.00%

Table 2: Breakdown of Percentages of Blades by Part per Operation

This pattern was not limited to Operation 32 (Refer to Table 2), but seems to be a common pattern across the site at all households regardless of rank; for Operation 31 out of 124 blades 61.29% were medial sections, for Operation 34 out of 138 blades 50.72% were medial sections, for Operation 35 out of 144 blades 54.86% were medial sections, for Operation 36 out of 111 blades 55.86% were medial sections, for Operation 37 out of 46 blades 45.65% were medial sections, and for Operation 38 out of 110 blades 64.55% were medial section. For the seven operations 54.28% of all blades encountered are medial segment blades. Only 45.72% of the remaining blades are to be made up of the proximal segments, distal segments, and the few complete blades encountered. These proportions indicate that the blades are being used and altered at the households. Such alteration is known to be a common domestic occurrence, since the other half of blades found at the house-lots were these broken sections. Only 3 complete blades were found in Operation 31, 7 complete blades in Operation 32, 2 complete blades in Operation 34, 3 complete blades in Operation 35, 1 complete blade in Operation 36, 2 complete blades in Operation 37, and 0 complete blades coming from Operation 38 (complete meaning from platform down to termination of blade).

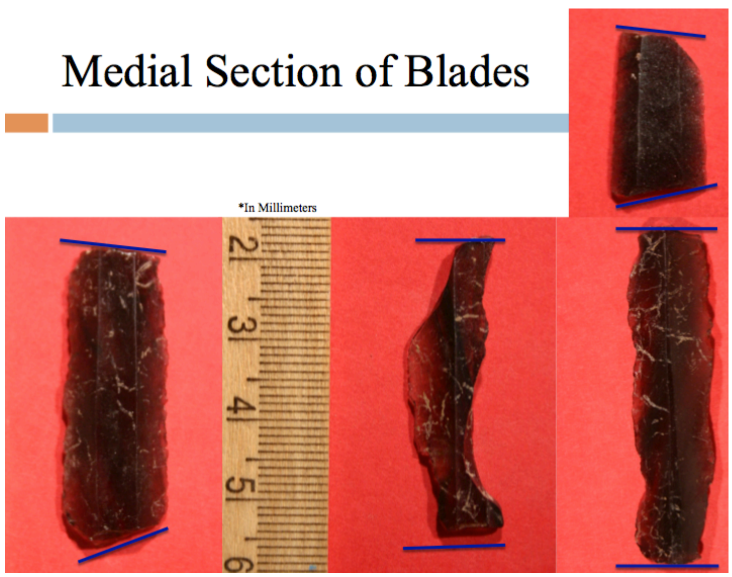


Figure 22: Illustrating the Purposeful Segmentation of Prismatic Blades.

The preference was not to use the blades in their complete state but instead to segment them into rectangular sections that were then utilized in some sort of processing of food or some other unknown perishable (See Figure 22). It is also important to note that it should not be assumed that there is a one to one relationship between the proximal, distal, and medial sections of blade, there is always the possibility that the same blade could have been separated into one, two, or even more medial sections (see figure 23). It all depends on the original overall length of the blade and the desired dimensions of the medial sections.

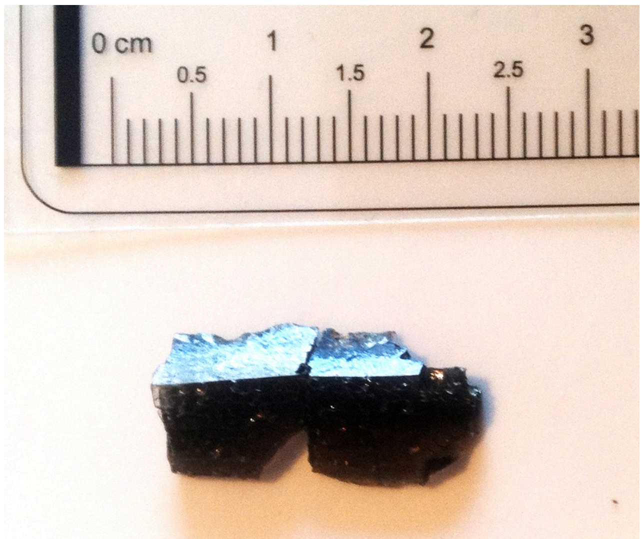


Figure 23: Two Medial Segments of a Blade that Refit (Artifacts: 32-1-2-190, 32-1-2-191)

To briefly reiterate how stages of removal were determined: Stage Three blades are the true prismatic blades highly uniform and with straightest ridges and edges, while Stage One is the earliest aspects of blade production and general setting up of the core, particularly noted by large percussion blades and very uneven ridges that generally tend to follow the curvature of early flaking scars. Stage Two blades are the natural in between progression between the Stage Ones and Threes. There is no longer cortex on these blades and numerous removals had been conducted to this point, but the ridges and edges are still notably sinuous and neither the distance between the ridges nor the overall shape of the blade is yet uniform in any respect.

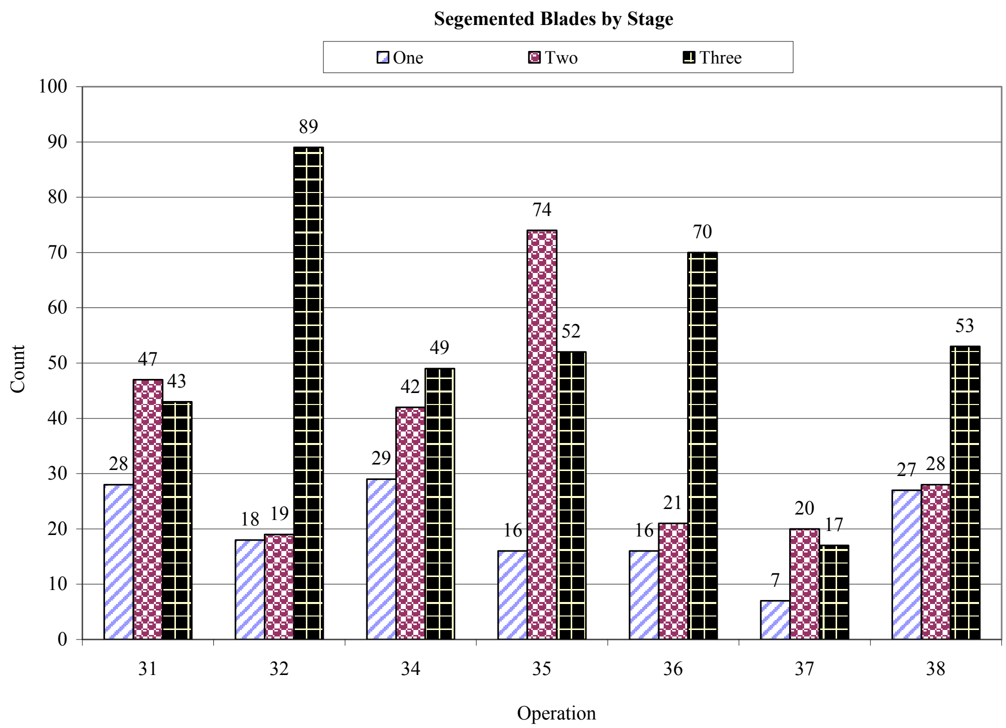


Figure 24: Segmented Blades for Operations by Stage of Removal

Operation	Stage 3	Stage 2	Stage 1	Undetermined *
31	35.54%	38.84%	23.14%	2.48%
32	63.12%	13.48%	12.77%	10.64%
34	36.84%	31.58%	21.80%	9.77%
35	36.62%	52.11%	11.27%	0.00%
36	63.06%	18.92%	14.41%	3.60%
37	38.64%	45.45%	15.91%	0.00%
38	48.62%	25.69%	24.77%	0.92%

Table 3: Percentages of segmented Blades by Stage of Removal (Stage 1, 2, and 3)

*Undetermined are those blades that could not be attributed to a stage of removal.

The histogram in Figure 24 shows the frequency of the segmented blades across operations. They number 765 and represent 93.07% of all the blades that were uncovered at La Blanca to date. In Table 3 the percentages are illustrated corresponding to the stage of reduction at which these blades were produced. While there is segmentation of prismatic blades at all three stages of removal, the majority of the segmented blades are coming from stage 3 for almost all the house lots. The exception is Operation 35, where the majority of the segmented blades are stage 2. This may indicate a different source of blade procurement for this household.

The site wide averages are 46.06% of the segmented blades are Stage Three, 32.30% of the segmented blades are Stage Two, and 17.72% of the segmented blades are Stage One, with 3.92% of the blades that are not complete nor identifiable to an accurate stage. The existence of undetermined blades is explained by the propensity of the inhabitants of La Blanca to bi-polar blades as they become dull. This is a sporadic process that is difficult to control. It may result in the utter destruction of the blade in question. For the purposes of this analysis there were many remnants of blades that still could be identified as at one time having been a prismatic blade but with generally far too damaged (Particularly to the dorsal face) to permit identification to a stage of removal.

The tendency at the site overall for Stage 2 and 3 blades could be a strong indicator that the raw material for the production of prismatic blades is not making it to the households directly from the quarry.

As for the early stage blades, there were differences amongst the Operations, but the greatest similarity was the extremely low percentage of early stage blades and core set up. (Operation 32 17.39%, Operation 34 12.96%, and Operation 36 5.26% early stage blades) The majority of the blades were 3rd series blades coming off of fully functioning and running prismatic cores. The blades of Operation 32 were comprised of 67.39% of such blades, while Operation 34 held 44.44% and Operation 36 was comprised of 92.15% 3rd stage blades. Operation 36 was also the household that contained the platform rejuvenation flake. These data combined with blade stages seems to point to the idea that if cores are present at the household level they are of a highly refined variety already several rows of blades into production. Refer to Figure 25 for the breakdown of the overall stage of removal distribution, again the majority are Stage Three (49%).

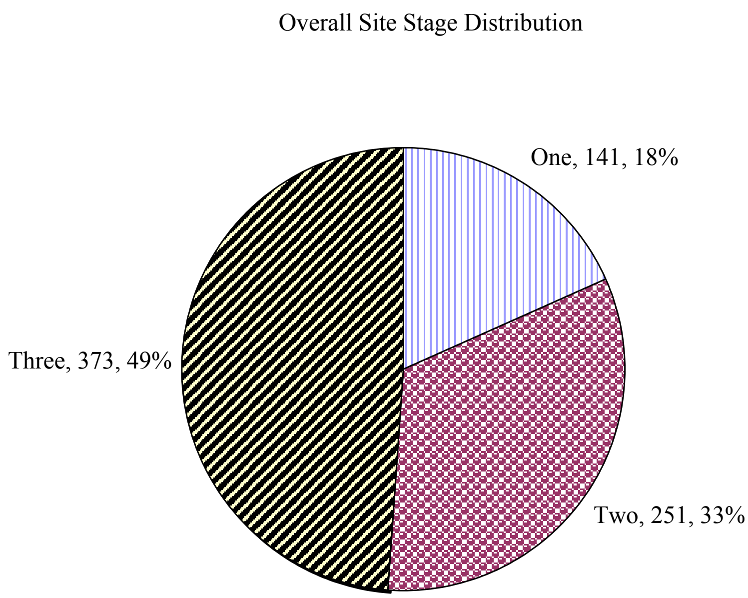


Figure 25: Overall Site Stage of Removal Distribution

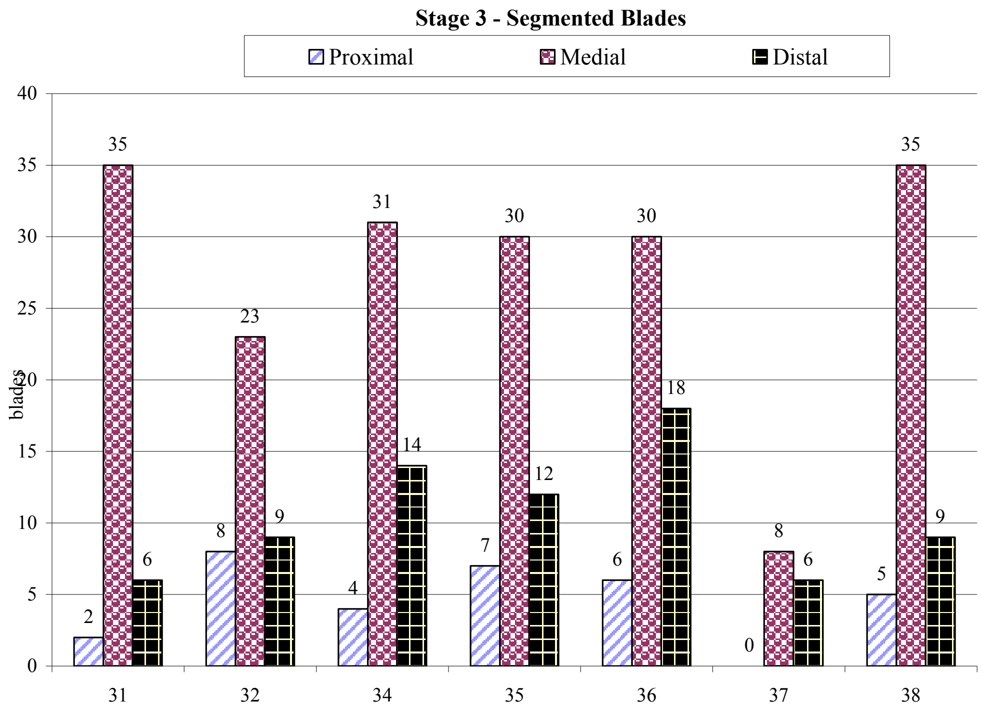


Figure 26: Stage 3 Segmented Blades

To best understand these patterns, the data were then further filtered down to the stage three blades (the true prismatic blades found at each operation) and the medial sections were compared to each other. This filtered sample brought forth an average width of 11.64 mm and a length of 19.18 mm, the standard deviation for width is 2.83 and for length is 8.40 mm. While there is some difference in lengths of the medial sections the widths are quite similar the standard deviation of 2.83 is very small considering the measurements are taken in millimeters (See Figure 27-28). The overall spread of width and length are presented in Tables 4 and 5. The largest range for both variables comes from Operation 34. There is only one complete blade out of 194 Stage 3 blades, again speaking to a preference of segmentation.

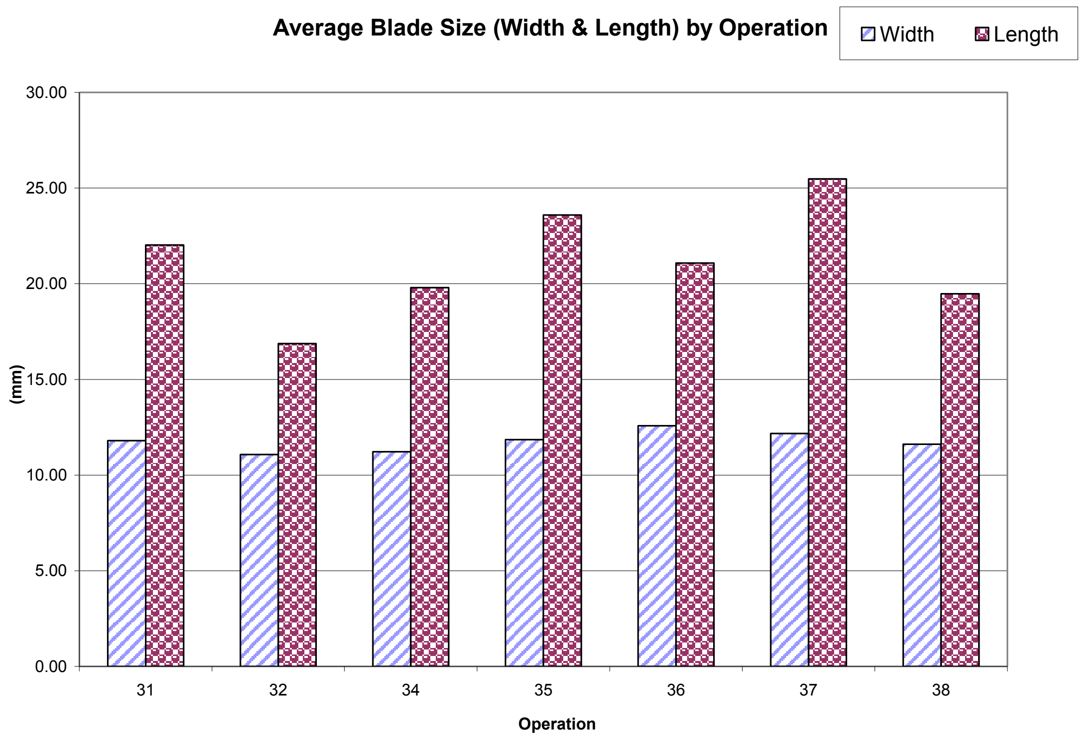


Figure 27: Comparison of Mean Width and Length across Operations

The use wear on the blades themselves was highly variable. Some had striations going in a single direction, while others only had edge damage going towards the dorsal face center of the blade (scraping motion) and others had edge damage in both directions. Even here the extent varied with some minimal and others so extreme that the entire edge was completely rounded. This implies that blades were not considered in the past as single use tools. Instead they may have served multiple functions throughout their use life. Perhaps used as cutting implements that when dulled were retouched through percussion and then employed in other household tasks.

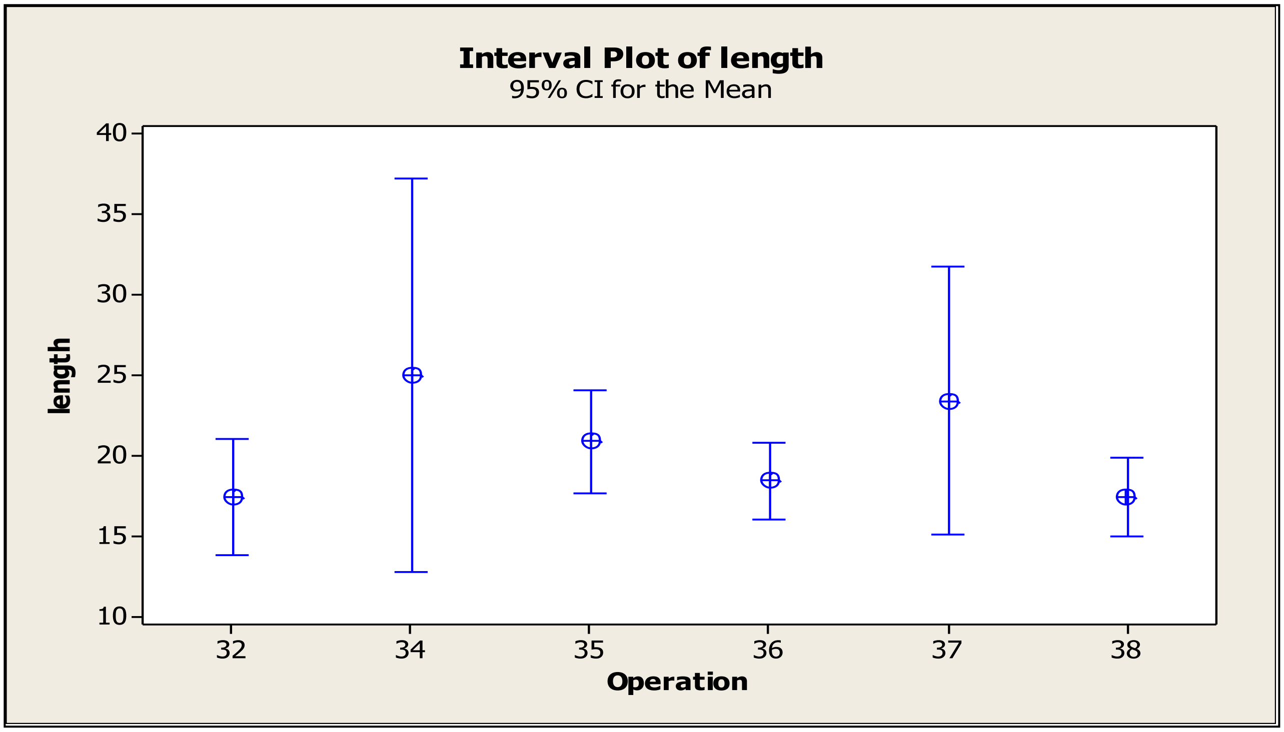


Figure 28: Interval Plot of Length compared across Operations

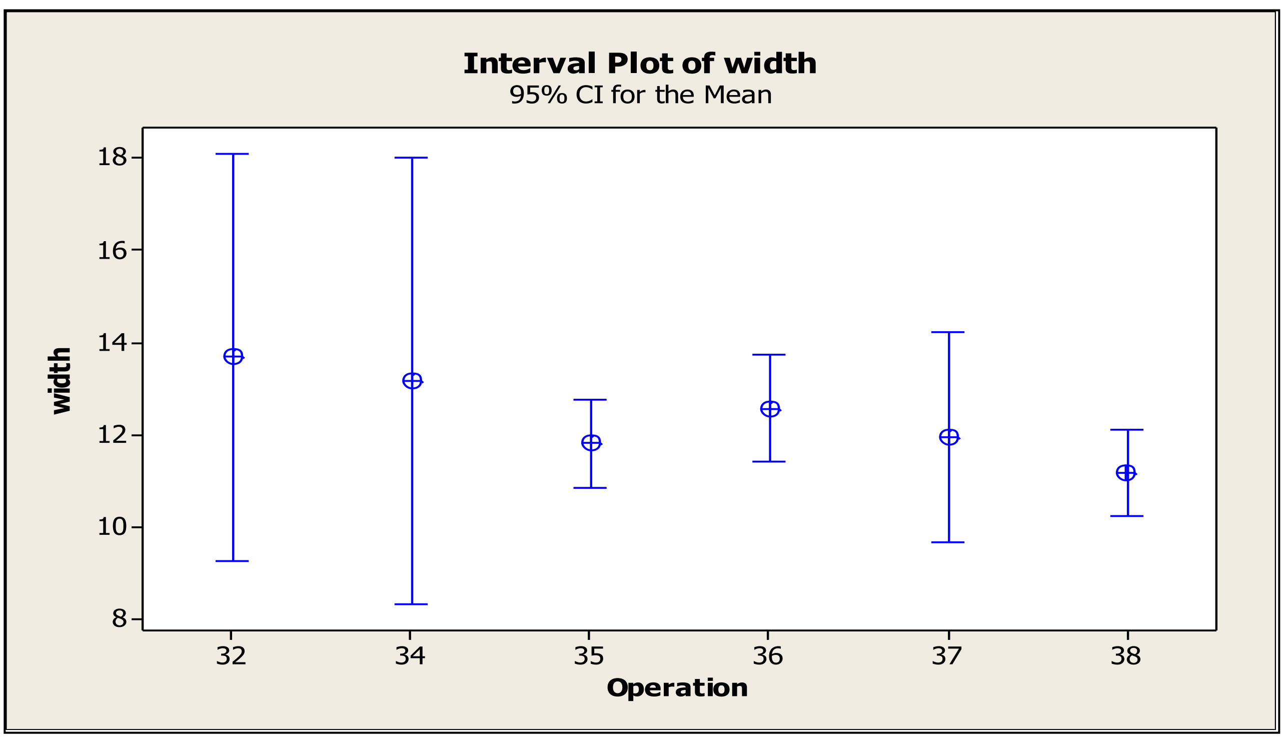


Figure 29: Interval Plot of Width compared across Operations

Obsidian Sources

The exact uses of the blades themselves are unknown, yet it is certain that they served some important function at the household level. All house-lots encountered at La Blanca to date regardless of how low or high of rank, held prismatic blades. Naturally some households have more than others, and one wonders what factors limited the access to the blades or raw material for their production. In terms of raw material (refer to Figure 30), the percentage of material that appears to be making its way to the site with any cortex at all is very low (4.38%) and of this percentage none is completely cortical (meaning an artifact with a dorsal face completely covered in cortex)(Table 4).

Operation	# of Blades	# > 0% Cortex	Percentage
31	124	2	1.61%
32	148	7	4.73%
34	138	6	4.35%
35	145	6	4.14%
36	112	4	3.57%
37	46	3	6.52%
38	109	8	7.34%
Total/ Site Average	822	36	4.38%

Table 4: Distribution of Blades with Cortex

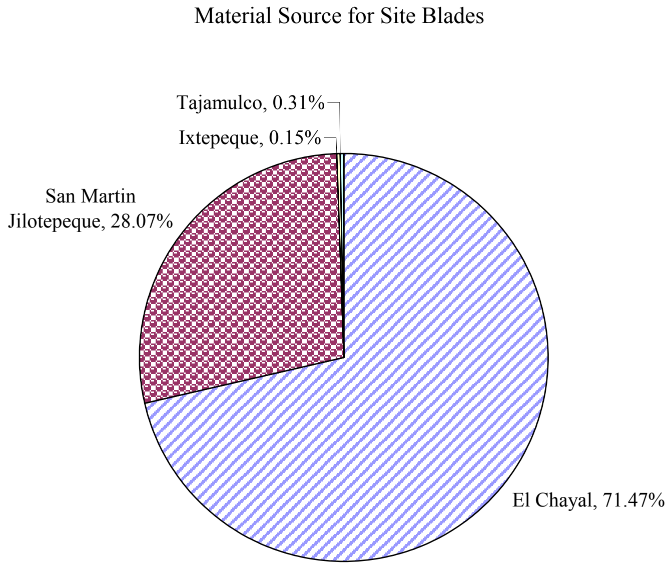


Figure 30: Material Sources for Site Blades

This lack of cortex is understandable, as the most desired volcanic sources for raw obsidian (El Chayal, San Martin Jiltotepeque, and Ixetepeque) are all within 2-3 days walking distance (150-250 km). Regardless whether the material is being traded in or sought directly by the inhabitants of La Blanca, it would be inefficient to carry material as anything more than a blank, which would have the majority of the cortex removed at the quarry. Even with this consideration it was anticipated that more cortex bearing pieces would be present at the site had there been direct access to the quarries.

Operation	Number of Levels	El Chayal Count	El Chayal Weight	San Martin Count	San Martin Weight	Tajamulco Count	Tajamulco Weight	Ixetepque Count	Ixetepeque Weight
Totals for 31	41	723	313.9	97	57.2	23	22.4	0	0
		85.77%	79.77%	11.51%	14.54%	2.73%	5.69%	0.00%	0.00%
Totals for 35	30	428	339.7	49	37.9	0	0	0	0
		89.73%	89.96%	10.27%	10.04%	0.00%	0.00%	0.00%	0.00%
Totals for 36	38	654	372.1	146	105.5	28	31	6	6
		78.42%	72.31%	17.51%	20.50%	3.36%	6.02%	0.72%	1.17%
Totals for 37	13	334	185.3	104	73.9	0	0	0	0
		76.26%	71.49%	23.74%	28.51%	0.00%	0.00%	0.00%	0.00%
Totals for 38	29	656	393	130	93.8	39	52.2	0	0
		79.52%	72.91%	15.76%	17.40%	4.73%	9.68%	0.00%	0.00%

Table 5: Breakdown of Overall Obsidian Sourcing by Count, Weight and Percentage

Of the blades that could be visually sourced and the 98 that were chemically sourced through the chemical process XRF at Cal State Long Beach by Dr. Neff's team, the result is that 71.47% of the blades are of the volcanic source El Chayal, which is roughly 3 days walking distance from La Blanca. The majority of the remaining percentages of obsidian sourcing for the blades came from San Martin Jilotepeque that represented 28.07 % of the blades from the site. Refer to Table 5 for complete data breakdown by operation.

Obsidian Distribution at La Blanca

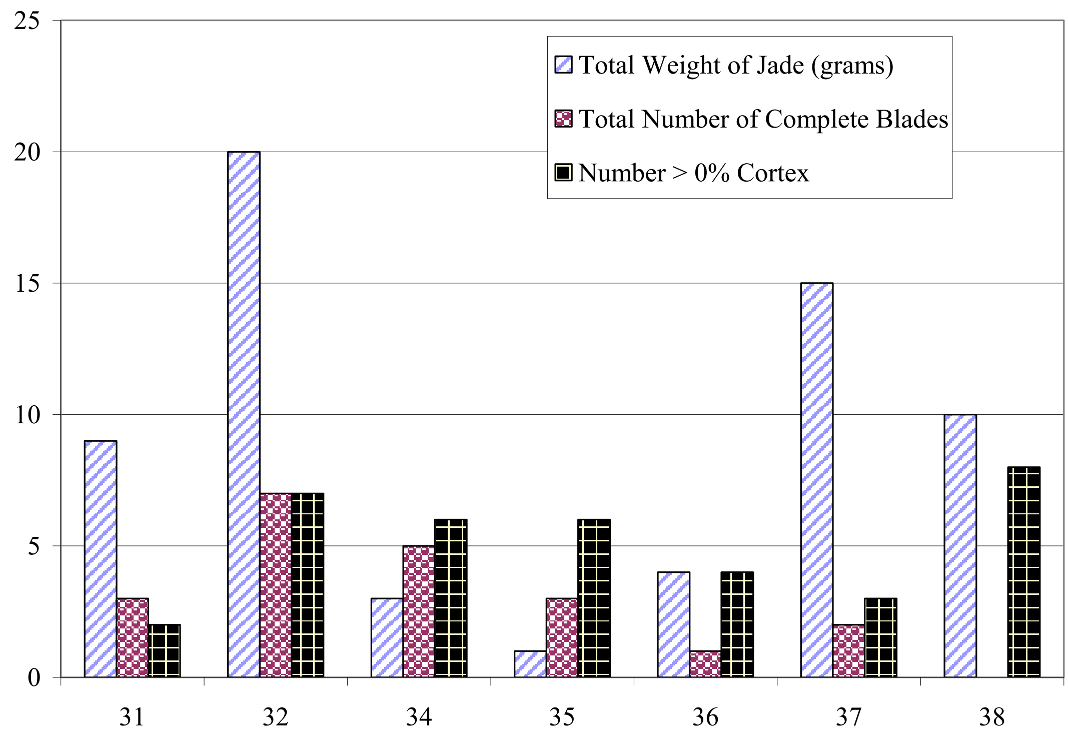


Figure 31: Comparison of Blades to Jade Weight (Jade Data from Love 2011)

Finally, there are many markers within the artifact classes discovered at La Blanca that assist in finding differences among the house lots and by extension social distinctions amongst the individuals that resided there in the past. Overall jade density is seen as a marker of social wealth. It is assumed higher amounts of jade in an operation should correlate with a higher social/political ranking. Table 13 compares some aspects of the blade collection from La Blanca to the gross weight in grams of jade from the same operations.

The surprising reality is that there is no correlation that can be drawn between these two factors. The correlation between jade weight and overall number of blades per operation is -0.29, the correlation between jade weight and complete blades per operation is 0.34, the correlation between jade weight and blades with cortex per operation is 0.04, and the correlation between jade weight and proximal segments of blades per operation is -0.23. The blade counts are skewed due to the low number of blades overall for Operation 37. Converting the interval data to ranked data shows no change. Ranked correlation between the total number of blades and the jade weight is now -0.21, and a ranked correlation between the total number of complete blades and jade weight is an equally non-existent 0.07. The only ranking that actually matches up is that of Operation 32, considered the wealthiest house lot, (and ranking as number one in terms of Jade with 20 grams) also ranks as number one in total blade count. However this is slightly misleading as it is only 3 blades ahead of Operation 35 which ranks dead last (7th) in terms of jade weight.

Summary of Data Analysis

The analysis of the obsidian artifact class at the Middle Formative site of La Blanca has illuminated some interesting statistics about households from this time. All operations sampled to this date have significant amounts of obsidian present. All households contain evidence for both industries present at the site. Overall, prismatic blades represent 20% of all lithic artifacts encountered at the site. The major household production occurring at the site was that of expedient technology particularly bi-polar. Bi-polar made up 90% of the weight for the total lithic artifact class. These two industries were not entirely exclusive; there was a propensity to bipolar the blades themselves as a way of sharpening dulled edges (this affected 13.51% of all blades).

Future excavations at the site can expect to see around 129 blades per Middle Preclassic residence. In terms of prismatic blade production, there was some evidence at the site, yet all of the examples were small and from fully developed stage 3 cores. At this point it can be considered that there is no evidence of craft specialization in regards to lithics at the household level for this time period at La Blanca. The factors limiting obsidian production and consumption during the Formative time period at La Blanca were not unique to individual household level but instead affected the site as a whole.

Furthermore, the consumption rates as expressed through the modification of the obsidian blades at these households were high. Almost all of the blades were being segmented into rectangular sections. Less than 3% of the blades found site-wide were complete. The majority of the blades encountered were medial segments (54.28%) and of these there was a preference towards stage 3 blades (46.06% of the segmented blades). The consumption data shows that overall the blades present at the site are highly refined stage 3 blades with little variation in the width of the segmented blades. This may imply that many of the blades are coming from the same parent core, rather than many individual cores or knapping instances.

Finally, the overall distribution of blades shows low variation amongst the households regardless of rank. Utilizing jade as a marker of status, there was close to zero correlation between rank of the household and the type of obsidian artifacts found there. The site seems to be using the same sources at a typical rate through time, with preference being for obsidian from El Chayal (70%). The cortex present at the site is very low (4.38%) and signifies that obsidian reaching the site is not coming directly from the quarries and that the blades may have been produced somewhere off-site.

CHAPTER VII: CONCLUSIONS

The evidence from the lithic assemblage at the Middle Preclassic site of La Blanca debunks several theoretical assumptions outlined by social complexity theory. Due to the overall attributes of this complex chiefdom it was believed that several economic patterns would be present in the household data. The most significant finding is that correlations between craft specialization and social complexity are not as strong as theory would predict.

Obsidian is a basic staple for household domestic functions. It is a prime example of an economic commodity as well as a subsistence necessity. This means that for economic purposes, each and every domestic residence would have to consider the constraints of supply and demand on tool-stone. As noted in Chapter 6, evidence for blade production is extremely low. The reality is that if production was occurring at the site it was most likely in a non-domestic context, a workshop area or completely off-site, with the finished products being brought into the site, particularly due to the propensity of late stage blades and the low levels of cortex.

What does this mean for the discussion on the topic of craft specialization? The primary evidence of crafting was the prismatic blades as they represented a unique item that was easily distinguishable from the common percussion flakes. It has also been noted that the production of prismatic blades is specialized and was not widely available to the inhabitants of La Blanca.

Based on previous findings, the other artifact classes such as jade, fauna, architecture, and ceramics it is also possible to separate the residents of La Blanca into a clear economic hierarchy (Love 2013). The social evolutionary framework anticipated that through the increased organization at the site and the presence of a specialized industry there was an expectation of some sort of concentrated crafting at the site. Instead to date there is neither an organized workshop nor any domestic specialization occurring at the individual houses in the form of a cottage industry (Hirth 2010).

Furthermore, the critiques of the theory of craft specialization made by Hirth and outlined in Chapter Two, were further strengthened by the evidence from La Blanca. The first was in regards to time, from the inception of La Blanca, the obsidian blades were already present. The arguments for part-time/ full-time crafting dichotomy were made mute, as the data showed neither evidence of production nor unequal consumption rates across the site. According to the second point there is also no evidence that through the 300 year reign of La Blanca were the elites able to increase the production nor acquisition of tool-stone to the site. Also refuted is the third misconception of assuming that complex societies with developed elite hierarchy always had attached craft producers. If this had been the case there would have been some distinguishing factor among the lithic assemblages of elite and non-elite households, to provide evidence of increased access on the part of the former.

What the data did show was that La Blanca had a complex economic interaction network reaching far in all directions to attain much desired trade goods. The day to day use of obsidian inspired social interactions between La Blanca and the far flung obsidian sources in the search of workable material, even if the material was not intended for the production of blades the majority of the obsidian waste (71.47%) still originated at the volcanic sources of El Chayal. This desire to attain high quality obsidian from far sources such as El Chayal and San Martin Jilotepeque still show that as a group they required good quality tool-stone.

The lithic evidence of each individual house lot is not that of production for trade or sale. It is more likely that these households were consumers of obsidian and the debitage they generated was for their own personal in-house use. The high rate of discard of obsidian blades and their extreme levels of use, when found in the domestic contexts at La Blanca, show that they were very much a part of the toolset used in the home during the Preclassic time period. While the broader obsidian class did not march in line with the rest of the evidence pointing to economic stratification at the site, it instead highlighted another line of evidence: site-wide economic restrictions.

The economic aspect comes into play when considering that blade technology by its very nature is a highly efficient use of raw material. For instance, if a flint knapper has the skill and knowledge to produce high quality obsidian blades, then they should be able to do so indefinitely, solely depending on time and the amount of raw material available. Once an obsidian core is up and running, barring any mishaps or mistakes, blades can be continually removed until the core itself is exhausted. Thus, when utilizing blades for a manual task (e.g., cutting), the edge naturally begins to wear on the blade. When this happens, the crafter should be able to simply pick up a fresh blade and continue work. In essence, blades should be considered widely disposable, since they can be produced in the hundreds.

The evidence presented from La Blanca shows the opposite in regards to blade disposability. The ancient people here (regardless of rank), attempted to eek out every last potential cutting edge from the obsidian blades. What is most likely occurring is that the people of La Blanca are acquiring the blades from some secondary source, either trade, purchase, or as gifts; whichever the method, the amount received is not sufficient for the domestic activities they are conducting. As such they are circumnavigating this lack of usable blades through the extension of the use-life of the blades themselves and the high use of bi-polar/expedient technology to develop basic flakes for quick cutting edge.

Since these factors are not stratified amongst the houses, there is really no other option but to attribute it to a site-wide economic restriction. By whatever method the obsidian is reaching La Blanca from the sources, either through direct trade, down the line trading or direct attainment, there was an inadequate influx of tool-stone to service the needs of the populace regardless of rank.

La Blanca may be a counter example to the simplified social evolutionary model. The site shows evidence of many of the hallmarks of increased complexity in the forms, of hierarchical social groups, centralized power, and political cycling (Love 2002a). Yet there is little evidence of economic resource control in regards to lithics on a site-wide basis. What effect did the increased complexity of a chiefdom level society have on the lithic industry at the domestic level? It was anticipated that it would promote the development of household production to in turn generate surpluses that could facilitate the accumulation of wealth. Instead the people of La Blanca regardless of rank were content (or perhaps restricted) to maintaining a more consumer basis in regards to tool-stone. This should also promote discussion of the assumption from political economy that a Mesoamerican chiefdom level society would promote the generation of surpluses at the household level (Earle 1997).

Moving Forward

In conclusion, household archaeology is still strongly considered as a viable methodology for exploring at all societal levels the economic and political power relations of the people of the past. Through the analysis of household data, we are able to attribute changes through time not only on a local level but also cumulatively at the regional level. Naturally as most projects go many more questions were raised than were answered. What exactly were the power dynamics between La Blanca and other Preclassic sites? Through the evidence of the obsidian it is noted that trade was moving along the east to west corridors between the pacific and the interior of Central America. How many locales were involved and what other objects may have been "piggybacking" along with the obvious trade goods of jade and obsidian? Where was the production of the fine obsidian blades being conducted and by whom and how many, and what might have been their connections to the social hierarchy of La Blanca? Further analysis of material of the Formative Period from Mesoamerica will provide much needed insight into these types of processes and would help to produce a more defined understanding of the long history of swelling complexity in the region.

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APPENDIX

OBSIDIAN BLADES - LA BALANCA, SAN MARCOS, GUATEMALA

Operation Num.	Sub. Oper.	Level	Elem.	Form Num.	Artifact	Part	Location	Stage of Removal	Complete Blade	Number of Dorsal Ridges	(%) Cortex	Width (mm)	Length (mm)	Thickness (mm)	Platform Modification	Bulb of Percussion	Weight (grams)	Blade Modification	Material Source
31	1	1			78	middle	core face		no		0%	18.22	13.04	3.77			0.9	bipolared	El Chayal
31	1	6			151	middle	core face	1	no	1	0%	9.75	23.91	5.83		percussion	0.9	segmented	El Chayal
31	1	10			64	proximal	core face	1	no	2	0%	9.99	21.90	3.02	isolated	punch	0.6	segmented	El Chayal
31	1	12			56	middle	core face	2	no	2	0%	9.12	15.59	3.26			0.5	segmented	El Chayal
31	1	12			57	middle	core face	2	no	2	0%	11.22	11.02	3.02			0.3	segmented	El Chayal
31	1	14			58	proximal	core face	1	no	2	0%	10.10	17.61	2.12	unprepared	acute/pressure	0.4	segmented	El Chayal
31	1	16			43	middle	core face	2	no	2	0%	17.09	19.58	3.12			1.5	segmented	El Chayal
31	1	19			61	middle	core face	1	no	2	0%	14.18	16.46	2.76			0.7	segmented	El Chayal
31	1	19			62	middle	margin/lateral	2	no	2	0%	9.76	38.27	3.07			1.5	segmented	El Chayal
31	1	20			40	proximal	core face	2	no	2	0%	12.07	58.18	4.09	isolated	acute/pressure	3.0	segmented	El Chayal
31	2	3			51	middle		2	no	2	0%	9.35	22.87	4.11			0.8	bipolared	El Chayal
31	2	5			49	middle		3	no	1	0%	9.59	17.61	2.98			0.5	segmented	San Martin Jilotepeque
31	2	5			51	middle			no		0%	10.15	33.27	5.40			1.5	burinated	San Martin Jilotepeque
31	2	6			115	distal	margin/lateral	2	no	1	0%	7.05	21.23	7.02			0.4	segmented	San Martin Jilotepeque
31	2	7			122	middle	core face	2	no	2	0%	13.58	20.02	2.06			0.7	segmented	San Martin Jilotepeque
31	2	10			136	middle	core face	2	no	2	0%	11.52	20.87	4.13			1.1	burinated	El Chayal
31	2	11			222	middle	core face	2	no	1	0%	11.77	15.21	3.18			0.6	segmented	El Chayal
31	2	13			292	distal	margin/lateral	3	no	2	0%	14.32	47.78	3.46			3.0	segmented	El Chayal
31	2	13			289	middle	core face	2	no	1	0%	11.89	21.57	5.22			1.6	segmented	El Chayal
31	2	13			293	distal	core face	1	no	1	0%	19.92	36.66	9.79		percussion	4.4		El Chayal
31	2	13			290	distal	margin/lateral	2	no	2	0%	14.21	13.44	2.41			0.5		San Martin Jilotepeque
31	2	14			311	middle	core face	2	no	2	0%	9.55	23.54	2.60			0.6	segmented	San Martin Jilotepeque
31	2	14			312	middle	core face	3	no	2	0%	11.38	25.18	2.36			1.0	segmented	El Chayal
31	2	14			315	distal	core face	2	no	2	0%	12.14	29.42	2.70			1.2	segmented	El Chayal
31	2	14			309	middle	core face	1	no	1	0%	15.02	14.15	4.75			1.0	segmented	El Chayal
31	2	15			78	middle	core face	3	no	2	0%	7.90	19.04	2.86			0.6	split	El Chayal
31	2	15			76	proximal	core face	1	no	1	0%	12.60	14.72	3.44	isolated	acute/pressure	0.5	segmented	El Chayal
31	2	15			79	distal	core face	2	no	2	0%	10.12	13.42	2.13			0.3	segmented	El Chayal
31	2	15			77	middle	core face	3	no	1	0%	8.76	10.22	1.87			0.2	segmented	El Chayal
31	2	16			115	proximal	core face	2	no	2	0%	12.00	33.17	2.85	crushed	acute/pressure	1.9	segmented	El Chayal
31	2	17			50	middle	core face	1	no	1	45%	8.52	16.45	4.00			0.7	segmented	San Martin Jilotepeque
31	2	17			52	middle	core face	3	no	1	0%	8.23	26.53	2.68			0.5	segmented	El Chayal
31	3	5			105	middle	core face	2	no	3	0%	11.04	27.26	2.50			0.3	segmented	San Martin Jilotepeque
31	3	7			145	middle	core face	2	no	1	0%	14.80	22.49	3.22			1.3	segmented	El Chayal
31	3	7			146	middle	margin/lateral	1	no	1	0%	12.00	14.60	2.08			0.3	segmented	El Chayal
31	3	8			131	proximal	core face	1	no	1	0%	11.85	12.34	2.29	crushed	acute/pressure	0.3	segmented	El Chayal
31	3	8			132	middle	core face	2	no	2	0%	13.22	16.43	1.49			0.3	segmented	El Chayal
31	3	8			133	middle	core face	2	no	2	0%	19.43	16.35	5.19			1.9	segmented	El Chayal

Operation Num.	Sub. Oper.	Level	Elem.	Form Num.	Artifact	Part	Location	Stage of Removal	Complete Blade	Number of Dorsal Ridges	(%) Cortex	Width (mm)	Length (mm)	Thickness (mm)	Platform Modification	Bulb of Percussion	Weight (grams)	Blade Modification	Material Source
31	3	8			134	distal	core face	2	no	1	0%	8.90	13.00	2.65			0.1	segmented	El Chayal
31	3	9			89	middle	core face	3	no	1	0%	10.60	6.30	2.30			0.2	bipolared	El Chayal
31	3	9			90	distal	margin/lateral	3	no	2	0%	10.27	18.94	1.99			0.2	segmented	San Martin Jilotepeque
31	3	10			94	middle	core face	3	no	2	0%	11.42	26.42	3.34			0.9	bipolared	El Chayal
31	3	12			94	middle	core face	2	no	1	0%	11.90	13.47	2.76			0.4	segmented	El Chayal
31	3	12			95	middle	margin/lateral	2	no	2	0%	13.96	22.03	2.20			1.1	segmented	San Martin Jilotepeque
31	3	12			96	proximal	core face	2	no	2	0%	14.12	27.20	2.80	crushed	acute/pressure	1.3	segmented	San Martin Jilotepeque
31	3	12			97	middle	core face	1	no	1	0%	9.13	20.78	3.00			0.5	segmented	El Chayal
31	3	13			88	proximal	core face	2	no	1	0%	12.83	53.27	5.02	crushed	punch	3.4	segmented	El Chayal
31	3	13			89	middle	core face	3	no	1	0%	9.67	7.60	2.21			0.1	segmented	El Chayal
31	3	13			90	middle	core face	3	no	2	0%	8.74	11.49	1.57			0.1	segmented	San Martin Jilotepeque
31	3	14			58	middle	core face	3	no	1	0%	16.58	15.67	2.65			0.7	segmented	San Martin Jilotepeque
31	3	14			59	middle	core face	2	no	2	0%	12.20	16.94	2.23			0.6	segmented	San Martin Jilotepeque
31	3	15			53	middle	core face	3	no	2	0%	12.81	40.03	2.73			2.2	segmented	El Chayal
31	3	15			54	middle	core face	3	no	3	0%	13.73	13.38	2.56			0.6	segmented	El Chayal
31	3	15			55	middle	core face	2	no	1	0%	8.22	14.08	1.87			0.2	bipolared	El Chayal
31	3	16			68	distal	core face	1	no	1	0%	12.20	21.53	1.90			0.5	segmented	El Chayal
31	3	16			69	middle	core face	2	no	2	0%	10.67	19.43	2.37			0.5	segmented	El Chayal
31	3	18	A		41	proximal	core face	1	no		0%	14.45	11.07	3.18	unprepared	percussion	0.5	segmented	El Chayal
31	3	18	A		42	middle	core face	3	no	1	0%	7.56	16.98	2.00			0.3	segmented	El Chayal
31	3	19	B		54	middle	core face	3	no	2	0%	17.54	25.90	3.50			2.2	segmented	El Chayal
31	4	2			68	distal	core face	1	no	1	0%	17.33	16.34	4.56			1.0	segmented	San Martin Jilotepeque
31	4	3			53	middle	core face	2	no	2	0%	13.31	27.21	3.03			1.5	segmented	San Martin Jilotepeque
31	4	4			67	distal	core face	3	no	3	0%	9.17	30.31	4.47			1.2	segmented	El Chayal
31	4	4			62	distal	margin/lateral	3	no	2	0%	12.85	17.87	2.07			0.6	segmented	San Martin Jilotepeque
31	4	5			77	middle	core face	3	no	1	0%	9.27	22.63	2.61			0.4	segmented	San Martin Jilotepeque
31	4	7			147	distal	core face	1	no	1	0%	13.17	16.04	2.61			0.3	segmented	El Chayal
31	4	7			146	middle	core face	3	no	2	0%	11.19	26.05	2.91			1.0	segmented	El Chayal
31	4	9			167	proximal	margin/lateral	2	no	1	0%	14.34	20.09	3.84	unprepared	percussion	1.0		El Chayal
31	4	9			168	proximal	core face	1	no	1	0%	12.50	33.96	3.96	isolated	acute/pressure	1.7	segmented	El Chayal
31	4	12			190	middle	core face	3	no	1	0%	10.67	10.24	2.08			0.3	segmented	San Martin Jilotepeque
31	4	12			191	middle			no		0%	10.29	10.89	3.32		percussion	0.3	bipolared	San Martin Jilotepeque
31	4	12			192	proximal	core face	2	no	1	0%	10.87	19.51	3.11	unprepared	punch	0.7	segmented	San Martin Jilotepeque
31	4	12			193	middle	core face	1	no	1	0%	9.39	22.57	5.50		percussion	0.9	bipolared	San Martin Jilotepeque
31	4	12			194	middle	core face	3	no	1	0%	12.83	16.63	2.77			0.5	bipolared	San Martin Jilotepeque
31	4	13			192	proximal	margin/lateral	1	no	2	0%	13.26	29.79	4.36	unprepared	percussion	1.3		El Chayal
31	4	13			193	middle	core face	2	no	2	0%	12.09	14.42	1.69			0.4	segmented	El Chayal
31	4	13			194	middle	margin/lateral	2	no	2	0%	10.22	21.28	1.66			0.5	segmented	San Martin Jilotepeque
31	4	13			195	proximal	margin/lateral	1	no	2	0%	10.01	16.00	2.23	unprepared	percussion	0.3	bipolared	El Chayal
31	4	13			196	middle	core face	2	no	1	0%	11.06	14.39	3.37			0.6	segmented	San Martin Jilotepeque

Operation Num.	Sub. Oper.	Level	Elem.	Form Num.	Artifact	Part	Location	Stage of Removal	Complete Blade	Number of Dorsal Ridges	(%) Cortex	Width (mm)	Length (mm)	Thickness (mm)	Platform Modification	Bulb of Percussion	Weight (grams)	Blade Modification	Material Source
31	4	13			197	middle	core face	2	no	2	0%	11.46	16.79	2.44			0.5	bipolared	San Martin Jilotepeque
31	4	13			198	middle	margin/lateral	1	no	1	0%	10.84	10.83	3.34			0.3	segmented	El Chayal
31	4	13			200	middle	core face	3	no	2	0%	8.76	10.79	1.80			0.3	segmented	El Chayal
31	4	15			106	proximal	core face	3	no	2	0%	13.55	20.92	3.61	isolated	punch	1.3	segmented	San Martin Jilotepeque
31	4	15			108	middle	margin/lateral	2	no	1	0%	14.29	13.23	3.10			0.6	bipolared	El Chayal
31	4	15			109	middle	core face	3	no	1	0%	6.28	13.04	2.47			0.1	bipolared	El Chayal
31	4	16			86	distal	margin/lateral	2	no	1	0%	12.86	25.86	3.43			0.8	segmented	El Chayal
31	4	16			87	middle	core face	3	no	2	0%	10.90	21.43	2.68			0.8	segmented	San Martin Jilotepeque
31	4	16			88	middle	core face	3	no	1	0%	7.22	20.69	2.90			0.4	bipolared	El Chayal
31	4	16			126	proximal	core face	1	no	1	0%	13.53	20.87	3.37	isolated	acute/pressure	0.9	bipolared	San Martin Jilotepeque
31	5	3		1	77	middle	core face	1	no	1	0%	12.62	15.17	4.55			0.7	segmented	El Chayal
31	5	4		39	146	distal	margin/lateral	2	no	1	0%	6.46	26.00	2.47			0.4	bipolared	El Chayal
31	5	4		21	147	proximal	core face	1	no	1	0%	14.50	20.78	3.16	unprepared	percussion	1.0	segmented	El Chayal
31	5	4		1	148	middle	core face	3	no	2	0%	13.50	20.81	2.99			1.1	segmented	El Chayal
31	5	4		1	149	middle	core face	1	no	1	0%	13.81	17.17	4.85			0.8	segmented	El Chayal
31	5	5		1	107	distal	margin/lateral	2	no	2	0%	13.64	47.62	3.50			2.2	segmented	San Martin Jilotepeque
31	5	5		1	108	middle	core face	3	no	1	0%	10.11	16.75	3.90			0.7	segmented	San Martin Jilotepeque
31	5	5		1	109	distal	core face	2	no	2	0%	14.75	23.70	4.11			1.5	segmented	San Martin Jilotepeque
31	5	6		1	95	middle	core face	3	no	2	0%	12.86	18.94	2.34			0.6	segmented	San Martin Jilotepeque
31	5	8			70	middle	core face	3	no	1	0%	14.94	5.12	4.42			0.1	segmented	El Chayal
31	5	8			71	distal	core face	1	no	1	0%	5.57	14.81	2.13			0.1		El Chayal
31	5	9			93	middle	core face	3	no	1	0%	12.17	15.69	3.50			0.6	bipolared	San Martin Jilotepeque
31	5	9			94	middle	margin/lateral	2	no	1	0%	9.58	12.24	2.43			0.2	segmented	San Martin Jilotepeque
31	5	9			95	distal	core face	3	no	2	0%	13.72	29.45	3.33			1.6	segmented	El Chayal
31	5	11			85	middle	core face	3	no	1	0%	7.94	23.18	2.06			0.4	segmented	El Chayal
31	5	11			86	proximal	core face	3	no	2	0%	12.43	5.03	3.26	crushed	acute/pressure	0.9	segmented	El Chayal
31	5	11			87	proximal	core face	2	no	2	0%	10.79	34.96	2.94	crushed	acute/pressure	1.5	segmented	El Chayal
31	5	12			93	distal	core face	1	no	1	0%	3.63	30.90	2.12			0.2		El Chayal
31	5	12			94	middle	margin/lateral	2	no	2	0%	12.81	22.49	2.48			1.1	segmented	El Chayal
31	5	14			43	middle	core face	3	no	2	0%	16.19	16.23	1.86			0.7	segmented	El Chayal
31	5	R-48			39	complete	core face	3	yes	2	0%	16.79	86.43	3.88	isolated	punch	6.5		El Chayal
31	6	1		21	189	complete	margin/lateral	1	yes	1	0%	10.24	36.02	2.47	unprepared	percussion	0.8		El Chayal
31	6	1			190	proximal	core face	2	no	1	0%	14.55	18.97	3.12	isolated	acute/pressure	0.9	segmented	El Chayal
31	6	1			191	distal	margin/lateral	2	no	1	0%	9.74	23.29	3.31			0.5	segmented	San Martin Jilotepeque
31	6	1			192	middle	core face	3	no	3	0%	10.91	41.64	4.17			2.9	segmented	El Chayal
31	6	1			193	middle	core face	2	no	1	0%	10.64	34.23	2.68			1.1	segmented	San Martin Jilotepeque
31	7	1			358	middle	core face	3	no	2	0%	12.53	8.11	2.84			0.3	bipolared	San Martin Jilotepeque
31	7	1			359	distal	margin/lateral	3	no	2	0%	12.41	20.52	2.53			0.5	segmented	El Chayal
31	7	1			361	proximal	core face	2	no	2	0%	10.84	39.74	3.73	isolated	acute/pressure	1.9	segmented	San Martin Jilotepeque
31	7	1			360	middle	core face	3	no	2	0%	10.59	8.44	2.46			0.5	segmented	San Martin Jilotepeque

Operation Num.	Sub. Oper.	Level	Elem.	Form Num.	Artifact	Part	Location	Stage of Removal	Complete Blade	Number of Dorsal Ridges	(%) Cortex	Width (mm)	Length (mm)	Thickness (mm)	Platform Modification	Bulb of Percussion	Weight (grams)	Blade Modification	Material Source
31	7	3			53	middle	core face	3	no	1	0%	7.92	26.71	2.93			0.7	segmented	El Chayal
31	1	6			151	middle	core face	3	no	2	0%	12.69	18.87	2.24	none		0.7	segmented	El Chayal
31	1	5			130	complete	margin/lateral	2	yes	1	15%	13.59	31.31	2.63	raking	acute pressure	1.3		El Chayal
31	1	7			114	proximal	core face	1	no	1	0%	10.64	29.72	3.23	isolated	acute pressure	0.9	segmented	San Martin Jilotepeque
31	2	13			288	proximal	core face	1	no	2	0%	20.69	51.70	4.56	isolated	punch	4.9	segmented	San Martin Jilotepeque
31	2	13			293	middle	core face	3	no	2	0%	12.80	22.51	2.50			0.9	segmented	San Martin Jilotepeque
32	1	1		30	483	proximal	margin/ lateral sides		no	1	0%	17.67	11.05	3.30	unprepared	acute	0.5		
32	1	1		30	484	proximal	core face	3	no	1	0%	10.46	15.78	1.50	crushed	acute	0.3		
32	1	1		30	485	distal	margin/ lateral sides		no	2	0%	12.66	20.92	2.62			0.7		
32	1	1		30	486	distal	core face	3	no	2	0%	4.32	14.18	1.68			0.1		
32	1	1		31	487	middle		3	no	2	0%	7.20	10.51	2.80			0.5	bipolared	
32	1	1		21	488	complete	margin/ lateral sides	2	yes	2	0%	16.15	38.10	4.59	crushed	acute	0.1		
32	1	2		30	187	proximal	core face	3	no	1	0%	7.87	13.83	2.77	unprepared	acute	0.1	bipolared	
32	1	2		30	189	distal		3	no	1	0%	7.78	19.31	4.14			0.5	bipolared	
32	1	3		30	190	distal	margin/ lateral sides	3	no	1	50%	12.14	17.56	1.89			0.4		
32	1	4		30	103	middle	core face	3	no	2	0%	10.25	22.65	2.33			0.6		
32	1	5		30	114	proximal	core face	3	no	1	0%	12.05	14.32	2.32	unprepared	acute	0.6	segmented	
32	1	6		30	106	distal	margin/ lateral sides		no	1	0%	15.84	13.63	2.06			0.6		
32	1	7		31	84	distal	core face	3	no	3	0%	6.82	8.52	1.62			0.1		
32	1	10			151	middle	core face	3	no	1	0%	9.07	17.58	3.17			0.4		
32	1	10		30	152	middle	core face	3	no	2	0%	11.81	16.23	2.30			0.6	burinated	
32	1	10		30	154	middle		3	no	2	0%	11.66	11.84	2.94			0.3	segmented	
32	1	10		30	155	middle			no	2	0%	10.21	15.91	3.78			0.9		
32	1	10		39	156	middle	core face	3	no	1	0%	5.97	22.36	2.34			0.4	bipolared, segmented	
32	1	11		30	203	middle	core face	3	no	2	0%	13.28	13.27	3.17			0.5		
32	1	11		39	204	distal		1	no	1	25%	4.26	21.29	4.25			0.6		
32	1	12		21	110	proximal	core face	3	no	2	0%	11.05	9.99	2.37	unprepared	acute	0.5		
32	1	12		31	113	middle			no		0%	10.36	9.50	2.93			0.2	bipolared	
32	1	13			529	proximal	core face	3	no	1	0%	9.00	14.28	3.41	unprepared	acute	0.8		
32	1	13			531	distal			no	1	0%	8.88	7.09	2.23			0.1		
32	1	14			686	complete	margin/ lateral sides	1	yes	2	0%	11.26	25.01	3.61	crushed	acute	0.7		
32	3	1		23	142	distal		2	no	2	0%	6.47	16.46	2.51			0.1		El Chayal
32	3	1		28	135	distal	margin/ lateral sides	3	no	3	0%	10.06	30.80	6.07			1.2		El Chayal
32	3	1		23	129	proximal	margin/ lateral sides	2	no	2	0%	15.25	14.46	1.71	isolated	acute	0.3		El Chayal
32	3	3			87	proximal		2	no	1	0%	16.95	28.39	3.31	isolated	acute	1.7		El Chayal
32	3	4			151	middle		3	no	2	0%	8.96	11.16	2.75			0.3		El Chayal
32	3	6			154	distal	margin/ lateral sides	1	no	1	0%	14.32	13.53	3.57			0.9		El Chayal
32	3	7			117	distal		1	no	1	50%	7.94	15.33	2.46			0.1		El Chayal
32	3	7			120	complete	Back end of core	1	yes	2	0%	12.37	31.62	4.99	unprepared	percussion	1.7		El Chayal
32	4	2			89	proximal	core face	3	no	2	0%	13.48	11.17	2.82	unprepared	percussion	0.5		El Chayal

Operation Num.	Sub. Oper.	Level	Elem.	Form Num.	Artifact	Part	Location	Stage of Removal	Complete Blade	Number of Dorsal Ridges	(%) Cortex	Width (mm)	Length (mm)	Thickness (mm)	Platform Modification	Bulb of Percussion	Weight (grams)	Blade Modification	Material Source
32	4	5			198	middle		1	no	1	0%	16.20	36.82	4.82		percussion	2.8		
32	4	9			233	distal	core face	3	no	8	0%	9.21	17.02	5.10			0.8		El Chayal
32	4	13			87	proximal	core face	3	no	2	0%	10.47	12.46	2.77	isolated	acute	0.4		El Chayal
32	4	13			88	middle		1	no	1	0%	5.33	18.71	3.05			0.4	retouch	
32	4	14			185	distal	core face	3	no	7	0%	7.66	25.61	3.22			0.6		El Chayal
32	4	14			187	middle	core face	1	no	1	0%	4.52	21.31	0.15		percussion	1.6	retouch	El Chayal
32	4	14			188	proximal	core face	2	no	2	0%	4.72	4.19	1.92	isolated	acute	0.2		El Chayal
32	4	15			399	proximal	core face	2	no	3	0%	13.75	19.31	1.45	unprepared	acute	0.1		El Chayal
32	4	15			401	middle	margin/ lateral sides	1	no	1	50%	12.12	15.10	2.46			0.5		
32	4	16			466	proximal	core face	1	no	1	0%	15.15	20.81	3.85	isolated	percussion	1.0		El Chayal
32	4	16			467	complete	core face	3	yes	2	0%	6.90	11.04	3.58	crushed	percussion	0.4		
32	4	17			458	middle	margin/ lateral sides	1	no	2	0%	14.91	12.45	3.04			0.6		El Chayal
32	4	17			459	middle	margin/ lateral sides	2	no	1	0%	10.76	14.83	1.74			0.2		El Chayal
32	4	17			461	proximal	core face	1	no	2	0%	13.48	17.04	3.54	unprepared	percussion	0.9	retouch	
32	4	17			463	proximal	core face		no	1	0%	13.47	12.66	2.05	unprepared	acute	0.5		El Chayal
32	5	1			318	middle	core face	3	no	1	0%	10.86	9.00	2.20			0.3	burinated	El Chayal
32	5	1			319	distal	margin/ lateral sides	1	no	1	25%	9.99	18.60	2.23		percussion	0.6		
32	5	1			320	proximal		1	no	2	0%	13.28	20.05	3.15	unprepared	acute	0.7		
32	5	1			321	complete		1	yes	1	0%	13.88	17.57	4.41	unprepared	percussion	0.5		
32	5	2			96	distal	core face	3	no	2	0%	15.28	14.69	2.11			0.6		
32	5	2			97	distal	core face	2	no	2	0%	11.10	13.00	1.61			0.1		
32	5	4			93	complete	margin/ lateral sides	1	yes	2	25%	21.60	29.34	2.89	unprepared	percussion	2.1		
32	5	10			77	distal	core face	3	no	1	0%	7.72	9.07	1.35			0.1		El Chayal
32	5	10			78	middle			no	1	0%	9.14	16.76	1.58			0.3	bipolared	
32	5	10			79	middle			no	1	0%	12.14	15.23	2.58			0.4	bipolared	
32	5	10			82	proximal	core face	3	no	1	0%	9.04	17.78	1.51		acute	0.4		
32	5	10			83	middle			no	1	0%	3.28	17.52	2.33		percussion	0.2	bipolared	
32	5	10			84	middle	core face	3	no	1	0%	8.88	2.93	1.53			0.1		
32	5	11			66	middle			no		0%	11.17	10.59	2.26		percussion	0.4	bipolared	
32	5	11			69	complete	core face	3	yes	3	0%	5.98	12.64	1.92	unprepared	percussion	0.4		El Chayal
32	5	11			70	middle	core face	3	no	1	0%	14.27	8.04	2.37			0.3	bipolared	
32	5	11			71	middle	core face	3	no	1	0%	10.56	13.17	4.00			0.7	bipolared	
32	5	12			74	middle	core face	3	no	1	0%	9.26	3.83	2.75			0.1		
32	5	12			75	middle	core face		no		0%	8.41	5.91	2.21			0.1	bipolared	
32	5	12			77	distal	margin/ lateral sides	2	no	1	0%	11.04	11.22	1.87			0.1		
32	5	13			54	middle		2	no	1	0%	9.04	8.14	1.97			0.1	segmented	
32	5	13			55	distal		3	no	1	0%	10.84	10.28	2.55			0.2		
32	5	13			56	middle		3	no	1	0%	5.43	4.67	1.83			0.1	bipolared	El Chayal
32	5	14			73	middle	core face	2	no	1	0%	6.58	11.68	0.80			0.2	bipolared	
32	5	14			74	proximal		2	no	1	0%	14.03	9.00	2.10	isolated	acute	0.4		

Operation Num.	Sub. Oper.	Level	Elem.	Form Num.	Artifact	Part	Location	Stage of Removal	Complete Blade	Number of Dorsal Ridges	(%) Cortex	Width (mm)	Length (mm)	Thickness (mm)	Platform Modification	Bulb of Percussion	Weight (grams)	Blade Modification	Material Source
32	5	14			75	distal	core face	2	no	1	0%	8.25	20.96	2.94			0.4	segmented	
32	5	14			76	middle			no	1	0%	6.64	3.93	1.97			0.1	bipolared	
32	5	15			88	distal	core face		no	1	0%	12.56	12.74	2.56			0.4		
32	5	15			94	middle			no		0%	5.66	16.26	1.98		percussion	0.1	bipolared	
32	5	15			95	middle	core face	3	no	1	0%	7.50	3.33	2.87			0.2		
32	5	16	B		33	proximal		3	no	1	0%	10.97	5.71	3.99	unprepared	percussion	0.3	bipolared	
32	5	17			87	proximal	core face	2	no	1	0%	14.14	19.80	2.63	isolated	acute	0.6		
32	5	17			88	proximal	core face	3	no	1	0%	13.45	9.07	4.01	unprepared	percussion	0.6	segmented	
32	5	18			132	distal	core face	3	no	6	0%	8.09	32.36	5.32			1.5		
32	2	1			238	middle	core face	3	no	2	0%	12.95	26.14	2.86	none		1.3	segmented	El Chayal
32	2	1			239	proximal	core face	3	no	2	0%	9.34	23.11	2.68	raking	acute pressure	0.6	segmented	El Chayal
32	2	1			240	middle	core face	3	no	2	0%	14.71	7.93	2.65	none		0.4	bipolared	El Chayal
32	2	1			241	proximal	core face	3	no	2	0%	9.07	15.17	2.55	crushed	acute pressure	0.4	segmented	El Chayal
32	2	1			245	middle	core face	3	no	2	0%	8.73	19.02	2.78	none		0.4	bipolared, segmented	El Chayal
32	2	1			246	middle	core face	3	no	2	0%	16.14	16.38	3.19	none		0.9	segmented	El Chayal
32	2	1			247	distal	core face	3	no	3	5%	15.75	27.42	2.58	none		1.8	segmented	El Chayal
32	2	1			248	proximal	core face	3	no	2	0%	11.27	23.93	3.82	raking	acute pressure	1.2	segmented	El Chayal
32	2	1			249	distal	core face	3	no	1	0%	11.19	16.25	3.75	none		0.6	segmented	El Chayal
32	2	1			250	middle	core face	3	no	2	0%	13.11	16.23	2.93	none		0.7	segmented	El Chayal
32	2	1			251	distal	core face	1	no	1	0%	10.03	15.75	2.27	none		0.3	segmented	El Chayal
32	2	1			252	distal	core face	3	no	2	0%	12.03	26.24	3.98	none		1.6	segmented	El Chayal
32	2	1			253	middle	core face	3	no	2	0%	14.98	29.05	2.85	none		1.5	burinated, segmented	El Chayal
32	2	2			113	proximal	core face	3	no	1	0%	11.19	46.14	3.09	raking	acute pressure	1.6	segmented	El Chayal
32	2	2			114	middle	core face	3	no	2	0%	10.82	26.61	1.97	none		0.8	segmented	El Chayal
32	2	2			115	middle	core face	3	no	2	0%	11.53	19.84	3.04	none		0.7	segmented	El Chayal
32	2	2			116	middle	core face	3	no	2	0%	20.89	12.89	2.08	none		0.5	segmented	El Chayal
32	2	2			117	middle	core face	3	no	1	0%	12.84	11.38	3.26	none		0.4	segmented	El Chayal
32	2	2			118	middle	core face	3	no	1	0%	9.33	6.96	3.16	none		0.1	segmented	El Chayal
32	2	2			119	distal	core face	3	no	2	0%	8.91	11.81	2.13	none		0.2	segmented	El Chayal
32	2	2			120	middle	core face	3	no	1	0%	6.98	19.52	2.44	none		0.4	bipolared, segmented	El Chayal
32	2	4			184	middle	core face	3	no	2	0%	12.72	11.00	2.34	none		0.4	segmented	El Chayal
32	1	1			482	middle	core face	3	no	3	0%	7.95	30.45	2.39	none		0.7	segmented	El Chayal
32	1	1			483	middle	core face	3	no	2	0%	8.41	12.40	1.61	none		0.3	segmented	El Chayal
32	1	1			484	middle	core face	3	no	2	0%	10.24	12.67	3.26	none		0.4	segmented	El Chayal
32	1	1			485	distal	core face	3	no	5	0%	24.90	8.08	2.52	none	acute pressure	0.5	segmented	El Chayal
32	1	2			127	proximal	core face	3	no	1	0%	9.14	18.05	2.06	unprepared	acute pressure	0.3	segmented	El Chayal
32	1	2			188	proximal	core face	1	no	1	0%	11.32	22.70	3.39	isolated	punch	0.9	segmented	El Chayal
32	1	2			189	middle	core face	3	no	1	0%	9.40	5.49	2.24	none		0.1	bipolared	El Chayal
32	1	2			190	distal	core face	3	no	2	0%	11.72	17.63	2.76	none		0.8	segmented	El Chayal
32	1	2			191	proximal	core face	2	no	2	0%	9.76	25.18	3.25	isolated	acute pressure	0.9	segmented	El Chayal

Operation Num.	Sub. Oper.	Level	Elem.	Form Num.	Artifact	Part	Location	Stage of Removal	Complete Blade	Number of Dorsal Ridges	(%) Cortex	Width (mm)	Length (mm)	Thickness (mm)	Platform Modification	Bulb of Percussion	Weight (grams)	Blade Modification	Material Source
32	1	2			192	middle	core face	3	no	3	0%	10.33	9.07	3.16	none		0.5	bipolared, segmented	El Chayal
32	1	2			193	distal	core face	3	no	3	0%	10.33	11.23	3.00	none		0.4	bipolared, segmented	El Chayal
32	1	3			189	middle	core face	3	no	1	0%	8.47	15.01	2.36	none		0.3	segmented	El Chayal
32	1	7			83	middle	core face	3	no	2	0%	10.12	7.97	2.12	none		0.4	segmented	El Chayal
32	1	6			105	middle	core face	3	no	1	0%	11.93	13.16	2.91	none		0.7	split, segmented	El Chayal
32	1	6			106	proximal	core face	1	no	1	0%	10.70	20.27	3.87	raking	punch	0.9	segmented	El Chayal
32	1	12			338	middle	core face	3	no	2	0%	8.81	13.12	1.91	none		0.2	burinated, segmented	El Chayal
32	1	12			339	middle	core face	3	no	2	0%	13.14	20.99	2.19	none		0.8	segmented	El Chayal
32	1	12			340	middle	core face	2	no	2	0%	8.45	9.51	1.74	none		0.2	segmented	El Chayal
32	1	12			341	proximal	core face	2	no	2	0%	35.77	22.80	2.87	raking	punch	2.6	segmented	El Chayal
32	1	16			587	middle	core face	3	no	1	0%	9.60	19.34	2.39	none		0.5	segmented	El Chayal
32	1	16			589	proximal	core face	2	no	1	0%	6.49	7.63	1.11	none		0.1	segmented	El Chayal
32	1	16			590	proximal	core face	3	no	3	0%	10.47	23.30	3.53	raking	acute pressure	1.0	segmented	El Chayal
32	1	16			591	middle	core face	3	no	2	0%	13.79	58.35	4.54	none		4.8	segmented	El Chayal
32	1	16			592	distal	core face	3	no	1	0%	9.65	17.47	2.44	none		0.5	segmented	El Chayal
32	1	16			593	middle	core face	2	no	1	0%	11.70	20.93	2.85	none		0.8	segmented	El Chayal
32	1	16			594	distal	core face	1	no	2	0%	9.13	15.71	3.80	none		0.4	segmented	El Chayal
32	1	16			595	distal	core face	3	no	2	0%	20.08	9.14	3.23	none		0.6	segmented	El Chayal
32	1	16			596	proximal	core face	1	no	2	0%	11.95	25.21	3.17	crushed	acute pressure	1.3	burinated	El Chayal
32	1	16			597	middle	core face	3	no	1	0%	8.74	13.64	2.85	none		0.1	segmented	El Chayal
32	1	16			598	proximal	core face	3	no	1	0%	10.43	20.48	2.42	isolated	acute pressure	0.7	segmented	El Chayal
32	1	16			599	middle	core face	3	no	2	0%	9.88	38.00	2.83	none		1.1	bipolared	El Chayal
32	1	16			600	distal	core face	3	no	1	0%	10.08	13.63	2.06	none		0.3	segmented	El Chayal
32	1	16			601	middle	core face	3	no	2	0%	15.21	44.17	3.32	none		3.4	segmented	El Chayal
32	1	21			286	middle	core face	3	no	2	0%	12.85	10.91	1.71	none		0.3	segmented	El Chayal
32	1	21			287	middle	core face	3	no	1	0%	11.78	21.31	2.39	none		0.6	segmented	El Chayal
32	1	21			288	middle	margin/lateral	2	no	2	0%	11.11	13.25	2.01	none		0.3	segmented	El Chayal
32	1	21			289	middle	core face	3	no	2	0%	9.28	17.61	1.58	none		0.3	segmented	El Chayal
32	1	21			290	proximal	core face	3	no	2	0%	13.05	13.52	2.99	crushed	acute pressure	0.5	segmented	El Chayal
32	1	23			253	middle	core face	3	no	1	0%	10.84	13.74	1.99	none		0.3	bipolared	El Chayal
32	1	23			254	middle	core face	3	no	2	0%	12.95	21.28	2.64	none		0.5	bipolared	El Chayal
32	1	23			255	proximal	center, core face	1	no	2	0%	15.11	29.05	3.91	isolated	acute pressure	1.8	segmented	El Chayal
32	1	23			256	middle	core face	3	no	1	0%	9.82	13.80	2.52	none		0.4	segmented	El Chayal
32	1	23			257	middle	core face	3	no	2	0%	6.84	19.34	2.15	none		0.3	bipolared	El Chayal
34	2	1			1	middle	core face	3	no	2	0%	10.70	19.90	1.60			0.6	retouch	
34	2	3			1	proximal	core face	2	no	2	0%	12.10	31.00	2.80	unprepared	acute/pressure	1.3	usewear	
34	2	4			1	proximal		2	no	2	0%	10.60	19.00	2.10	isolated	acute/pressure	0.6		
34	2	5			1	proximal	core face	1	no	2	0%	12.00	14.70	1.90	crushed	acute/pressure	0.4		
34	5	5			1	proximal	core face	1	no	2	25%	12.20	14.80	2.90	isolated	acute/pressure	0.7		
34	6	1			1	complete	core face	1	yes	1	0%	10.60	35.60	2.90	crushed	percussion	1.1		

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34	2	1			2	middle	core face	3	no	2	0%	10.80	16.00	2.90			0.5	bipolared	
34	2	2			2	middle	core face	3	no	1	0%	12.90	20.20	3.10			0.8	bipolared	
34	2	3			2	middle	core face	3	no	2	0%	20.00	22.90	2.50			1.8	usewear	
34	2	4			2	distal	core face	3	no	2	0%	10.90	23.10	3.70			1.0	usewear	
34	2	5			2	proximal	core face	2	no	2	0%	13.20	16.50	2.20	unprepared	acute/pressure	0.7	usewear	
34	6	1			2	proximal	core face	1	no	2	0%	11.30	15.70	2.60	unprepared	acute/pressure	0.6		
34	2	3			3	proximal	core face	2	no	1	0%	7.90	14.80	2.50	unprepared	acute/pressure	0.3		
34	2	4			3	middle	core face	3	no	1	0%	11.20	24.60	3.00			0.9	usewear	
34	2	5			3	proximal		1	no	1	0%	12.30	38.00	3.60	unprepared	acute/pressure	1.9		
34	2	4			4	proximal	core face	2	no	2	0%	11.60	16.70	2.10	unprepared	acute/pressure	0.8	notching	
34	2	5			4	proximal	core face	3	no	2	0%	9.40	17.10	2.10	isolated	acute/pressure	0.5		
34	2	4			5	middle		3	no	2	0%	11.30	8.60	1.70			0.2		
34	2	5			5	proximal	core face	2	no	2	0%	11.60	23.00	2.30	crushed	acute/pressure	0.9	usewear	
34	2	4			6	middle	core face	2	no	2	0%	7.40	11.10	1.60			0.2		
34	2	5			6	middle	core face	2	no	2	0%	8.90	25.80	2.60			0.7		
34	2	5			7	middle	core face	2	no	1	0%	12.40	15.00	2.70			0.5	usewear	
34	2	5			8	middle		3	no	1	0%	8.10	7.10	1.60			0.1		
34	2	5			9	middle	core face	2	no	2	0%	12.80	11.80	1.40			0.3		
34	2	5			10	distal	core face	3	no	2	0%	12.10	26.00	3.20			1.4	usewear	
34	7	9			21	proximal	core face	2	no	2	0%	9.40	14.50	2.50	unprepared	acute/pressure	0.4	usewear	el Chayal
34	7	9			22	proximal	core face	1	no	2	0%	11.80	18.00	2.30	unprepared	acute/pressure	0.6		el Chayal
34	7	9			23	proximal	core face	1	no	2	0%	8.50	17.10	1.90	isolated	acute/pressure	0.3		el Chayal
34	7	9			24	middle	core face	3	no	4	0%	12.90	21.30	3.70			1.6		el Chayal
34	7	9			25	middle	core face	3	no	2	0%	13.10	6.50	2.10			0.2		el Chayal
34	7	9			26	middle	core face	3	no	2	0%	17.10	3.80	3.20			0.3	bipolared	el Chayal
34	7	9			27	middle	core face	2	no	1	0%	8.50	32.40	2.60			0.6	bipolared	el Chayal
34	2		90	H	28	middle	core face	1	no	1	0%	12.20	18.90	2.70			0.7		
34	7	9			28	distal	margin/lateral	2	no	2	0%	15.00	34.10	3.10			2.3	usewear	el Chayal
34	2		90	H	29	distal	core face	2	no	2	0%	13.20	19.60	3.00			0.8		
34	1	2			42	proximal	core face	1	no	1	50%	11.78	20.40	2.05	unprepared	acute/pressure	0.4		
34	1	2			43	proximal			no		0%	10.97	13.56	2.39			0.4	bipolared	
34	3	4			49	middle			no	1	no	9.20	18.96	2.58			0.5		tajamulco
34	3	4			50	middle			no	2	no	13.06	18.82	1.78			0.6		El Chayal
34	3	4			51	middle			no	2	no	9.67	10.90	2.45			0.4		El Chayal
34	1	3			52	distal	core face	1	no	1	0%	16.62	11.40	3.48			0.7	bipolared	
34	3	1			52	middle			no	2	no	9.04	10.70	2.10			0.1		El Chayal
34	1	3			53	middle	core face	2	no	2	0%	16.30	11.38	3.44			0.5	bipolared	
34	3	1			53	middle			no	2	no	8.41	14.36	2.61			0.3		El Chayal
34	3	3			60	middle			no	2	no	6.19	17.82	2.75			0.4		El Chayal
34	3	3			61	proximal			no	2	no	11.21	28.47	4.27			1.2		El Chayal

Operation Num.	Sub. Oper.	Level	Elem.	Form Num.	Artifact	Part	Location	Stage of Removal	Complete Blade	Number of Dorsal Ridges	(%) Cortex	Width (mm)	Length (mm)	Thickness (mm)	Platform Modification	Bulb of Percussion	Weight (grams)	Blade Modification	Material Source
34	2	10			104	middle	core face	1	no	2	25%	10.70	12.30	1.40			0.4	segmented	
34	2	11			104	distal	core face	1	no	1	0%	13.20	19.10	4.50			1.4	retouch	
34	2	12			104	middle	core face	2	no	2	0%	14.10	36.50	3.30			2.6	usewear	
34	2	13			104	middle	core face	2	no	1	0%	10.10	20.40	1.50			0.5	bipolared	
34	7	11	A		104	middle	core face	2	no	2	0%	6.80	25.00	2.00			0.6	burinated	el Chayal
34	2	7	A		105	distal	core face	3	no	2	0%	9.50	13.90	2.30			0.4	usewear	
34	2	9			105	middle	core face	3	no	2	0%	13.60	20.60	1.90			0.9	usewear	
34	2	10			105	middle	core face	2	no	1	0%	10.60	17.70	2.70			0.4	segmented	
34	2	11			105	distal	core face	1	no	2	0%	12.80	17.70	2.20			0.7	usewear	
34	2	12			105	middle	core face	2	no	1	0%	10.20	19.70	2.20			0.5		
34	2	13			105	distal	core face	1	no	2	0%	14.90	29.30	3.30			1.9		
34	2	9			106	middle	core face	1	no	1	75%	11.00	11.40	1.90			0.3	segmented	
34	2	10			106	middle	core face	3	no	2	0%	9.60	8.70	1.60			0.2	segmented	
34	2	12			106	middle	margin/lateral	3	no	1	0%	11.20	24.50	2.00			1.0	usewear	
34	1	7			107	middle			no		0%	11.69	4.95	3.47		percussion	0.4	bipolared	
34	2	9			107	middle	core face	3	no	1	0%	7.70	4.40	1.30			>.1	segmented	
34	2	10			107	distal	core face	3	no	3	0%	10.90	18.20	2.90			0.8		
34	2	12			107	middle			no		0%	7.70	14.40	2.50			0.4	bipolared	
34	2	9			108	middle	core face	3	no	2	0%	7.70	8.50	1.90			0.2	segmented	
34	2	10			108	distal	core face	3	no	2	0%	7.30	18.00	2.30			0.3		
34	2	12			108	distal	margin/lateral	3	no	1	0%	8.20	11.60	1.60			0.2		
34	2	9			109	middle	core face	2	no	1	0%	14.20	3.20	3.60			0.2	segmented	
34	2	10			109	distal	core face	1	no	1	0%	12.10	18.40	2.40			0.7		
34	2	9			110	middle	core face	3	no	2	0%	8.00	13.40	1.10			0.2	segmented	
34	2	10			110	distal	core face	1	no	1	0%	9.50	11.70	1.10			0.2		
34	2	9			111	middle	core face	2	no	2	0%	11.80	39.50	3.60			2.6	heavy usewear	
34	2	9			112	distal	core face	1	no	1	0%	9.20	29.30	2.60			0.7	usewear	
34	2	9			113	distal	core face	3	no	2	0%	12.50	18.50	2.20			0.8	usewear	
34	2	9			114	distal	core face	2	no	1	0%	5.40	12.70	1.20			0.2		
34	2	9			115	distal	core face	3	no	2	0%	6.40	11.10	2.40			0.2		
34	2	9			116	distal	core face	3	no	2	0%	9.20	31.70	2.50			0.8		
34	2	6			148	proximal	core face	2	no	2	0%	10.30	32.30	3.70	isolated	acute/pressure	1.8	heavy usewear	tajamulco
34	2	6			149	proximal	core face	1	no	1	0%	11.90	37.40	2.80	unprepared	acute/pressure	1.6	usewear	
34	2	6			150	proximal	core face	1	no	2	0%	12.30	24.50	2.90	isolated	acute/pressure	0.9	usewear	
34	2	6			151	middle	core face	3	no	2	0%	12.50	23.50	2.40			1.2	usewear	
34	2	6			152	middle	core face	2	no	1	0%	15.70	30.50	3.40			1.7	usewear	
34	2	6			153	middle	core face	2	no	2	0%	13.90	19.40	1.80			0.7	usewear	
34	2	6			154	middle		3	no	1	0%	9.60	8.10	1.60			0.1	bipolared	
34	2	6			155	distal	core face	3	no	2	0%	13.00	25.80	2.80			1.4	usewear	
34	2	6			156	distal	core face	2	no	1	0%	6.20	6.70	1.60			0.1		

Operation Num.	Sub. Oper.	Level	Elem.	Form Num.	Artifact	Part	Location	Stage of Removal	Complete Blade	Number of Dorsal Ridges	(%) Cortex	Width (mm)	Length (mm)	Thickness (mm)	Platform Modification	Bulb of Percussion	Weight (grams)	Blade Modification	Material Source
34	2	14			197	distal	core face	2	no	2	0%	9.60	22.00	1.50			0.3		
34	2	8			202	complete	core face	1	yes	2	0%	11.30	61.60	4.10	crushed	acute/pressure	3.0	usewear	
34	2	8			203	middle	core face	3	no	1	0%	8.30	28.70	2.20			0.7	usewear	
34	2	8			204	middle		2	no	1	0%	13.30	6.00	1.20			0.1		
34	2	8			205	distal	core face	3	no	1	0%	8.50	14.40	2.70			0.3		
34	2	8			206	distal	margin/lateral	3	no	3	25%	13.00	29.60	4.50			1.7	usewear	
34	7	10	A		209	proximal	core face	3	no	2	0%	8.50	20.60	2.20	isolated	acute/pressure	0.5	usewear	el Chayal
34	7	10	A		210	middle	core face	1	no	1	0%	10.50	16.30	3.20			0.6	bipolared	el Chayal
34	7	10	A		211	middle	core face	2	no	3	0%	14.50	21.60	2.40			1.3	retouch	el Chayal
34	7	10	A		212	middle	core face	3	no	2	0%	6.90	15.20	1.50			0.2		el Chayal
34	7	10	A		213	middle	core face	2	no	2	0%	16.80	15.50	2.70			0.7	bipolared	el Chayal
34	7	10	A		214	distal	core face	3	no	2	0%	10.50	25.70	3.50			1.1		el Chayal
35	1	2			85	middle	margin/lateral	2	no	1	0%	12.48	17.35	3.14			0.7	segmented	San Martin Jilotepeque
35	1	2			86	middle	core face	2	no	1	0%	11.26	14.93	2.60			0.5	bipolared	San Martin Jilotepeque
35	1	3			60	distal	margin/lateral	2	no	2	0%	10.68	18.86	3.06			0.4		San Martin Jilotepeque
35	1	3			61	middle	core face	3	no	1	0%	7.54	20.06	2.76			0.4	segmented	El Chayal
35	1	3			62	proximal	core face	2	no	1	0%	11.08	21.32	2.72	unprepared	percussion	0.7		El Chayal
35	1	3			64	distal	margin/lateral	3	no	2	0%	8.09	16.78	2.92			0.3	bipolared	El Chayal
35	1	4			66	middle	core face	3	no	2	0%	10.61	33.85	4.24			2.6	segmented	San Martin Jilotepeque
35	1	4			70	distal	core face	1	no	1	35%	16.46	27.41	7.05			1.9	segmented	El Chayal
35	1	4			67	middle	core face	2	no	2	0%	8.73	0.89	2.14			0.7	segmented	El Chayal
35	1	5			69	middle	core face	1	no	1	0%	13.50	8.81	2.33			0.3	segmented	El Chayal
35	1	5			68	middle	core face	3	no	1	0%	13.05	18.03	2.43			0.6	segmented	El Chayal
35	1	6			83	proximal	core face	2	no	2	0%	10.50	22.91	2.94	crushed	acute/pressure	0.8	segmented	El Chayal
35	1	7			93	middle	core face	2	no	1	0%	16.60	7.10	2.66			0.4	bipolared	El Chayal
35	1	7			94	distal	core face	3	no	3	0%	8.42	17.87	4.32			0.5	segmented	El Chayal
35	1	8			129	middle	core face	2	no	1	0%	17.81	6.88	3.88			0.3	segmented	El Chayal
35	1	8			120	distal	core face	3	no	2	0%	14.04	28.21	3.22			1.5	segmented	El Chayal
35	1	8			124	middle	core face	2	no	2	0%	9.73	11.34	2.31			0.3	bipolared	El Chayal
35	1	8			123	distal	core face	3	no	2	0%	10.81	21.24	2.57			0.6	segmented	San Martin Jilotepeque
35	1	8			121	middle	core face	3	no	2	0%	11.10	25.36	4.39			1.6	segmented	San Martin Jilotepeque
35	1	8			122	distal	margin/lateral	3	no	3	0%	8.22	26.78	2.62			0.5	segmented	San Martin Jilotepeque
35	1	9			176	middle	margin/lateral	2	no	1	0%	14.41	23.97	3.23			1.2	segmented	El Chayal
35	1	9			142	distal	margin/lateral	2	no	1	0%	7.93	13.24	2.71			0.2		San Martin Jilotepeque
35	1	9			174	proximal	core face	2	no	1	0%	13.91	33.62	3.73	crushed	percussion	2.0	segmented	El Chayal
35	1	9			175	middle	core face	2	no		0%	12.35	21.91	2.25			0.8	bipolared	El Chayal
35	1	10			175	middle	core face	2	no	1	0%	10.69	21.94	3.58			0.5	bipolared	El Chayal
35	1	10			178	middle	margin/lateral	2	no	2	0%	17.31	16.71	2.82			0.9	segmented	El Chayal
35	1	12			246	middle	core face	3	no	1	0%	6.55	26.02	1.75			0.3	segmented	El Chayal
35	1	13			218	middle	core face	1	no	2	0%	11.85	25.03	4.50			1.3	bipolared	El Chayal

Operation Num.	Sub. Oper.	Level	Elem.	Form Num.	Artifact	Part	Location	Stage of Removal	Complete Blade	Number of Dorsal Ridges	(%) Cortex	Width (mm)	Length (mm)	Thickness (mm)	Platform Modification	Bulb of Percussion	Weight (grams)	Blade Modification	Material Source
35	1	14			54	middle	core face	3	no	2	0%	14.16	23.61	2.10			0.9	segmented	El Chayal
35	1	15	B		195	distal	margin/lateral	2	no	1	0%	11.81	16.54	2.35			0.3		El Chayal
35	1	15	B		194	middle	core face	2	no	2	0%	11.63	22.74	3.94			1.0	bipolared	El Chayal
35	1	15	B		193	distal	core face	3	no	2	0%	13.30	35.09	2.18			1.0	segmented	San Martin Jilotepeque
35	1	16	B		200	distal	margin/lateral	1	no	1	35%	11.10	23.25	4.08			1.0	segmented	San Martin Jilotepeque
35	1	17	B		349	middle	core face	3	no	2	0%	13.45	13.39	2.59			1.5	segmented	San Martin Jilotepeque
35	1	17	B		348	complete	margin/lateral	1	no	3	0%	11.00	71.30	2.55	unprepared	acute/pressure	2.9		El Chayal
35	1	17	B		350	middle	margin/lateral	2	no	2	0%	16.19	17.03	3.10			1.2	segmented	San Martin Jilotepeque
35	1	18	B		256	distal	margin/lateral	2	no	1	0%	14.93	47.82	2.60			2.3	segmented	El Chayal
35	1		112C		109	middle	core face	3	no	2	0%	15.38	47.19	4.07			3.4	bipolared, segmented	El Chayal
35	2	6			201	middle	core face	2	no	2	0%	19.75	24.19	3.17			2.2	segmented	El Chayal
35	2	6			202	middle	core face	3	no	1	0%	11.27	13.22	1.95			0.4	segmented	El Chayal
35	2	7			200	complete	margin/lateral	1	no	1	0%	19.00	57.12	3.57	crushed	percussion	5.2		El Chayal
35	2	7			201	proximal	margin/lateral	1	no	1	0%	15.72	41.47	4.92	unprepared	acute/pressure	3.3	segmented	El Chayal
35	2	7			202	middle	core face	2	no	2	0%	14.72	28.53	2.93			1.9	segmented	El Chayal
35	2	7			203	middle	core face	2	no	1	0%	12.11	16.72	2.72			0.7	segmented	El Chayal
35	2	7			204	middle	core face	2	no	1	0%	11.35	16.00	2.70			0.4	segmented	El Chayal
35	2	7			205	middle	core face	1	no	1	0%	11.24	19.35	3.58			0.7		El Chayal
35	2	7			206	middle	core face	3	no	2	0%	7.47	14.36	2.07			0.2	segmented	El Chayal
35	2	8			207	middle	core face	2	no	2	0%	8.13	16.82	1.15			0.1	segmented	El Chayal
35	2	8			208	middle	core face	3	no	2	0%	10.95	19.56	3.34			0.8	segmented	El Chayal
35	2	8			209	proximal	core face	2	no	1	0%	11.54	10.59	2.37	crushed	acute/pressure	0.7	segmented	El Chayal
35	2	9			269	proximal	core face	2	no	2	0%	11.74	50.10	3.04	crushed	acute/pressure	2.3	segmented	El Chayal
35	2	9			270	middle	core face	2	no	2	0%	9.56	23.37	2.97			0.8	segmented	San Martin Jilotepeque
35	2	9			271	middle	core face	2	no	1	0%	9.69	13.02	2.67			0.4	segmented	San Martin Jilotepeque
35	2	10			305	proximal	core face	1	no	1	0%	11.76	22.33	3.20	crushed	acute/pressure	0.8	segmented	El Chayal
35	2	10			306	distal	core face	3	no	3	0%	11.33	30.76	2.57			1.4	segmented	El Chayal
35	2	10			307	distal	core face	3	no	2	0%	10.72	6.06	2.68			0.6	segmented	San Martin Jilotepeque
35	2	10			308	middle	core face	3	no	2	0%	12.78	18.84	1.60			0.5	segmented	El Chayal
35	2	10			309	proximal	core face	2	no	2	0%	11.88	16.18	3.97	unprepared	acute/pressure	0.9	segmented	San Martin Jilotepeque
35	2	10			310	middle	core face	3	no	2	0%	9.84	11.64	1.84			0.3	segmented	El Chayal
35	2	10			312	proximal	core face	2	no	1	0%	9.81	12.61	2.23	unprepared	acute/pressure	0.3	segmented	El Chayal
35	2	11			443	middle	core face	2	no	2	0%	9.17	23.05	2.89			0.6	segmented	El Chayal
35	2	12			200	distal	core face	3	no	2	0%	9.70	26.09	2.91			0.8	segmented	El Chayal
35	3	3			103	middle	core face	3	no	1	0%	9.68	13.25	2.40			0.5		San Martin Jilotepeque
35	3	3			105	middle	core face	3	no	2	0%	14.79	23.24	3.11			1.3	segmented	San Martin Jilotepeque
35	3	5			119	distal	core face	2	no	2	0%	10.94	18.49	2.53			0.5	segmented	El Chayal
35	3	6			154	proximal	core face	3	no	2	0%	10.54	24.89	3.15	isolated	acute/pressure	0.8	segmented	El Chayal
35	3	8			291	distal	margin/lateral	2	no	2	0%	4.64	6.33	3.59			0.8	segmented	El Chayal
35	3	8			294	proximal	core face	3	no	1	0%	11.72	42.51	3.62	isolated	acute/pressure	2.0	segmented	El Chayal

Operation Num.	Sub. Oper.	Level	Elem.	Form Num.	Artifact	Part	Location	Stage of Removal	Complete Blade	Number of Dorsal Ridges	(%) Cortex	Width (mm)	Length (mm)	Thickness (mm)	Platform Modification	Bulb of Percussion	Weight (grams)	Blade Modification	Material Source
35	3	8			293	proximal	core face	2	no	2	0%	13.06	30.09	3.23	crushed	punch	1.6	segmented	San Martin Jilotepeque
35	3	8			292	middle	core face	2	no	2	0%	14.57	16.75	2.56			0.7	segmented	El Chayal
35	3	8			296	middle	margin/lateral	2	no	2	0%	16.94	22.34	2.43			0.9	segmented	El Chayal
35	3	8			297	middle	margin/lateral	1	no	1	15%	15.00	17.01	3.03			0.8	segmented	San Martin Jilotepeque
35	3	8			298	middle	core face	2	no	1	0%	15.34	24.71	2.90			0.8	bipolared	El Chayal
35	3	8			288	middle	core face	3	no	1	0%	9.54	10.07	2.77			0.3	segmented	El Chayal
35	3	9			224	distal	core face	3	no	1	0%	9.26	19.36	2.91			0.4	segmented	El Chayal
35	3	9			223	middle	core face	2	no	1	0%	9.94	16.53	2.94			0.4	segmented	San Martin Jilotepeque
35	3	10			217	middle	core face	3	no	2	0%	13.18	28.91	2.59			1.0	segmented	El Chayal
35	3	11			423	distal	margin/lateral	3	no	2	0%	7.15	26.70	2.95			1.3	segmented	San Martin Jilotepeque
35	3	11			426	proximal	core face	3	no	2	0%	11.82	21.27	3.25	crushed	acute/pressure	0.8	segmented	San Martin Jilotepeque
35	3	11			424	distal	margin/lateral	2	no	2	0%	8.81	17.66	2.14			0.3	segmented	San Martin Jilotepeque
35	3	11			422	middle	core face	3	no	2	0%	9.81	11.36	2.10			0.3	segmented	El Chayal
35	3	11			425	middle	core face	2	no	2	0%	14.15	29.60	3.15			1.9	segmented	San Martin Jilotepeque
35	3	11			421	middle	core face	3	no	2	0%	10.63	25.00	2.30			0.8	segmented	El Chayal
35	3	11			420	middle	core face	3	no	2	0%	9.30	21.21	2.12			0.4	segmented	San Martin Jilotepeque
35	3	11			427	distal	core face	1	no	1	100%	9.98	38.59	5.40			2.0		El Chayal
35	3	12			372	proximal	core face	2	no	1	0%	12.05	12.91	4.04	unprepared	acute/pressure	0.6	segmented	San Martin Jilotepeque
35	3	12			338	middle	core face	2	no	2	0%	9.65	30.69	4.08			1.6	segmented	San Martin Jilotepeque
35	3	12			339	proximal	core face	2	no	1	0%	10.29	23.88	2.69	unprepared	punch	0.7	segmented	San Martin Jilotepeque
35	3	12			341	middle	core face	2	no	2	0%	16.61	28.91	3.18			1.9	segmented	El Chayal
35	3	14			48	proximal	margin/lateral	2	no	1	0%	14.99	25.57	3.08	unprepared	punch	1.5	segmented	El Chayal
35	4	1			57	middle	margin/lateral	2	no	1	0%	14.16	13.72	3.26			0.6	segmented	San Martin Jilotepeque
35	4	4			66	middle	core face	2	no	2	0%	10.70	11.00	2.99			0.4	segmented	San Martin Jilotepeque
35	4	4			67	middle	core face	1	no	1	90%	13.15	27.59	2.66			0.9	bipolared	El Chayal
35	4	5			58	distal	margin/lateral	2	no	2	0%	10.75	19.27	2.28			0.5	segmented	San Martin Jilotepeque
35	4	6			68	proximal	core face	2	no	1	0%	11.24	17.50	3.14	crushed	acute/pressure	1.8	segmented	El Chayal
35	4	7			78	middle	core face	2	no	2	0%	10.16	10.02	3.16			2.3	segmented	El Chayal
35	4	7			77	middle	core face	3	no	2	0%	12.77	14.54	2.00			0.4	segmented	San Martin Jilotepeque
35	4	7			79	proximal	core face	3	no	1	0%	10.22	18.87	3.04	unprepared	acute/pressure	0.5	segmented	San Martin Jilotepeque
35	4	8			104	middle	core face	2	no	2	0%	10.68	13.39	2.23			0.3	segmented	San Martin Jilotepeque
35	4	9			93	middle	core face	3	no	2	0%	13.74	20.84	2.23			0.7	segmented	El Chayal
35	4	9			95	proximal	core face	2	no	2	0%	11.44	21.84	2.75	crushed	acute/pressure	0.9	segmented	San Martin Jilotepeque
35	4	11			236	middle	core face	3	no	1	0%	13.08	27.20	2.97			1.0	segmented	San Martin Jilotepeque
35	4	12			152	distal	core face	3	no	2	0%	13.35	20.92	2.16			0.7	segmented	El Chayal
35	4	19			94	distal	core face	2	no	2	0%	13.45	27.37	2.93			1.3	segmented	El Chayal
35	5	1			76	middle	core face	2	no	2	0%	11.81	18.17	1.88			0.4	segmented	San Martin Jilotepeque
35	5	1			77	middle	margin/lateral	1	no	1	0%	9.61	23.13	2.41			0.4	segmented	El Chayal
35	5	6			146	middle	core face	2	no	1	0%	11.67	18.36	2.87			0.6	segmented	El Chayal
35	5	6			147	proximal	core face	2	no	2	0%	11.91	36.08	2.73	unprepared	acute/pressure	1.4	segmented	El Chayal

Operation Num.	Sub. Oper.	Level	Elem.	Form Num.	Artifact	Part	Location	Stage of Removal	Complete Blade	Number of Dorsal Ridges	(%) Cortex	Width (mm)	Length (mm)	Thickness (mm)	Platform Modification	Bulb of Percussion	Weight (grams)	Blade Modification	Material Source
35	5	6			150	proximal	core face	1	no	1	0%	8.50	20.68	2.78	crushed	acute/pressure	0.4	segmented	El Chayal
35	5	6			149	middle	core face	3	no	2	0%	16.52	34.73	3.47			3.0	segmented	El Chayal
35	5	6			148	middle	core face	2	no	1	0%	9.09	12.66	2.93			0.2	segmented	San Martin Jilotepeque
35	5	7			222	middle	core face	3	no	2	0%	14.37	16.84	3.50			0.9	segmented	El Chayal
35	5	7			224	proximal	core face	2	no	2	0%	7.10	36.20	4.30	unprepared	acute/pressure	1.8	bipolared	El Chayal
35	5	7			225	proximal	core face	3	no	2	0%	15.32	41.13	3.09	unprepared	punch	2.5	segmented	El Chayal
35	5	7			224	distal	margin/lateral	1	no	2	0%	14.53	26.63	3.16			1.3		El Chayal
35	5	8			398	middle	core face	2	no	1	0%	11.26	12.84	2.38			0.4	segmented	San Martin Jilotepeque
35	5	8			403	middle	margin/lateral	1	no	2	0%	8.95	16.05	3.02			1.2	segmented	El Chayal
35	5	8			402	proximal	core face	3	no	2	0%	9.29	29.67	2.38	isolated	acute/pressure	0.8	segmented	El Chayal
35	5	8			404	distal	core face	1	no	1	35%	13.34	47.32	3.14			2.4	segmented	San Martin Jilotepeque
35	5	8			405	proximal	core face	2	no	2	0%	14.05	33.45	3.05	isolated	acute/pressure	1.6	segmented	El Chayal
35	5	9			538	proximal	core face	2	no	2	0%	14.13	33.18	4.71	isolated	acute/pressure	2.4	segmented	El Chayal
35	5	9			534	proximal	core face	2	no	2	0%	10.10	12.81	1.94	crushed	acute/pressure	0.3		San Martin Jilotepeque
35	5	9			541	middle	margin/lateral	1	no	1	0%	12.36	30.47	2.93			1.0		El Chayal
35	5	9			539	middle	core face	2	no	2	0%	11.05	33.03	2.05			0.8	segmented	El Chayal
35	5	9			542	complete	core face	2	yes	2	0%	10.55	61.44	3.49	unprepared	acute/pressure	2.6		El Chayal
35	5	9			533	middle	core face	3	no	2	0%	9.67	27.68	2.24			0.8	segmented	San Martin Jilotepeque
35	5	9			530	proximal	core face	2	no	1	0%	16.61	27.15	3.33	unprepared	punch	1.3	segmented	El Chayal
35	5	9			531	middle	core face	3	no	2	0%	16.75	19.10	3.14			1.3	segmented	El Chayal
35	5	10			321	proximal	core face	2	no	2	0%	14.81	55.52	2.93	crushed	acute/pressure	2.8	segmented	El Chayal
35	5	10			319	middle	core face	2	no	1	0%	13.53	17.42	1.83			0.2	segmented	San Martin Jilotepeque
35	5	10			322	distal	margin/lateral	2	no	1	0%	8.87	19.74	2.73			0.4	segmented	El Chayal
35	5	10			323	proximal	core face	2	no	2	0%	12.33	38.61	3.48	unprepared	acute/pressure	2.0	segmented	San Martin Jilotepeque
35	5	12			491	middle	core face	3	no	2	0%	10.72	21.74	2.51			0.9	segmented	El Chayal
35	5	12			487	middle	core face	2	no	2	0%	13.00	22.83	2.50			0.8	segmented	El Chayal
35	5	12			489	proximal	core face	2	no	1	0%	11.07	46.29	3.85	crushed	acute/pressure	2.1	segmented	El Chayal
35	5	12			492	proximal	margin/lateral	2	no	2	0%	10.13	34.91	2.26	crushed	acute/pressure	0.8	segmented	El Chayal
35	5	16			70	middle	core face	3	no	1	0%	12.57	16.33	1.93			0.3	segmented	El Chayal
35	5	18	B		41	proximal	core face	2	no	1	0%	11.91	36.34	3.18	isolated	acute/pressure	1.4	segmented	El Chayal
35	5	19			62	middle	core face	3	no	1	0%	11.57	18.62	2.61			0.6	segmented	San Martin Jilotepeque
35	5	19			61	middle	core face	2	no	1	0%	10.13	12.40	2.80			0.4	segmented	San Martin Jilotepeque
35	5	20			93	middle	core face	3	no	2	0%	10.76	4.16	2.33			0.5	segmented	San Martin Jilotepeque
35	5		111A		207	middle	core face	2	no	1	0%	8.92	29.76	2.95			0.5	segmented	San Martin Jilotepeque
35	5		111B		78	proximal	core face	3	no	1	0%	13.04	40.43	2.97	isolated	acute/pressure	1.6	segmented	San Martin Jilotepeque
35	5		111B		76	distal	core face	3	no	2	0%	10.37	30.31	2.16			0.5	segmented	El Chayal
35	2	2			59	proximal	core face	3	no	2	0%	12.84	15.55	2.95	crushed	acute/pressure	0.7	segmented	El Chayal
36	2	2			60	proximal	core face	3	no	1	0%	11.22	13.69	2.33	crushed		0.4	bipolared	El Chayal
36	2	2			61	proximal	core face	3	no	1	0%	9.02	12.80	2.64	unprepared	punch	0.3	segmented	San Martin Jilotepeque
36	2	2			62	proximal	core face	2	no	1	0%	16.04	24.15	4.36	unprepared		1.4	bipolared	El Chayal

Operation Num.	Sub. Oper.	Level	Elem.	Form Num.	Artifact	Part	Location	Stage of Removal	Complete Blade	Number of Dorsal Ridges	(%) Cortex	Width (mm)	Length (mm)	Thickness (mm)	Platform Modification	Bulb of Percussion	Weight (grams)	Blade Modification	Material Source
36	2	3			89	middle	core face	3	no	2	0%	13.45	10.19	3.04			0.4	bipolared	El Chayal
36	2	3			90	middle	core face	3	no	1	0%	15.65	9.34	3.70			0.7	segmented	El Chayal
36	2	4			74	distal	core face	3	no	2	0%	18.53	13.70	2.47			0.8	segmented	San Martin Jilotepeque
36	2	6			109	distal	margin/lateral	2	no	1	0%	11.28	30.30	3.01			0.8	segmented	El Chayal
36	2	6			108	distal	core face	3	no	1	0%	7.02	29.84	1.84			0.4	segmented	San Martin Jilotepeque
36	2	8			151	middle	core face	3	no	1	0%	9.20	15.39	1.75			0.2	bipolared	El Chayal
36	2	8			152	middle	margin/lateral	3	no	2	0%	13.68	20.89	2.31			0.7	segmented	El Chayal
36	2	9			136	distal	core face	3	no	2	0%	15.10	25.01	1.97			0.6	segmented	El Chayal
36	2	10			136	middle	core face	3	no	2	0%	12.23	26.35	3.95			1.5	segmented	El Chayal
36	2	11			282	middle	core face	3	no	2	0%	15.68	12.55	2.26			0.4	bipolared	El Chayal
36	2	11			283	middle	core face	3	no	2	0%	14.28	16.84	4.33			1.1	segmented	El Chayal
36	2	11			284	middle	core face	3	no	2	0%	19.89	18.76	3.51			1.2	segmented	San Martin Jilotepeque
36	2	11			285	middle	core face	3	no	2	0%	11.85	23.45	3.35			1.4	segmented	El Chayal
36	2	12			328	proximal	core face	1	no	2	0%	11.92	31.01	3.06	raking	punch	1.2	segmented	El Chayal
36	2	12			329	distal		2	no	1	0%	8.27	19.16	2.75			0.4	segmented	El Chayal
36	2	12			330	middle	core face	3	no	1	0%	13.31	12.00	3.53			0.5	segmented	San Martin Jilotepeque
36	2	12			332	distal	core face	1	no	1	0%	14.68	43.67	4.53			2.4	segmented	El Chayal
36	2	12			334	middle			no		0%	9.28	19.28	4.13			0.4	burinated	San Martin Jilotepeque
36	2	14			190	middle		3	no	1	0%	10.98	9.88	3.44			0.2	segmented	El Chayal
36	2	14			191	complete	core face	1	yes	1	0%	11.27	24.01	5.01	crushed	percussion	0.7		El Chayal
36	2	15			224	proximal	core face	2	no	2	0%	18.23	23.54	3.35	raking	acute/pressure	1.8	segmented	El Chayal
36	2	15			225	proximal	core face	1	no	1	0%	11.30	7.32	1.93	crushed	acute/pressure	0.1	bipolared	El Chayal
36	2	16			21	middle	core face	3	no	2	0%	12.54	12.45	1.72			0.2	segmented	San Martin Jilotepeque
36	2	16			22	distal		1	no	1	0%	11.05	13.15	1.24			0.2		El Chayal
36	2	17			56	middle	core face	3	no	2	0%	13.87	12.45	2.47			0.6	bipolared	El Chayal
36	2	17			57	middle	core face	3	no	1	0%	9.31	10.17	2.64			0.1	bipolared	El Chayal
36	2	17			59	proximal	core face	1	no	1	0%	14.30	15.73	3.09	unprepared	acute/pressure	0.4	segmented	El Chayal
36	3	2			73	middle	core face	3	no	2	0%	12.96	14.30	2.21			0.5	segmented	San Martin Jilotepeque
36	3	3			67	proximal	core face		no	1	0%	11.63	20.25	2.89	crushed	acute/pressure	0.5	bipolared	San Martin Jilotepeque
36	3	4			70	middle	core face	3	no	1	0%	13.35	12.74	2.22			0.4	bipolared	San Martin Jilotepeque
36	3	4			76	proximal	margin/lateral	1	no	1	15%	13.90	15.89	3.03	unprepared	punch	0.6	segmented	El Chayal
36	3	5			119	middle	core face	3	no	2	0%	14.02	18.83	5.30			1.5	bipolared	El Chayal
36	3	5			120	middle	core face	3	no	2	0%	12.95	21.85	2.60			0.7	segmented	San Martin Jilotepeque
36	3	6			166	proximal	core face	1	no	1	0%	13.17	16.47	3.51	crushed		0.7	segmented	El Chayal
36	3	6			167	middle	core face	3	no	2	0%	5.39	12.38	1.53			0.1	segmented	San Martin Jilotepeque
36	3	6			168	middle	margin/lateral	3	no	1	0%	17.95	24.68	4.61			1.9	segmented	El Chayal
36	3	6			171	middle	core face	3	no	1	0%	7.89	23.52	5.22			0.6	bipolared	El Chayal
36	3	7			175	distal	core face	3	no	1	0%	13.37	16.13	2.04			0.5	segmented	El Chayal
36	3	7			177	middle	core face	3	no	2	0%	10.59	13.79	2.06			0.4	segmented	San Martin Jilotepeque
36	3	7			178	distal	core face	1	no	2	100%	10.89	16.38	3.34			0.4	segmented	San Martin Jilotepeque

Operation Num.	Sub. Oper.	Level	Elem.	Form Num.	Artifact	Part	Location	Stage of Removal	Complete Blade	Number of Dorsal Ridges	(%) Cortex	Width (mm)	Length (mm)	Thickness (mm)	Platform Modification	Bulb of Percussion	Weight (grams)	Blade Modification	Material Source
34	3	3			62	proximal			no	2	no	15.94	20.93	3.47			1.3		El Chayal
34	6	2			65	middle	core face	2	no	3	0%	11.70	27.60	4.00			1.6	usewear	
34	6	2			66	middle	core face	3	no	2	0%	12.40	24.60	2.80			1.3		
34	6	2			67	middle	core face	3	no	2	0%	8.90	22.40	1.70			0.6		
34	6	2			68	middle	core face	1	no	2	0%	10.50	20.40	4.70			0.8	bipolared	
34	1	6			71	proximal	core face	1	no	1	0%	19.72	15.51	4.25	unprepared	percussion	0.9		
34	1	6			72	middle	core face	2	no	1	0%	6.93	15.81	1.43			0.3		
34	1	6			75	middle	core face	1	no	1	0%	7.42	13.43	0.75			0.1		
34	2	7	A		100	proximal	core face	2	no	3	0%	10.60	17.20	3.90	unprepared	acute/pressure	0.8	usewear	
34	2	9			100	complete	margin/lateral	1	yes	1	0%	10.20	29.40	3.80	unprepared	acute/pressure	0.9		
34	2	10			100	proximal	core face	2	no	2	0%	11.70	39.00	2.40	isolated	acute/pressure	2.1	usewear	
34	2	11			100	proximal	margin/lateral	1	no	1	50%	9.00	15.50	2.80	crushed	acute/pressure	0.5	usewear	
34	2	12			100	complete	margin/lateral	3	yes	4	0%	8.00	37.40	2.40	crushed	acute/pressure	1.0	usewear	
34	2	13			100	middle	core face	3	no	2	0%	13.20	30.10	2.90			1.8	heavy usewear	
34	2	15			100	middle	core face	3	no	2	0%	18.50	23.00	3.20			1.8	usewear	
34	7	11	A		100	proximal	core face	3	no	2	0%	10.90	29.20	3.40	isolated	acute/pressure	1.3		el Chayal
34	2	7	A		101	middle	core face	3	no	1	0%	7.40	7.90	1.60			0.1		
34	2	9			101	complete	core face	2	yes	2	0%	9.90	42.70	3.40	isolated	acute/pressure	1.5	usewear	
34	2	10			101	proximal	core face	2	no	2	0%	11.30	25.40	2.90	crushed	acute/pressure	1.0		
34	2	11			101	middle	core face	3	no	2	0%	15.10	20.30	3.60			1.5	usewear	
34	2	12			101	proximal	margin/lateral	1	no	1	50%	10.80	25.80	3.50	isolated	acute/pressure	1.2		
34	2	13			101	middle	core face	3	no	2	0%	11.90	29.50	3.40			1.6	heavy usewear	
34	2	15			101	distal	core face	3	no	2	0%	8.10	16.10	2.70			0.4	retouch	
34	7	11	A		101	proximal	core face	2	no	2	0%	12.80	25.00	3.80	unprepared	acute/pressure	1.2		el Chayal
34	2	7	A		102	middle	core face	2	no	1	0%	10.40	17.00	1.90			0.5		
34	2	9			102	proximal			no	1	0%	12.60	15.90	3.30	crushed	acute/pressure	0.7		
34	2	10			102	proximal	core face	1	no	2	0%	29.00	10.10	2.20	isolated	acute/pressure	1.0	usewear	
34	2	11			102	middle	core face	3	no	2	0%	11.10	28.50	2.70	crushed		1.0	bipolared	
34	2	12			102	proximal	core face	2	no	2	0%	12.90	18.30	3.50	isolated	acute/pressure	1.1		
34	2	13			102	middle	core face	2	no	1	0%	9.50	8.80	3.70			0.4		
34	7	11	A		102	middle	core face	1	no	1	0%	11.40	19.30	4.20			1.0		el Chayal
34	2	7	A		103	middle			no	1	0%	14.30	24.50	3.00			0.7	bipolared	
34	2	9			103	proximal	core face	2	no	2	0%	9.30	17.30	1.30	isolated	acute/pressure	0.3		
34	2	10			103	proximal	core face	1	no	2	0%	12.00	18.30	2.90	cortical	acute/pressure	0.9		
34	2	11			103	middle	margin/lateral	2	no	1	0%	6.30	11.10	1.00			0.1		
34	2	12			103	proximal	core face	1	no	1	0%	11.70	9.10	2.00	isolated	acute/pressure	0.3		
34	2	13			103	middle	core face	3	no	2	0%	12.50	23.10	2.60			1.0	usewear	
34	7	11	A		103	middle	core face	3	no	3	0%	11.10	17.70	3.20			0.7	bipolared	el Chayal
34	2	7	A		104	middle	core face	3	no	2	0%	11.40	13.40	2.00			0.5	usewear	
34	2	9			104	proximal	core face	3	no	2	0%	7.10	22.20	1.20	isolated	acute/pressure	0.3		

Operation Num.	Sub. Oper.	Level	Elem.	Form Num.	Artifact	Part	Location	Stage of Removal	Complete Blade	Number of Dorsal Ridges	(%) Cortex	Width (mm)	Length (mm)	Thickness (mm)	Platform Modification	Bulb of Percussion	Weight (grams)	Blade Modification	Material Source
36	3	8			169	middle	core face	3	no	1	0%	8.90	15.99	1.90			0.3	segmented	San Martin Jilotepeque
36	3	8			170	middle	core face	3	no	1	0%	15.22	25.56	3.86			0.8	bipolared	San Martin Jilotepeque
36	3	8			172	distal	core face	2	no	2	0%	9.18	13.54	3.32			0.4	segmented	El Chayal
36	3	9			225	distal	core face	3	no	2	0%	16.44	18.40	4.12	crushed	punch	1.6	segmented	San Martin Jilotepeque
36	3	9			226	middle	core face	3	no	2	0%	8.50	18.14	1.73			0.3	segmented	El Chayal
36	3	9			227	distal		3	no	2	0%	6.66	20.25	1.79			0.3	segmented	San Martin Jilotepeque
36	3	9			228	middle	core face	3	no	2	0%	8.37	17.14	1.95			0.3	segmented	El Chayal
36	3	9			229	middle	core face	3	no	2	0%	8.82	16.39	2.65			0.5	segmented	El Chayal
36	3	9			231	distal	margin/lateral	3	no	3	0%	13.51	13.33	2.76			0.4	segmented	El Chayal
36	3	10			192	distal	core face	3	no	2	0%	14.89	20.23	2.99			0.8	segmented	San Martin Jilotepeque
36	3	10			210	middle			no	1	0%	11.47	23.13	1.31			0.5	bipolared	San Martin Jilotepeque
36	3	10			189	distal	core face	3	no	2	0%	12.02	20.65	3.66			1.1	segmented	San Martin Jilotepeque
36	3	10			188	middle	core face	3	no	2	0%	11.07	24.07	2.43			0.7	segmented	San Martin Jilotepeque
36	3	10			190	distal	core face	3	no	2	0%	7.80	24.21	3.08			0.5	segmented	San Martin Jilotepeque
36	3	10			191	middle	core face	3	no	1	0%	13.85	25.12	3.58			1.5	segmented	El Chayal
36	3	11			179	proximal	core face	3	no	2	0%	12.48	28.78	2.76	isolated	acute/pressure	1.4	segmented	El Chayal
36	3	11			180	proximal	core face	3	no	2	0%	12.98	24.23	2.21	isolated	acute/pressure	0.7	segmented	El Chayal
36	3	11			181	proximal	core face	3	no	1	0%	8.79	6.10	3.73	unprepared	acute/pressure	0.5	segmented	San Martin Jilotepeque
36	3	12	B		27	middle	core face	1	no	2	0%	15.06	25.80	2.37			1.6	segmented	El Chayal
36	3	12	D		38	distal	margin/lateral	3	no	1	0%	13.66	43.82	3.20			1.7	segmented	El Chayal
36	3	12	D		40	middle	core face	3	no	1	0%	11.58	10.19	2.06			0.2	bipolared	El Chayal
36	3	14	E		51	middle	core face	1	no	2	0%	11.02	28.84	2.49			0.9	segmented	San Martin Jilotepeque
36	3	14	H		71	proximal	core face	3	no	2	0%	14.28	50.99	2.62	isolated	punch	2.3	segmented	El Chayal
36	3	14	H		72	middle			no	1	0%	9.39	20.64	3.28			0.8	bipolared	El Chayal
36	3	15	H		195	middle	core face	3	no	2	0%	14.43	21.18	1.91			0.9	segmented	Ixtepeque
36	3		122C		105	middle	core face	3	no	1	0%	11.89	19.98	2.49			0.6	segmented	El Chayal
36	3		122C		106	proximal	core face	2	no	2	0%	14.42	42.65	3.40	isolated	punch	2.0	segmented	El Chayal
36	3		122D		192	middle	core face	2	no	2	15%	14.36	18.10	1.53			0.7	segmented	El Chayal
36	3		122D		194	distal	core face	3	no	2	0%	8.88	13.35	2.16			0.3	segmented	El Chayal
36	3		125E		50	middle	core face	3	no	1	0%	10.94	22.64	2.55			0.7	bipolared, segmented	San Martin Jilotepeque
36	3		127A		98	proximal	core face	2	no	2	0%	14.44	37.15	2.75	isolated	punch	2.2	segmented	San Martin Jilotepeque
36	3		127D		131	middle	core face	3	no	2	0%	15.73	31.69	2.36			1.6	segmented	El Chayal
36	3		127D		132	middle	core face	3	no	2	0%	14.20	7.36	4.09			0.4	bipolared	El Chayal
36	3		127E		48	distal	core face	3	no	2	0%	12.23	17.15	3.16			0.8	segmented	El Chayal
36	5	2			53	distal	margin/lateral	2	no	2	0%	23.67	32.55	3.29			2.4	segmented	El Chayal
36	5	4			101	middle	core face	1	no	1	0%	10.73	25.62	2.71			0.6		El Chayal
36	5	4			102	middle	core face	3	no	1	0%	11.06	14.15	2.83			0.5	bipolared, segmented	San Martin Jilotepeque
36	5	5			86	middle	core face	3	no	2	0%	9.72	21.55	2.60			0.8	segmented	San Martin Jilotepeque
36	5	6			121	distal	margin/lateral	3	no	2	0%	12.91	19.30	3.67			0.8	segmented	El Chayal
36	5	6			125	middle	core face	3	no	1	0%	18.70	6.61	5.15			0.3	segmented	El Chayal

Operation Num.	Sub. Oper.	Level	Elem.	Form Num.	Artifact	Part	Location	Stage of Removal	Complete Blade	Number of Dorsal Ridges	(%) Cortex	Width (mm)	Length (mm)	Thickness (mm)	Platform Modification	Bulb of Percussion	Weight (grams)	Blade Modification	Material Source
36	5	7			123	middle	core face	2	no	1	0%	7.48	15.91	3.12			0.3		El Chayal
36	5	7			120	proximal	core face	2	no	2	0%	15.10	17.93	3.07	crushed	acute/pressure	0.7	segmented	San Martin Jilotepeque
36	5	7			119	distal	margin/lateral	2	no	1	0%	14.18	15.79	3.92			0.6		San Martin Jilotepeque
36	5	7			122	middle	core face	3	no	1	0%	13.42	8.00	2.49			0.2	segmented	El Chayal
36	5	8			184	middle	core face	2	no	2	0%	11.15	19.59	2.59			0.7	segmented	San Martin Jilotepeque
36	5	9			177	distal	margin/lateral	1	no	3	0%	7.54	33.06	3.52			0.7		El Chayal
36	5	9			169	middle	core face	2	no	2	0%	16.80	19.41	2.73			0.9	segmented	El Chayal
36	5	9			168	middle	margin/lateral	2	no	2	0%	16.72	19.15	4.19			1.3	segmented	San Martin Jilotepeque
36	5	9			175	middle	core face	3	no	2	0%	6.35	36.06	4.44			1.6	bipolared	El Chayal
36	5	9			170	middle	core face	2	no	2	0%	10.11	23.77	2.21			0.4	bipolared	El Chayal
36	5	10			146	middle	core face	2	no	2	0%	10.11	14.17	1.98			0.3	segmented	San Martin Jilotepeque
36	5	10			145	middle	margin/lateral	2	no	2	0%	13.07	19.12	2.82			0.8	segmented	San Martin Jilotepeque
36	5	11			178	middle	core face	3	no	2	0%	11.52	14.41	3.10			0.3	bipolared, segmented	San Martin Jilotepeque
36	5	11			177	middle	core face	3	no	1	0%	11.59	15.74	2.81			0.6	segmented	El Chayal
36	5	11			176	distal	core face	3	no	2	0%	9.64	22.74	2.58			0.6	segmented	El Chayal
36	5	11			175	proximal	core face	2	no	2	0%	15.96	31.09	3.57	unprepared	punch	2.5	segmented	El Chayal
36	5	11			189	middle	core face	3	no	1	0%	17.04	16.70	3.57			0.6	bipolared	San Martin Jilotepeque
36	5	12			287	middle	core face	2	no	1	0%	10.92	28.42	4.19			1.5	bipolared	El Chayal
36	5	12			286	middle	core face	1	no	1	0%	19.26	44.59	4.55			3.4		El Chayal
36	5	12			285	proximal	core face	2	no	2	0%	16.43	21.13	3.95	unprepared	punch	1.6	segmented	San Martin Jilotepeque
36	5		R129		94	distal	core face	3	no	1	0%	10.50	12.90	2.62			0.3	segmented	El Chayal
36	7	3			118	middle	core face	3	no	2	0%	12.12	20.07	2.98			1.1	segmented	El Chayal
36	7	4			228	middle	margin/lateral	1	no	1	0%	15.40	29.41	3.99			1.9	segmented	El Chayal
36	7	5			208	distal	core face	1	no	2	0%	12.41	34.49	3.29			1.5	segmented	El Chayal
36	7	6			206	middle	core face	3	no	2	0%	14.60	31.64	3.84			2.0	segmented	San Martin Jilotepeque
36	7	6			207	distal	margin/lateral	3	no	4	0%	11.81	31.54	4.55			1.9	segmented	El Chayal
36	7	7			144	distal	core face	3	no	3	0%	12.48	37.41	5.35			2.7	segmented	El Chayal
36	7	9	A		32	distal	margin/lateral	1	no	2	5%	13.28	24.61	2.52			0.7	segmented	El Chayal
36	1	2			217	proximal	core face	1	no	1	0%	15.56	30.94	3.76	isolated	acute/pressure	1.6		San Martin Jilotepeque
37	1	2			216	middle	core face	3	no	3	0%	7.70	8.65	2.95			0.7	segmented	San Martin Jilotepeque
37	1	6			156	middle	core face	3	no	2	0%	13.63	35.24	3.64			2.4	segmented	El Chayal
37	1	6			157	middle	core face	3	no	2	0%	14.52	18.02	3.28			0.9	segmented	San Martin Jilotepeque
37	1	R-142	6--A		200	complete	margin/lateral	1	yes	1	0%	19.74	45.85	7.12	unprepared	percussion	5.2		El Chayal
37	2	7			82	distal	margin/lateral	2	no	1	0%	9.51	25.37	2.75			0.8	segmented	El Chayal
37	2	8			115	distal	margin/lateral	2	no	3	0%	11.08	29.85	2.43			1.0	segmented	San Martin Jilotepeque
37	2	8			114	proximal	core face	2	no	2	0%	9.91	35.32	3.21	isolated	acute/pressure	1.5	segmented	El Chayal
37	2	9	B		117	proximal	margin/lateral	2	no	1	0%	16.17	20.88	3.10	crushed	acute/pressure	0.8	segmented	El Chayal
37	2	9	B		118	middle	core face	2	no	2	0%	7.47	18.73	1.66			0.3	segmented	San Martin Jilotepeque
37	2	10			237	proximal	margin/lateral	1	no	1	0%	24.06	29.37	5.65	unprepared	percussion	3.5		El Chayal
37	2	10			235	complete	margin/lateral	1	no	1	0%	21.12	53.56	4.43	crushed	percussion	5.4		San Martin Jilotepeque

Operation Num.	Sub. Oper.	Level	Elem.	Form Num.	Artifact	Part	Location	Stage of Removal	Complete Blade	Number of Dorsal Ridges	(%) Cortex	Width (mm)	Length (mm)	Thickness (mm)	Platform Modification	Bulb of Percussion	Weight (grams)	Blade Modification	Material Source
37	2	10			229	middle	core face	3	no	1	0%	15.67	21.56	4.04			1.5	segmented	El Chayal
37	2	10			230	middle	core face	3	no	2	0%	9.00	23.53	2.01			0.6	segmented	San Martin Jilotepeque
37	2	10			232	distal	core face	2	no	2	0%	10.33	21.10	1.95			0.5	bipolared, segmented	San Martin Jilotepeque
37	2	10			228	distal	core face	2	no	2	17%	16.77	25.64	2.03			0.9	segmented	San Martin Jilotepeque
37	2	10	B		59	middle	core face	1	no	1	0%	12.72	1.63	3.93			0.4	bipolared	El Chayal
37	2	11			240	middle	core face	2	no	2	0%	9.33	8.57	1.29			0.1	segmented	El Chayal
37	2	11			243	distal	core face	3	no	3	0%	12.74	30.58	3.08			1.4	segmented	El Chayal
37	2	11			234	proximal	core face	1	no	2	0%	16.33	39.18	3.19	unprepared	acute/pressure	2.2	segmented	El Chayal
37	2	11			238	middle	core face	2	no	2	0%	12.14	13.52	2.56			0.5	segmented	El Chayal
37	2	11			235	middle	core face	2	no	2	0%	13.16	28.85	4.02			2.0	segmented	San Martin Jilotepeque
37	2	11			236	proximal	core face	2	no	2	0%	12.90	22.75	3.09	unprepared	acute/pressure	1.5	segmented	El Chayal
37	2	12			234	middle	margin/lateral	1	no	1	50%	7.42	13.43	1.61			0.1		El Chayal
37	2	13			219	distal	core face	3	no	2	0%	11.46	52.22	2.82			2.1	segmented	El Chayal
37	2	14			220	distal	margin/lateral	2	no	2	0%	11.92	26.22	2.45			0.7	segmented	El Chayal
37	2	14			222	proximal	margin/lateral	2	no	1	0%	14.25	30.31	2.69	unprepared	acute/pressure	1.0		El Chayal
37	2	14			223	middle	core face	2	no	1	0%	11.06	18.66	2.08			0.5	segmented	El Chayal
37	2	14			224	middle	core face	3	no	1	0%	12.31	9.63	3.56			0.4	bipolared	San Martin Jilotepeque
37	2	14			225	proximal	core face	2	no	2	0%	10.55	20.87	2.72	unprepared	acute/pressure	0.5	segmented	San Martin Jilotepeque
37	2	14			233	middle	core face	3	no	2	0%	11.14	23.85	4.88			1.4	bipolared	San Martin Jilotepeque
37	2	14			238	middle	core face	3	no	1	0%	9.59	17.14	3.73			0.4	bipolared	El Chayal
37	2	15			244	distal	margin/lateral	3	no	2	0%	13.00	28.63	2.87			1.3	segmented	San Martin Jilotepeque
37	2	15			186	middle	core face	3	no	2	0%	12.52	16.27	2.19			0.5	segmented	El Chayal
37	2	16	A		79	distal	margin/lateral	3	no	2	0%	10.94	23.95	2.70			0.8	segmented	San Martin Jilotepeque
37	2	16	A		78	proximal	core face	2	no	1	0%	10.61	38.08	3.78					San Martin Jilotepeque
37	2	16	B		289	proximal	core face	2	no	1	0%	10.18	36.57	2.78	unprepared	acute/pressure	1.60	segmented	El Chayal
37	2	17			274	distal	margin/lateral	3	no	3	0%	10.60	34.23	3.20			1.50	segmented	San Martin Jilotepeque
37	2	18			231	distal	core face	1	no	2	2%	13.23	43.00	3.33			2.30	segmented	El Chayal
37	2	18			234	distal	core face	3	no	2	0%	3.01	18.52	1.72			0.30	segmented	San Martin Jilotepeque
37	2	18			232	middle	core face	3	no	2	0%	10.47	39.02	2.25			1.80	segmented	San Martin Jilotepeque
37	2	18			233	middle	core face	2	no	2	0%	9.74	19.81	2.97			0.60	segmented	El Chayal
37	2	19			271	middle	core face	2	no	1	0%	12.24	23.04	2.77			0.90	segmented	San Martin Jilotepeque
37	2	19			128	proximal	core face	1	no	1	0%	9.39	13.69	2.98			0.40		San Martin Jilotepeque
37	2	19			126	middle	core face	3	no	2	0%	12.02	25.03	2.38			1.00	segmented	El Chayal
37	2	21			158	middle	core face	2	no	1	0%	10.31	32.38	2.80			1.30	segmented	El Chayal
37	1	1			130	proximal	core face	2	no		0%	15.87	9.77	2.77		acute/pressure	0.40	segmented	El Chayal
38	1	2			68	middle	core face	3	no	2	0%	10.75	22.42	2.43			0.80	segmented	San Martin Jilotepeque
38	1	2			69	middle	core face	3	no	2	0%	18.08	16.71	3.12			1.20	segmented	San Martin Jilotepeque
38	1	4			122	middle	core face	3	no	3	0%	7.38	7.40	2.39			0.20	segmented	San Martin Jilotepeque
38	1	4			124	middle	core face	3	no	1	0%	13.00	13.52	2.50			0.60	segmented	San Martin Jilotepeque
38	1	5			156	proximal	core face	3	no	2	0%	10.46	31.77	2.19	isolated	acute/pressure	1.00	segmented	San Martin Jilotepeque

Operation Num.	Sub. Oper.	Level	Elem.	Form Num.	Artifact	Part	Location	Stage of Removal	Complete Blade	Number of Dorsal Ridges	(%) Cortex	Width (mm)	Length (mm)	Thickness (mm)	Platform Modification	Bulb of Percussion	Weight (grams)	Blade Modification	Material Source
38	1	5			157	middle	core face	2	no	2	0%	11.12	23.30	3.25			0.60	bipolared	San Martin Jilotepeque
38	1	5			158	proximal	core face	1	no	1	0%	17.46	21.28	4.45	unprepared	punch	1.20	segmented	El Chayal
38	1	5			159	middle	core face	1	no	1	0%	13.87	20.46	4.64			1.30	segmented	San Martin Jilotepeque
38	1	5			160	proximal		3	no	3	0%	7.28	21.00	1.94	crushed	acute/pressure	0.50	segmented	San Martin Jilotepeque
38	1	5			161	distal		3	no	2	0%	8.88	10.59	1.65			0.20	segmented	El Chayal
38	1	6			202	distal	core face	2	no	1	0%	18.74	14.75	3.44			0.60	segmented	San Martin Jilotepeque
38	1	6			203	middle	core face	3	no	2	0%	13.21	24.48	2.79			1.10	segmented	San Martin Jilotepeque
38	1	6			204	middle		2	no	1	0%	9.64	20.47	3.11			0.60	burinated, segmented	San Martin Jilotepeque
38	1	6			205	middle	core face	1	no	1	0%	9.89	17.46	2.92			0.50	segmented	San Martin Jilotepeque
38	1	6			206	middle	core face	3	no	2	0%	7.10	16.80	2.18			0.20	segmented	El Chayal
38	1	6			207	middle	margin/lateral	2	no	1	0%	8.03	10.34	3.33			0.30	segmented	El Chayal
38	1	6			209	middle	core face	3	no	2	0%	8.77	10.22	1.93			0.20	segmented	El Chayal
38	1	6			210	middle		3	no	1	0%	7.30	8.88	1.90			0.10	segmented	El Chayal
38	1	6			211	middle	core face	3	no	2	0%	10.73	10.57	1.91			0.20	segmented	El Chayal
38	1	6			212	middle	core face	3	no	1	0%	10.44	12.12	2.75			0.40	burinated, segmented	San Martin Jilotepeque
38	1	6			214	proximal	core face	1	no	1	15%	10.38	15.59	3.62	isolated	acute/pressure	0.60	segmented	El Chayal
38	1	7			284	proximal	margin/lateral	1	no	1	0%	14.49	24.62	2.79		acute/pressure	0.70	segmented	El Chayal
38	1	7			320	middle	margin/lateral	1	no	1	0%	10.46	13.56	4.36			0.60	segmented	El Chayal
38	1	7			313	middle	core face	1	no	1	0%	11.97	15.75	3.70			0.50	segmented	El Chayal
38	1	7			291	middle	margin/lateral	1	no	1	0%	8.40	20.73	3.44			0.60	segmented	El Chayal
38	1	7			285	middle	core face	2	no	2	0%	12.58	32.44	3.11			1.60	segmented	El Chayal
38	1	7			288	distal	core face	3	no	3	0%	9.78	27.73	5.03			1.20	segmented	El Chayal
38	1	7			286	middle	core face	3	no	2	0%	12.44	23.38	4.01			1.30	bipolared	El Chayal
38	1	7			290	middle	core face	3	no	2	0%	12.59	16.24	1.81			0.30	segmented	El Chayal
38	1	7			292	middle	core face	3	no	1	0%	11.83	11.61	1.88			0.30	segmented	El Chayal
38	1	8			250	middle	margin/lateral	1	no	2	0%	16.38	23.75	3.37			1.00		El Chayal
38	1	8			248	distal	core face	3	no	3	0%	8.64	30.75	2.86			0.90	segmented	El Chayal
38	1	8			252	middle	core face	3	no	2	0%	13.48	12.47	4.20			0.70	segmented	El Chayal
38	1	8			249	middle	core face	3	no	2	0%	16.31	19.62	3.60			1.30	segmented	El Chayal
38	1	8			253	distal	core face	1	no	1	15%	13.87	13.24	3.12			0.60	segmented	El Chayal
38	1	8			266	proximal	core face	1	no	1	0%	17.33	23.38	5.15	crushed	percussion	1.40		El Chayal
38	1	8			256	middle	core face	3	no	3	0%	8.24	7.09	2.51			0.20	segmented	El Chayal
38	1	8			251	middle	core face	3	no	2	0%	9.55	22.28	2.81			0.80	segmented	El Chayal
38	1	8			247	distal	core face	1	no	2	0%	10.11	24.71	3.77			1.00	segmented	El Chayal
38	1	9			151	proximal	core face	3	no	2	0%	14.62	34.51	3.08	unprepared	punch	2.40	segmented	El Chayal
38	1	9			152	middle	core face	3	no	2	0%	9.25	30.03	3.01			1.20	segmented	El Chayal
38	1	9			153	middle	core face	3	no	2	0%	10.96	20.84	2.82			0.70	segmented	El Chayal
38	1	9			156	proximal	margin/lateral	1	no	1	0%	22.77	10.99	3.90	crushed	percussion	1.30	segmented	El Chayal
38	1	9			162	distal	margin/lateral	1	no	1	80%	8.73	17.62	3.63			0.50	segmented	El Chayal
38	1	9			154	distal	margin/lateral	2	no	2	0%	10.24	22.68	2.09			0.40	segmented	El Chayal

Operation Num.	Sub. Oper.	Level	Elem.	Form Num.	Artifact	Part	Location	Stage of Removal	Complete Blade	Number of Dorsal Ridges	(%) Cortex	Width (mm)	Length (mm)	Thickness (mm)	Platform Modification	Bulb of Percussion	Weight (grams)	Blade Modification	Material Source
38	1	10			153	middle	core face	3	no	2	0%	11.68	16.58	1.98			0.50	segmented	El Chayal
38	1	10			154	distal	core face	3	no	1	0%	9.91	16.04	2.85			0.40	segmented	El Chayal
38	1	10			155	middle	core face	2	no	1	0%	7.33	13.43	1.77			0.10	segmented	El Chayal
38	1	10			158	middle	core face	3	no	1	0%	7.27	8.15	1.97			0.20	segmented	El Chayal
38	1	10			162	middle	margin/lateral	1	no	1	0%	11.37	20.21	3.44			0.80	bipolared, segmented	El Chayal
38	1	11			212	proximal	core face	3	no	2	0%	11.18	8.15	2.75	crushed	acute/pressure	0.30	segmented	El Chayal
38	1	11			209	middle	core face	3	no	2	0%	10.48	16.90	2.73			0.60	segmented	El Chayal
38	1	11			210	middle	core face	2	no	1	0%	11.05	15.88	4.34			0.70	segmented	El Chayal
38	1	11			208	proximal	core face	2	no	3	0%	9.73	24.04	3.84	unprepared	punch	0.70	segmented	El Chayal
38	1	11			207	distal	margin/lateral	1	no	1	0%	10.60	12.46	2.20			0.10	segmented	El Chayal
38	1	13	B		226	middle	core face	2	no	2	0%	13.50	21.70	3.22			1.50	segmented	El Chayal
38	1	14	B		260	middle	core face	2	no	1	0%	11.78	14.30	2.80			0.70	segmented	El Chayal
38	1	15	A		53	middle	margin/lateral	1	no	1	0%	15.61	18.75	3.75			1.30	segmented	El Chayal
38	1	15	B		147	middle	core face	1	no	1	0%	10.31	18.08	3.56			0.50	segmented	San Martin Jilotepeque
38	1	15	B		419	proximal	core face	1	no	1	45%	9.98	41.48	4.47	unprepared	acute/pressure	2.00	segmented	El Chayal
38	1	15	B		423	middle	core face	2	no	2	0%	10.35	16.62	1.97			0.50	segmented	El Chayal
38	1	15	B		424	middle		3	no	1	0%	6.26	18.84	1.84			0.30	segmented	El Chayal
38	1	15	B		425	middle			no	1	0%	11.04	22.45	2.54			0.30	bipolared	El Chayal
38	1	16			238	middle	core face	3	no	1	0%	9.09	12.09	4.18			0.50	segmented	San Martin Jilotepeque
38	1	17	A		287	middle	core face	3	no	2	0%	10.30	31.85	1.76			0.70	segmented	El Chayal
38	1	17	A		288	distal	core face	3	no	2	0%	11.72	22.53	2.51			0.70	bipolared	El Chayal
38	1	17	A		322	distal	core face	2	no	3	0%	10.85	21.17	5.20			1.10	segmented	El Chayal
38	1		R	191	246	middle	core face	2	no	1	0%	12.84	19.00	3.17			0.80	segmented	El Chayal
38	2	1			65	proximal	core face	1	no	1	0%	12.21	22.99	3.18	crushed	punch	0.80	segmented	El Chayal
38	2	3			73	distal	core face	3	no	2	0%	10.33	12.99	2.80			0.40	segmented	El Chayal
38	2	3			74	proximal	core face	3	no	2	0%	9.17	28.83	2.12	isolated	acute/pressure	0.90	segmented	El Chayal
38	2	4			42	middle	core face	3	no	1	0%	11.83	22.36	3.53			0.70	segmented	El Chayal
38	2	4			43	proximal	core face	2	no	2	0%	11.40	19.63	2.29	unprepared	punch	0.40	segmented	El Chayal
38	2	5			102	middle	core face	2	no	1	0%	13.36	19.65	4.84			0.90	segmented	El Chayal
38	2	5			103	middle	core face	1	no	1	0%	9.75	18.09	4.49			0.80	segmented	El Chayal
38	2	5			104	middle	core face	3	no	1	0%	12.42	11.59	3.22			0.60	segmented	San Martin Jilotepeque
38	2	6			97	middle	core face	3	no	2	0%	13.43	27.65	2.95			1.70	segmented	El Chayal
38	2	7			80	middle	core face	3	no	1	0%	15.75	30.59	3.60			1.90	segmented	San Martin Jilotepeque
38	2	7			81	middle	core face	3	no	2	0%	14.28	22.75	2.43			1.00	segmented	El Chayal
38	2	8			107	middle	core face	1	no	2	0%	14.92	25.63	4.96			2.10	bipolared	El Chayal
38	2	8			106	middle	core face	2	no	2	0%	12.39	18.68	2.93			0.80	segmented	El Chayal
38	2	8			109	middle	core face	3	no	1	0%	12.80	15.11	2.19			0.60	bipolared, segmented	El Chayal
38	2	8			108	middle	core face	2	no	1	0%	17.10	16.62	3.98			0.90	bipolared, segmented	El Chayal
38	2	8			160	middle	core face	3	no	1	0%	14.00	5.66	2.09			0.10		El Chayal
38	2	9			155	middle	core face	3	no	2	0%	10.38	28.43	2.57			1.00	segmented	San Martin Jilotepeque

Operation Num.	Sub. Oper.	Level	Elem.	Form Num.	Artifact	Part	Location	Stage of Removal	Complete Blade	Number of Dorsal Ridges	(%) Cortex	Width (mm)	Length (mm)	Thickness (mm)	Platform Modification	Bulb of Percussion	Weight (grams)	Blade Modification	Material Source
38	2	9			156	middle	core face	2	no	1	0%	12.83	17.46	3.30			0.70	segmented	San Martin Jilotepeque
38	2	9			157	proximal	core face	1	no	2	0%	10.77	20.89	3.20	crushed	punch	0.90	segmented	San Martin Jilotepeque
38	2	9			158	middle	core face	3	no	2	0%	10.89	18.98	2.13			0.50	segmented	San Martin Jilotepeque
38	2	9			153	middle	core face	3	no	1	0%	13.53	9.88	2.85			0.50	segmented	San Martin Jilotepeque
38	2	9			151	proximal	core face	2	no	3	25%	17.13	24.35	3.32	unprepared	punch	1.50	segmented	San Martin Jilotepeque
38	2	9			159	middle	core face	2	no	1	0%	10.01	18.17	3.27			0.60	segmented	San Martin Jilotepeque
38	2	9			150	distal	margin/lateral	1	no	1	50%	12.02	24.70	3.65			0.70	segmented	San Martin Jilotepeque
38	2	9			160	middle	core face	2	no	1	0%	9.13	11.29	2.61			0.30	segmented	El Chayal
38	3	2			51	distal	core face	3	no	3	0%	9.43	24.56	2.04			0.70	segmented	El Chayal
38	3	3			73	middle	core face	1	no	1	0%	10.64	16.51	4.86			0.70	bipolared, segmented	El Chayal
38	3	3			74	middle	core face	3	no	2	0%	10.31	15.74	3.14			0.50	segmented	El Chayal
38	3	3			81	distal	margin/lateral	1	no	3	20%	9.35	14.54	2.23			0.20	segmented	El Chayal
38	3	5			80	proximal	margin/lateral	1	no	1	45%	12.21	46.79	6.44	unprepared	acute/pressure	3.60	segmented	San Martin Jilotepeque
38	3	5			82	middle	core face	2	no	1	0%	11.17	20.27	3.39			0.80	segmented	El Chayal
38	3	6			95	middle	core face	2	no	1	0%	8.77	13.15	2.14			0.30	segmented	San Martin Jilotepeque
38	3	6			96	middle	core face	3	no	2	0%	11.07	20.79	3.72			0.90	segmented	El Chayal
38	3	6			98	proximal	core face	2	no	2	0%	17.02	21.12	3.17	crushed	punch	1.50	segmented	El Chayal
38	3	7			103	middle	core face	2	no	1	0%	12.50	18.04	2.45			0.50	segmented	San Martin Jilotepeque
38	3	7			104	distal	core face	3	no	2	0%	11.58	27.55	2.48			0.90	segmented	San Martin Jilotepeque
38	3	7			105	proximal	core face	2	no	1	0%	12.15	24.08	3.42	crushed		1.10	segmented	El Chayal
38	3	8			125	distal	core face	3	no	4	0%	12.92	26.15	2.29			0.70	segmented	El Chayal
38	3	9			183	middle	core face	3	no	1	0%	10.20	10.93	3.50			0.30	segmented	El Chayal
38	5	4			50	middle	core face	2	no	2	0%	13.01	20.53	3.99			1.40	segmented	San Martin Jilotepeque
38	5	5			33	distal	core face	3	no	1	0%	10.10	27.84	2.58			0.70	segmented	El Chayal