Craft Production and Socio-Economic Marginality

Living on the Periphery of Urban Teotihuacan

by

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ABSTRACT

This dissertation investigates socio-economic strategies adopted by a small craftworking community situated on the edge of one of the earliest, largest and most complex cities in Mesoamerica. The focus of investigation is San José 520, a hamlet located on the southeastern margin of Teotihuacan and occupied primarily during the Tlamimilolpa and Xolalpan phases (ca. A.D. 200-500). Its inhabitants were potters of low socio-economic status living in small, architecturally simple residential structures. The investigation complements much more numerous studies of higher-status groups residing in Teotihuacan's famous apartment compounds, much larger and architecturally more formal structures clustered primarily within built-up parts of the city.

The founding residents of San José 520 might have initially been immigrants, arriving at Teotihuacan after most of the city was already filled in and occupied, and therefore settling in a spatially marginal area with limited potential for farming. Archaeological field and lab investigations demonstrate that they adopted ceramic production as a strategy of economic survival in a competitive urban system. They specialized in the manufacture of the outcurving bowl—a vessel widely used at Teotihuacan for food service and certain ritual activities. At smaller scales of production, these potters also made other types of serving and ritual vessels and figurines. Evidence relating to mortuary and domestic rituals indicates participation in a number of the rituals typical of other sectors of Teotihuacan society, but not all.

The most general goal of this investigation is to improve understanding of how socially and spatially marginal peoples possessing low economic status developed and exploited viable economic niches in pre-industrial urban systems. The San José 520 potters appear dynamic in their economic adjustment—in part by enhancing their

production system over time through the adoption of various specialized pot-making tools (some as yet undocumented for Teotihuacan), and to some extent by modifying their product line, they survived for many generations. Nevertheless, they never succeeded in significantly raising their economic status; at the time of their apparent disappearance sometime in the Xolalpan phase, these potters and their households continued to constitute a case study of urban poverty in a massive pre-industrial city.

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CHAPTER 1: INTRODUCTION

Cities, Economy, and Diversity

In recent times, a large percentage of the world population, perhaps slightly more than half, have come to live in cities (UNESCO 2011). Modern cities are attractive to many people because they appear to offer a more favorable setting than rural areas for the resolution of social and economic problems. There was a time, however, when no one lived in cities; the adoption of urban lifeways has caused radical transformations in human social life. Because of this, social scientists of various types (Childe 1950; Weber 1968; Wirth 1938) have devoted significant amounts of energy to understanding cities and what they have meant to human history.

Cities have been connected to the development of complex political systems such as archaic or pre-industrial states (see Childe 1950; Yoffee 2005:42-90). Such cities are also important because they are the seats of elite power, where much political and administrative decision-making took place (e.g., Blanton 1976). Cities are also places where many kinds of economic activities were intensified and have become most evident in the archaeological record (e.g., Blanton 1976, 1978, 1981; Kowalewski 1982; Santley and Alexander 1992). They are where activities associated with marketing, long-distance trade, and craft specialization tended to concentrate (Weber 1968:1215-1217).

One of the earliest and most striking examples of urbanism in the Precolumbian New World was Teotihuacan. Located approximately 50 km to the northeast of modern Mexico City (Figure 1.1), within the Teotihuacan Valley, this city began around 150 B.C. as a village or town of a few thousand people. The settlement grew quite rapidly into a very large city, becoming perhaps one of the six largest in the world (Millon 1993:17). At the height of its power, around A.D. 450, Teotihuacan was a primate city, the capital of

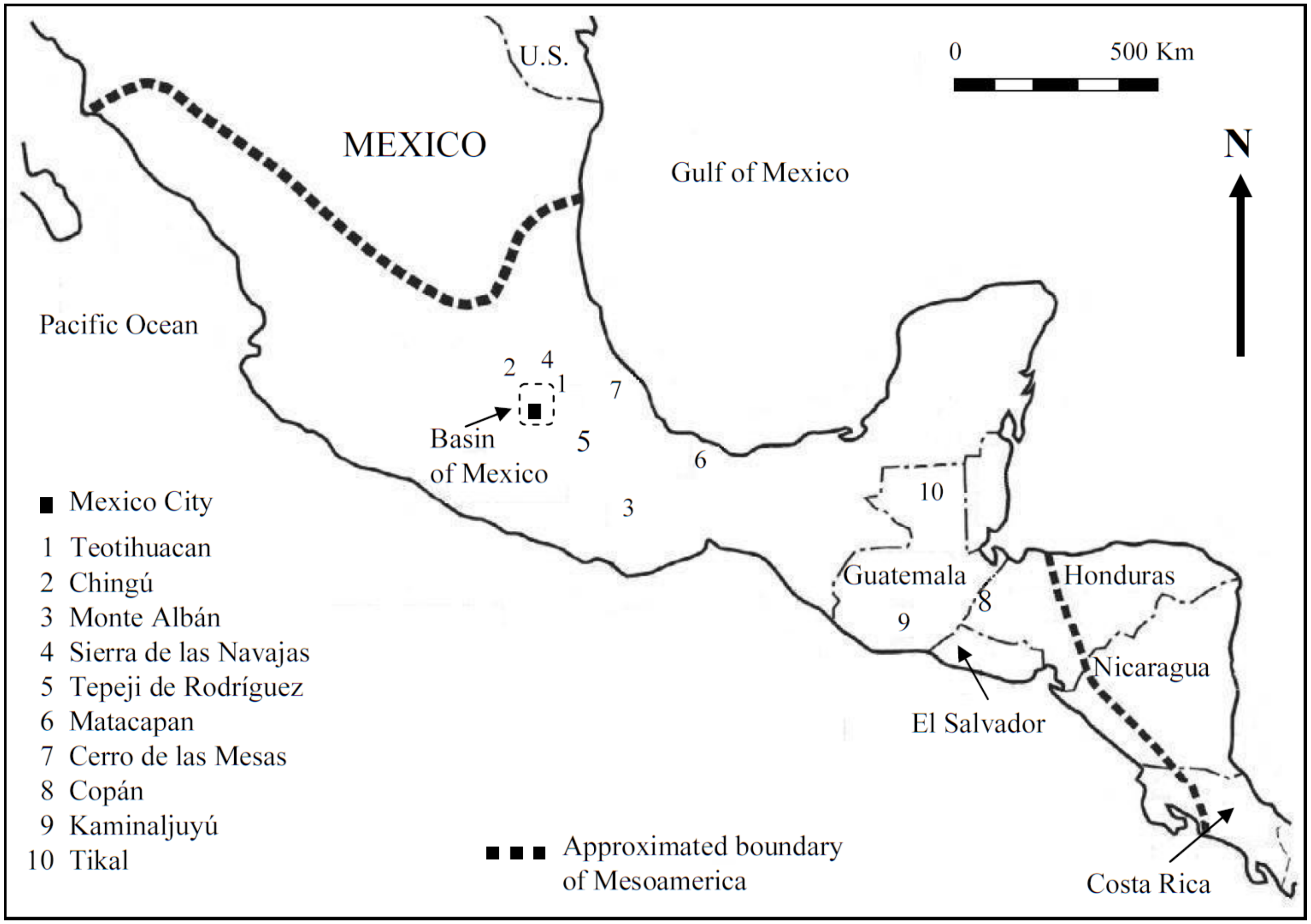


Figure 1.1. Location of Teotihuacan and other sites mentioned in this dissertation (modified from Cowgill 2008).

the most powerful polity in Central Mexico. With a population of around 100,000 people living in a space of approximately 20 square km, Teotihuacan concentrated a large percent of the population of the Basin of Mexico in a single, compact, densely populated settlement (Millon 1974). Occupation continued until about A.D. 500-600, when the ceremonial core was burned and much of the city abandoned.

Previous work at Teotihuacan (e.g., Spence 1986) as well as at other early cities has indicated that urban craft industries often grow and diversify in tandem with encompassing urban centers. This is due to the fact that inhabitants of cities provide large numbers of potential consumers that form the basis for new economies of scale in production and marketing. Teotihuacan fits this pattern, as it exhibited occupational specialization at levels that had not been documented in previous times in Mesoamerica.

Archaeological investigations aimed at understanding the role of craft production in processes of increasing sociopolitical complexity (which are frequently played out in cities) have portrayed craft goods as sources of economic and/or ideological power for ruling elites (Schortman and Urban 2004:189-195). From this perspective, elites are motivated to control certain kinds of manufactured goods—including, crucially, the material, labor and symbols that go into their production. Control of production flows and subsequent distribution reinforce political centralization and social inequality (Brumfiel and Earle 1987; Inomata 2001; Peregrine 1991).

Craft production, however, has also been addressed from other perspectives, including anthropological studies of more autonomous systems of craft production involving non-elite groups. In some cases, craft production appears to be a response to unfavorable economic conditions. Under this framework, commoner involvement in crafting is understood as a means of economic survival; individuals are drawn into independent craft production and specialized manufacturing activities as a matter of necessity, above all when productive land is not available or is insufficient to fulfill household subsistence requirements (see Arnold 1985; Fry 1981; Kramer 1985; O'Brien 1999; Pool 1992; Smith 1994; Thirsk 1961). Such producers usually manufacture utilitarian items (e.g., Stark 1991) on a part-time basis, flexibly combining such activities with whatever opportunities may exist for other activities, potentially including non-intensive farming or cultivation. The products of their craftwork may be distributed independently through markets, or directly to consumers.

The investigation developed in this dissertation contributes to the latter approach by studying independent and relatively poor crafts people at Teotihuacan. By focusing my research on a sector of Teotihuacan society that I consider to be “marginal”—in spatial, economic, and other ways I will discuss in subsequent chapters—I examine and elucidate the economic and social strategies that individuals living in such circumstances used to survive within a competitive urban society, and in so doing, learn more about how they were integrated within the broader urban system.

Marginality is a concept that has been applied to modern societies (primarily by sociologists, cultural geographers, and political scientists) to describe and analyze socio-economic and political systems in which people struggle against conditions of disadvantage to gain access to resources (economic, social and political), that have the potential to broaden and strengthen their position in society (e.g., Andersen and Larsen 1998; Brodwin 2001; Gurung and Kollmair 2005). Of course, the concept is both general and relative, existing in a variety of forms and levels. At least in modern times people that appear most strikingly marginalized are often immigrants to cities, frequently found settled around the edges of urban centers. They appear to belong to some of the lowest socio-economic levels in the city, and are often the most vulnerable to social, political and economic forces and change. Social heterogeneity and inequality are, however, intrinsic characteristics of urban centers (Fried 1967; McGuire 1983; Paynter and McGuire 1991) and people living under conditions of economic and social affliction were also common in ancient cities. They are however, understudied archaeologically (but see Roskams 2006; Van Ossel 2006).

I address my study of marginalized people adopting craft production as a strategy for urban survival by focusing my work at San José 520, a small hamlet of potters located at the edge of the city of Teotihuacan. This is an area of sparse settlement well away from the urban core. Although likely separated from more built-up parts of the city by actively cultivated farmland, this is not, however, a locality that can be described in an unqualified way as "rural." I discuss these and related issues more fully in Chapter 3.

To assess the socio-economic status of the people living in this hamlet, and to evaluate their degree of integration in broader Teotihuacan society, I follow various lines of evidence. I examine the location and nature of the locality they settled on, situating it within the broader settlement pattern of Teotihuacan and the Teotihuacan Valley. I characterize the nature of architectural remains, household possessions and the materialized remains of ritual activities. To investigate the socio-economic strategies used by these individuals to survive in the urban economy I characterize their ceramic production activities, evaluating choices of product, scales of production, and the degree of specialization. As far as possible, I track diachronic changes in all theses factors. I argue that San José 520 individuals not only adopted ceramic production as an economic strategy for survival, but strategized their work by focusing on the manufacture of products consumed at high levels by city inhabitants belonging to a range of socio-economic status levels.

Urban Heterogeneity: Elite vs. Non-Elite

Due to the concentration of social, economic, and political activities that characterizes cities, modern and ancient urban centers are typically marked by high levels of internal diversity. This diversity may be expressed materially in such things as the clothing of residents, the form and size of the structures they live and work in, and the kinds of artifacts they use in their daily lives. Overlapping with such differences, but at a more behavioral level, urban diversity may be expressed in the wide range of economic activities engaged in by city dwellers, including different ways of making a living, but also extending to variation in ritual and religious practices. At more abstract, social levels, but still overlapping with other kinds of distinctions, urban diversity is connected to variation in social identities, ethnicities, and so on.

The social structure of urban centers (as well as other, less complex settlements) emerges in part from interactions between social heterogeneity and inequality (see McGuire 1983). Heterogeneity refers to social variability or distribution of populations within a social group; while inequality represents the differential access to materials and social resources in a society. Identifying differences in wealth, prestige, and power (Weber 1947), and the specialized occupations of individuals have been essential to the understanding of the political and economic trajectories of ancient cities (Brumfiel and Earle 1987; Clark and Parry 1990). Despite the fact that archaeological work has recognized the importance of understanding social and economic diversity within urban systems in explaining the social processes underlying urban life, many dimensions of this diversity have remained under-examined.

Throughout the history of archaeological research, a great deal of emphasis has been placed on the elite culture of ancient cities—high level administration and planning, ritual, domestic practices, and so on—while much less attention has been directed to other sectors of the society. This is not surprising given that public architecture associated with elite culture and lifeways is usually both more visible and more impressive, contrasting significantly in these terms with the architectural remains and other material culture of less powerful and wealthy inhabitants (see Chase and Chase 1992; authors in Christie and Sarro 2006; authors in Evans and Pillsbury 2004; also Haviland and Moholy-Nagy 1992; Kowalewski et al. 1992).

As documented by archaeology, the lifestyles of ruling elites in Mesoamerica (and elsewhere) are marked by the significantly larger size and superior quality of associated monuments and other constructions; the pivotal location and limited accessibility to their residences (e.g., Barber and Joyce 2006; Carmean 1991; Demarest 2006); and architectural and sculptural features that materialize symbols of power and legitimacy (see Blanton 1994; Carballo 2007; Moore 1996; Murakami 2010; Sugiyama 1992). Similar distinctions are also visible in the remains of their elaborate, and sometimes monopolized ritual practices, and their associated paraphernalia; as well as in the patterns of their consumptions based on differential and preferential access to foods (e.g., Bray 2003; Cahue 2001), and exotic materials, among other items, derived from the control of particular forms of production and exchange, and knowledge (see Costin and Earle 1989; Inomata 2007). Sumptuary laws in some societies made sure that access to some of these products was in exclusive use of the elites (see Anawalt 1980; Umberger 1996).

Focusing on elite culture has been crucial to increasing our understanding of the development of political complexity in antiquity, and has facilitated characterization of certain aspects of economic, social, and religious systems of ancient societies. Importantly, studies of ancient elites should provide a basis for contrasting the lifeways of non-elite populations. Nonetheless, the latter sectors of society—the people upon whom urban elites relied for food and services—remain poorly understood. This is despite the fact that commoners form the great majority of all societies. For example, it has been suggested that in some areas of Prehispanic Mesoamerica commoners represented ca. 80 - 98 percent of their larger populations (Adams and Smith 1981:338; Lohse and Valdez 2004b:2; Marcus 2004:255; Webster 1992:146-147).

To say that commoners have been completely neglected from archaeological work would be an exaggeration. In fact, over the last two decades studies directed at achieving a better understanding of commoners have grown significantly (e.g., Gonlin and Lohse 2006; A. A. Joyce et al. 2001; Lohse and Valdez 2004a). Through the study of settlement patterns, and analytical frameworks such as "household archaeology" (Carballo 2011; Wilk and Rathje 1982), as well as interpretive studies that seek to understand people, practices, and meanings in the past through agency (e.g., Aldenderfer 1993; Ashmore 2002; Brumfiel 1992; Dobres and Robb 2000; Hendon 1996, 2003, 2010; R. A. Joyce and Gillespie 2000; Robin 2003) significant progress is being made in documenting and understanding commoner lifeways.

Above all, these studies stress the fact that commoners were highly social and economically heterogeneous (see authors in Lohse and Valdez, Jr. 2004a). This is not surprising given that commoners are the most numerous part of their societies, and it is within these large groups that the greatest diversity likely existed. Our understanding of this variability, however, is still poor. This is due in part to the fact that most social distinctions in societies are gradational, and subtle. Moreover, our samples of extensively excavated commoners' households are usually small and spotty (certainly the case at Teotihuacan), providing us with only a very partial picture of the range of social diversity. Among the sectors that are still neglected in such studies are people falling within the lowest levels of the socio-economic spectrum.

Although some archaeological research at Teotihuacan has begun characterizing various aspects of the lifeways of people residing in various parts of the city and belonging to different socio-economic statuses (e.g., Cabrera Castro and Gómez Chávez 2008; Clayton 2009; Gómez Chávez 1996, 2000; Manzanilla 1993c, 1996; Murakami 2010; Rattray 1989; Robertson 2008; Spence 2002; Widmer 1987; Widmer and Storey 1993), much archaeological work has continued to concentrate on the civic-ceremonial core and on the activities of administrative elites and other high-ranking citizens. We know much less about other sectors of Teotihuacan society, particularly those that fall near the other end of social and economic scales.

Research directed at understanding the lives of the numerous commoners of Teotihuacan has concentrated on characterizing the architecture and domestic life associated with the city's famous apartment compounds—the distinctive kind of residential complex that housed most of Teotihuacan's inhabitants from around the Tlamimilolpa to the Metepec phases (ca. A.D. 200 to 600). These structures consisted of large numbers of rooms, patios, courtyards, and passage-ways organized into apartments and packed into a tight square or rectangular group enclosed in most cases by a thick outer wall (see further description in Chapters 2 and 3). They were variable in their size, internal arrangement, and constructed materials, and structured the life of multi-household groups bound by kinship, occupation, or both.

With a few important exceptions (e.g., Tlamimilolpa, Oztoyahualco 15B:N6W3[1], Tlajinga 33, Tlailotlacan, Bidasoa), most of the very small number of apartment compounds that have been subjected to relatively extensive excavation (e.g., Atetelco, Tetitla, Yayahuala, Zacuala, Tepantitla, Teopancazco, Totometla, and various apartments compounds in the La Ventilla district) are located quite near to the city's core (Figure 2.2). This spatial bias in our research means that our characterization of urban life at Teotihuacan emphasizes some sectors of the ancient city over others. While the relationship between location and socio-economic scales remains understudied (but see Robertson 2001, 2005, 2008; Murakami 2010) it seems certain that middle and upper levels of the Teotihuacan society are much better represented than lower levels.

My work is a reaction to this. As will be more fully described in the following chapters, the population of Teotihuacan inhabited not only apartment compounds, but also resided in insubstantial structures—small architectural units made with perishable materials and a significantly lower investment both in construction labor and materials (see Cowgill et al. 1984; Robertson 2007, 2008). My excavations at San José 520 provide the first direct documentation of physical remains of such structures. The broader dissertation provides the first detailed study of the lives of people who lived in such structures, and who likely belonged to the lowest socio-economic sector of Teotihuacan. As such, it constitutes a small but important step towards a more holistic understanding of this early urban society.

Urban Economies: Craft Production as an Economic Strategy

Urban economies are inherently complex, in part because they are not confined to cities. This only sounds like a paradox. Critical resources for sustaining cities are often only available in the countryside and must be imported. In many societies, such resources may pass through the hands of individuals who are both economically and spatially marginal to the mainstream affairs of the urban core, and who turn to the production of alternative goods as a strategy, with the items ultimately to be consumed in the city. Paralleling a topic of much concern to social scientists studying modern cities (e.g., Blom 2000; Darin-Drabkin 1977; Kemper 1975; Tana 1996), in this dissertation I address the issue of socio-economic marginalization and integration of individuals who lived at the edge, both economically and socially, of Teotihuacan. As a large urban center with a diverse population and a complex economic system, Teotihuacan provides an excellent case study for addressing issues regarding socio-economic variation and marginalization in an early urban center.

Cross-cultural ethnographic studies (e.g., Buksmann 1980; Cohen 1969; Escóbar de Pabón and Ledo García 1988) show that settlements clustering around the peripheral, outer edge of cities are often inhabited by recent immigrants who lack either the high-quality rural farmland or urban social connections that would give them access to lucrative pursuits. Such individuals may offer their labor or services to others and may often turn to specialist craft production (Alcalá and Reyes Couturier 1994), especially involving ceramics (see Arnold 1985) as an alternative strategy for economic survival. In some cases, it may be possible to combine pottery production with the raising of crops suitable for cultivation on agriculturally marginal lands, or other economic activities to produce products that can be traded for subsistence staples (e.g., Rowlandson 1996:107).

San José 520 matches this pattern. I discuss below methodological problems in defining an external limit for Teotihuacan; nevertheless, it is clear that San José 520 is far from the city's core and is located in an area of scarce and very dispersed settlement—a settlement zone much more characteristic, at least in terms of population and architectural density, of rural areas than highly urbanized parts of the city. As will be more fully described in the following chapters, previous research documented high densities of tools related to ceramic production activities at this locality, indicating the possible existence of a community of potters. For this reason, San José 520 represented an ideal opportunity to investigate how spatially and socially marginal households used craft production to engage with larger-scale economic systems based in the metropolis.

A more nuanced understanding of Teotihuacan's economy (in particular the relationship between occupational niches filled by all of its inhabitants and the goods and services that made it an urban center) is crucial to understanding the development of the broader state, and the complexity of its capital. At Teotihuacan, however, most of the research on production systems has emphasized the urban settlement. Little is known about what was being produced around the edges of the city's edge (or in its hinterland) or how such production was integrated into the economy of this ancient state. By characterizing the craft production activities at San José 520, this study not only complements our knowledge of production systems within the city, but more importantly, generates new information on the socioeconomics of the immediate Teotihuacan periphery. This provides a window into a previously unexamined sector of the Teotihuacan society.

Teotihuacan and Craft Production

Like all complex urban societies, Teotihuacan was inhabited by a diverse population that included specialists and non-specialists working with various kinds of crafts and materials, some of them probably under state control, and others working independently. Previous studies have begun describing the basic characteristics of the different craft production systems that existed at Teotihuacan, principally obsidian working (Carballo 2007; Spence 1981, 1986), but also ceramic manufacture (Conides 2000; Hopkins 1995; Krotser 1987; Krotser and Rattray 1980; Múnera Bermúdez 1985; Rattray 1988; Sheehy 1992; Sullivan 2002, 2006, 2007), textile production (Cabrera Cortés 1999, 2002a), bone artifact manufacture (Padró Irizarry 2002; Romero Hernández 1997), tailoring (Padró Irizarry and Manzanilla 2004) grinding tools (Biskowski 1997; Biskowski et al. 1992), and lapidary work (Cabrera Cortés 1995, 2009; Gazzola 2005, 2007; López Juárez 2005; Rosales de la Rosa 2004; Turner 1988; Widmer 1991). These studies have demonstrated that, although fundamentally a farming population, a large proportion of Teotihuacan's inhabitants were involved in the manufacture of some sort of craft item, with residents participating in either part-time or full-time production.

Despite the important role that these industries had in the growth of Teotihuacan's economy, it is fair to say that craft production at this ancient city has only begun to be characterized. Potsherds are one of the most abundant artifacts at the ancient city. Notwithstanding the great importance that ceramics have had in the study of the Teotihuacan society, little is known about the systems that underlay ceramic production since few systematic studies of ceramic production (e.g., Hopkins 1995; Múnera Bermúdez 1985; Sheehy 1992; Sullivan 2002, 2006, 2007) have been conducted. Based on the analysis of surface materials, and a few intensive excavations, various levels of specialization have been suggested for the ceramic production systems at Teotihuacan (Krotser 1987). However, only a few examples of ceramic production areas have been deeply or systematically explored to verify this proposition.

Excavations at the apartment compound known as Tlajinga 33 and at the Cuadrángulo Norte de la Ciudadela provide some detail about two very different groups of ceramic specialists. Ceramic workers in the northern part of the Ciudadela, the administrative and ceremonial core of the city, produced ritual ceramic objects (composite censers and their ornaments, and some figurines) almost certainly under the direct control of the state (Cabrera Castro 2004; Múnera Bermúdez 1985; Sugiyama 1998). Potters from Tlajinga 33, an apartment compound located in the southern part of the city, specialized in the manufacture of large cooking bowls (craters), and large bottles or containers (amphorae) for storing water or *pulque* (maguey sap) (Sheehy 1992, 2001; Widmer 1991). There is no reason to suspect direct intervention by state administrators. The evidence suggests that very distinct kinds of ceramic production systems existed at Teotihuacan and that they were important components in the city's economy.

One goal of my dissertation research has been to further broaden our understanding of the nature of craft production activities at Teotihuacan. Archaeological excavations and analyses at San José 520 confirmed beyond any doubt the existence of a ceramic workshop at this locality. A surprisingly wide range of tools related to ceramic production were recovered, some previously undocumented for Teotihuacan or the region around it. The resident potters, which I characterize as both spatially and socially marginal to the broader urban center, were found to be specialists primarily in the manufacture of outcurving bowls, one of the most common serving vessels used by Teotihuacan's urban households from the Miccaotli to the Metepec phase (A.D. 150 to

600). The research has generated new information about an almost undocumented dimension of ceramic production systems at the ancient city, and has increased our knowledge of craft production at Teotihuacan in general.

Outline of the Dissertation

To investigate how spatially and socially marginal households in the ancient city of Teotihuacan used craft production to participate in the larger economic systems based in the metropolis, I focused my work at a small hamlet situated in the southeastern outer margins of the Teotihuacan city—San José 520. As more fully described in Chapter 4, this locality was selected on the basis of data collected during the 1960's surface work conducted by the Teotihuacan Mapping Project (TMP), under the direction of René Millon from the University of Rochester. San José 520 is one of a fairly large number of localities that were initially recorded by the TMP, but that were later excluded from the city's map because they were determined to be located outside the limits of the ancient city as defined by the project.

In the following chapters I provide a historical and interpretative framework for discussing evidence obtained from field and lab operations at San José 520. Chapter 2 provides a synthesis of Teotihuacan culture history, used as the basic context for further discussion of work at San José 520. Comparatively greater emphasis is placed on the Tlamimilolpa and Xolalpan phases (ca. A.D. 200 to 500) within the broader Teotihuacan Period (ca. 150 B.C. to A.D. 600) because these periods represent the main period of occupation and work at San José 520.

Chapter 3 provides a discussion of dimensions of urban diversity and variation, and this is intended as a framework for considering the socio-economic status and identity of subgroups within the larger urban system. Of particular importance is the perspective that urban economies should not be regarded as isolated entities, but rather as parts of larger settlement and economic systems. All cities, pre-industrial or modern, are better understood if we pay attention to the different socio-economic components, including sectors belonging to clearly urban areas, rural hinterlands, and transitional zones that lie in between.

Chapter 4 describes the field operations that I carried out at San José 520 and the results derived from surface and excavation procedures. In this section I describe the remains of domestic structures used by the San José 520 inhabitants, mortuary remains that were uncovered in deeper subsoil deposits, and features and facilities associated with ceramic production. Along with more portable artifacts drawn from the daily lives and work of these people, these aspects of material culture allow me to characterize some of the domestic, ritual, and occupational activities of the San José 520 people.

Chapter 5 deals more directly with evidence concerning ceramic production activities practiced by the San José 520 inhabitants. Among other things, I document a variety of tools used in ceramic manufacture, remains of features associated with their use, and the products and by-products that resulted from both. To contextualize the specific ceramic production activities inferred for San José 520, I present first a broad overview of Teotihuacan ceramics, followed by a brief description of what we know about ceramic production systems in various parts of the ancient city. I also present an overview of some of the archaeological indicators that have been used to identify ceramic production work and areas in archaeological sites in Mesoamerica, since these underlie my characterization of the ceramic production activities at San José 520.

Chapter 6 presents the evidence about identity and socio-economic status of the San José 520 inhabitants, as well as data that aid in assessing the degree of integration that these people had with the rest of the city. Evidence of oxygen isotopic analyses from human remains are used to assess the possible migratory status of the San José 520 people. To characterize the socio-economic status of the San José 520 inhabitants, physical characteristics and degree of investment exhibited by architectural remains and other types of other material culture to which they had access were crucial. Funerary and domestic ritual practices help us assess how aware and how connected the inhabitants of this hamlet were of cultural practices that characterized life in other parts of the city.

Chapter 7 integrates data presented in previous chapters and discusses broader results and conclusions. I discuss the implications of evidence suggesting that San José 520 was inhabited by individuals of low socio-economic status who engaged in specialist production of ceramic artifacts as the key element in a strategy aimed at economic survival in a competitive urban system. These people may have been immigrants, who nevertheless participated in funerary and other ritual activities broadly similar, but not identical, to those practiced by residents of urban Teotihuacan, living in apartment compounds, and in residential areas that were clearly part of the city. This chapter also discusses contributions of this study to general investigations of early urbanism, including issues concerning spatial components of cities; urban social diversity; and urban economies, in particular as they involve ceramic craft production.

Chapter 1 Notes

[1] This and similar designations refer to sites as identified on the Teotihuacan Map (Millon et al. 1973).

CHAPTER 2: TEOTIHUACAN: AN EARLY URBAN CAPITAL

Introduction

Teotihuacan was one of the earliest and largest cities in Mesoamerica. This ancient city is located in a valley of the same name, in the northeastern part of the Basin of Mexico (Figure 2.1). The settlement was founded around 150 B.C. and grew quite rapidly into a large city. At the height of its power, around A.D. 500, Teotihuacan appears to have had a population of around 100,000 people living on approximately 20 square km (Figure 2.2), concentrating a high proportion of the population of the Basin of Mexico in a single, compact settlement (Millon 1974; Sanders et al. 1979:107, 206). Sanders, Parsons, and Santley (1979:101, 107, 206) had estimated that roughly 90 percent of the population of the Basin of Mexico was concentrated in the Teotihuacan Valley at that time. A more recent estimate presented by William Sanders at the 2007 Basin of Mexico conference at San Miguel Ometusco (Robertson and Gorenflo 2008) suggests a more conservative figure—perhaps 70 - 80 percent of the regional population living in Teotihuacan (George L. Cowgill, personal communication 2008). Occupation was continuous until about A.D. 550, when the ceremonial core was burned and much of the city likely abandoned (Millon 1981:1-2).

Although occupation in the vicinity of Teotihuacan has been more or less continuous since times prior to the formation of the urban center until the present, the period relevant to the discussion of this work is that known as the "Teotihuacan Period" (Cowgill 1996; Robertson 2001), which falls between ca. 150 B.C. to A.D. 600. The Teotihuacan Period corresponds to the Terminal Formative or Preclassic and Early Classic Periods of the general Mesoamerican chronology (for slightly differing chronological references see Blanton et al. 1993:56, Table 3.1; Millon 1981:207, Figure

7.7; Sanders et al. 1979:93, Table 5.1), and has been divided into a number of archaeological phases and sub-phases (Figure 2.3). These divisions are based mainly on subtle stylistic changes of ceramic artifacts (Rattray 1991, 1998, 2001), reinforced by a relatively small amount of radiocarbon samples.

To provide a context for discussing the economic activities and social integration observed in San José 520, this chapter presents an overview of Teotihuacan culture history. Particular emphasis is paid to the Tlamimilolpa and Xolalpan phases (ca. A.D. 200-500), the time period of the main occupation at San José 520. My treatment makes no attempt to be exhaustive for these or any other phases; further details can be found in other summaries of Teotihuacan history (e.g., Cowgill 1992c; R. Millon 1988; Pasztory 1997).

The Basin of Mexico Before Teotihuacan

Human occupation of the Basin of Mexico prior to the foundation of Teotihuacan as an urban center was characterized by a series of mostly rather small settlements strategically located in areas proximal to the shores of a series of interconnected saline and fresh water lakes and the piedmont areas that surrounded the lake system. A few places, however, were large enough to have functioned as important regional centers, some more important than others. By 150 B.C., Cuicuilco, an urban center situated at the southern margins of Lake Xochimilco, stood out as the largest regional center in the southwestern part of the Basin (Figure 2.1). Not much is known about Cuicuilco, as the settlement was largely covered by a thick layer of lava from the eruption of the volcano Xictli (from Nahuatl, meaning “navel”; more commonly known as Xitle), located a short distance to the south (Figure 2.1). The rapid urban expansion of modern Mexico City (see Salazar Peralta 1998) has also limited research in the area. The small number of

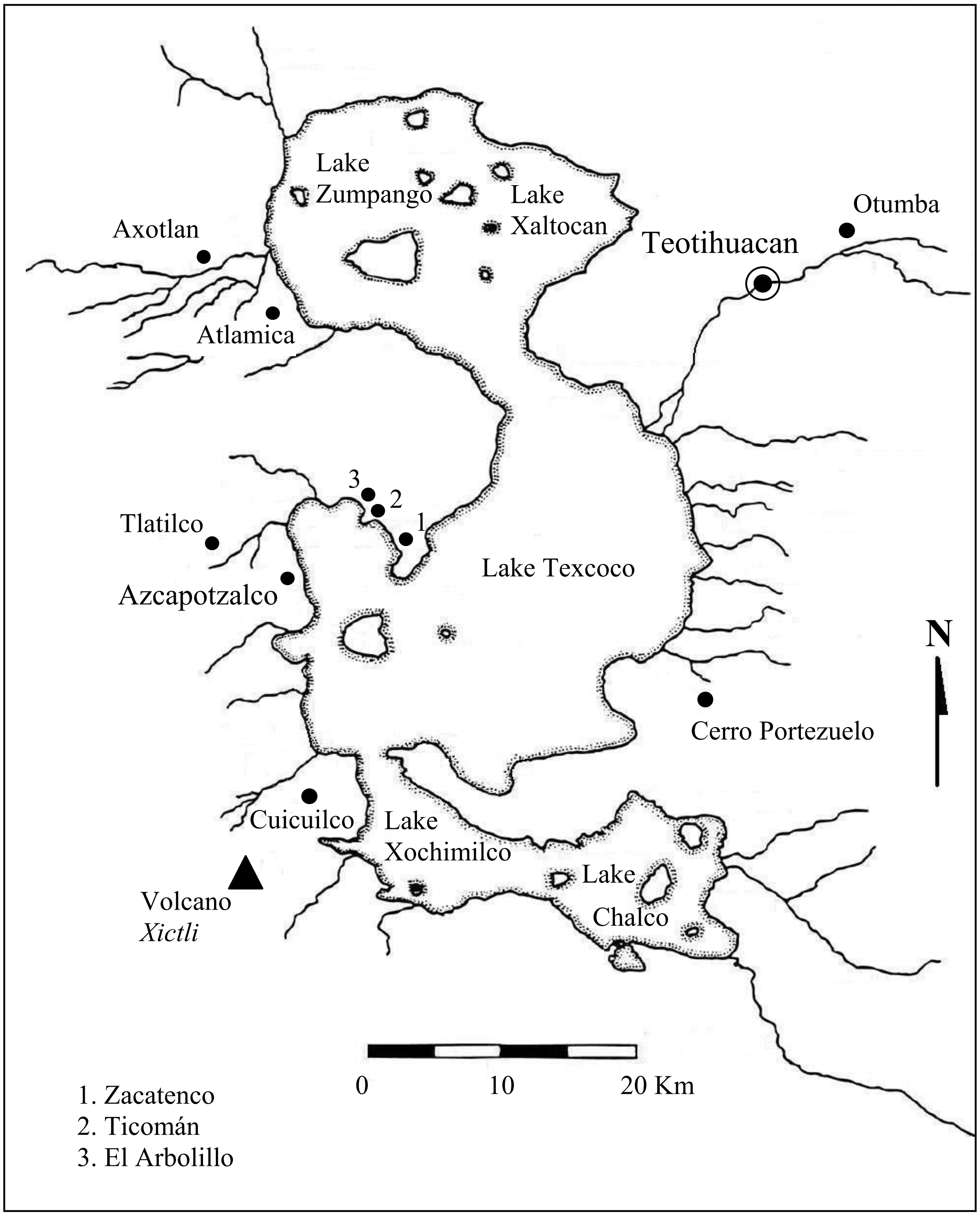


Figure 2.1. Location of Teotihuacan and select other sites in the Basin of Mexico (modified from Clayton 2009:Figure 1.1).

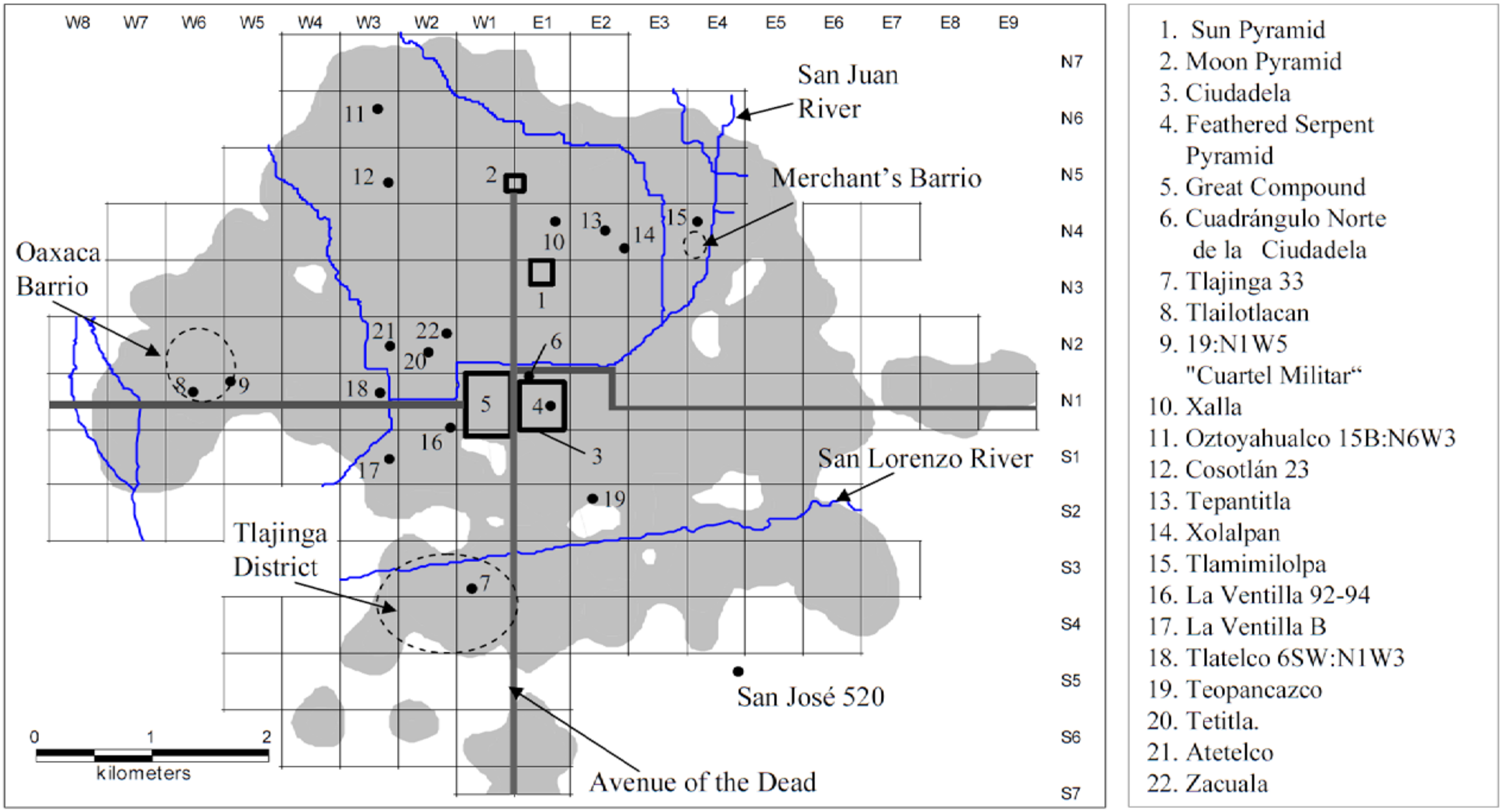


Figure 2.2. Maximum extent of urban Teotihuacan, and locations mentioned in this dissertation (figure prepared by Ian G. Robertson and Oralia Cabrera).

archaeological investigations that have been possible at the site since the 1920s indicate that Cuicuilco was an important and impressive settlement with a ceremonial center containing a series of public buildings, including a circular pyramid at least 20 m high, and a 4 m high stela with glyphs (Moguel 1997). The extent of the settlement is unknown, but it is possible that this center had ca. 10,000 inhabitants towards the end of the Ticoman phase (600-150 B.C.) (Robertson 2001:22).

Until the end of the last century, it was believed that the sudden growth of Teotihuacan as an urban center had been in part due to a mass migration of people from Cuicuilco, who relocated due to the effects of the eruption of Xictli. More recent research (González et al. 2000; Siebe 2000) indicates that the eruption of Xictli occurred around A.D. 300, a time when Teotihuacan was already the capital of a powerful state, and possibly after the political power of Cuicuilco had declined (Cordova F. de A. et al. 1994). It now seems more likely that environmental impacts caused by the eruption between 200-0 B.C. (Siebe 2000), of Popocatepetl, a volcano located farther to the east on the edge of the Basin of Mexico, may have contributed both to the general decline of population in the southern part of the Basin, and to the migration of people toward the Teotihuacan Valley.

The Early Phases of Teotihuacan's Culture History

Cuanalan Phase (ca. 500-150 B.C.)

The early settlement of Teotihuacan was characterized by people organized in small, mostly dispersed villages settled in a few parts of the Teotihuacan Valley (Sanders et al. 1979:96). For the Cuanalan phase (ca. 500-150 B.C.) the densest population was located in a settlement between 15 and 30 ha in size, located in an area notable for the abundance of perennial springs (Cowgill 1992c:89). The initial settlement in this area was likely linked to the benefit provided by these springs, which allowed year-round irrigation for farming. Inhabitants of the small hamlets and villages that characterized the Cuanalan phase complemented their farming economies with resources from several ecological niches, including the alluvial plains, lake shores, and forest (Manzanilla 1985).

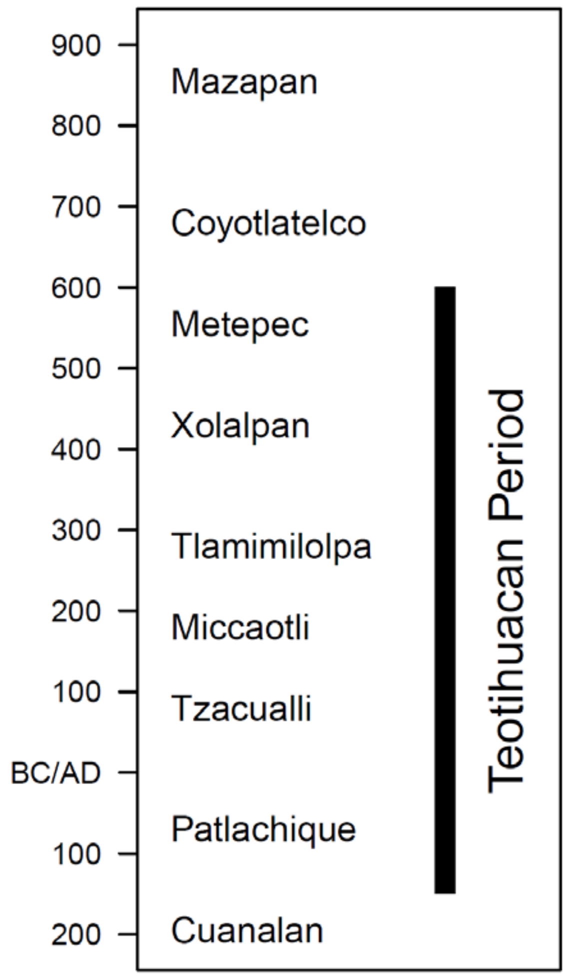


Figure 2.3. A chronology for the Teotihuacan Period.

Distributions of surface Cuanalan ceramics indicate that a smaller village, possibly with a few hundred people, was located on the north slopes of the Patlachique mountain (see, Cowgill 1992c:89-90, and Figure 5.1), an area northeast of but near to San

José 520. Population in this area (grid sector S3E6 of the Teotihuacan Mapping Project [TMP]) map), however, was less dense in later phases (Cowgill 1974:Figures 2-5, 7). During the Tlamimilolpa and Xolalpan phases, the main period of occupation for residents of San José 520 (see Chapter 4), this part of the valley was lightly populated.

The few excavated houses belonging to the Cuanalan phase exhibited architectural constructions made with perishable materials, characterized by wattle-and-daub walls built on clay or mud floors, often arranged around common spaces where activities such as food preparation were carried out (Charlton 1969; Manzanilla 1985).

Patlachique Phase (ca. 150-1 B.C.)

By about 150 B.C., settlements in many parts of the Basin of Mexico show a drastic population decline (Blanton 1972; Blanton et al. 1993:122; Sanders et al. 1979:106), while at the same time, within the Teotihuacan Valley, Teotihuacan grew rapidly. By the end of the Patlachique phase (ca. 150-1 B.C.), Teotihuacan had become a city, with a population around 20,000 – 40,000 people settled in an area of around 8 km^2 (Cowgill 1974:381-383). Immigrants drawn from other parts of the Basin of Mexico may have been an important source of new residents for Teotihuacan (Cowgill 1992c:94-95). Cuicuilco likely continued to enjoy influence in the southern part of the basin, but Teotihuacan was certainly a significant rival by this time (Sanders et al. 1979:99).

Within the Teotihuacan Valley, the areas of densest population for the Patlachique phase do not coincide with the spring area where settlement had been dense in Cuanalan times. Surface ceramics indicate that settlement during the Patlachique phase concentrated on the lower slopes of Cerros Colorado and Malinalco, mountains that delimit the valley toward the northwest. Cowgill (1992c:93) suggests that moving towards the slopes of the mountains and away from the best lands for farming, may conceivably have been the result of a defense strategy or a "short-lived gesture towards a 'sacred mountain' syndrome."

While the settlement shifted to higher lands in the valley, irrigation systems must still have been crucial in sustaining the growing population. It has been suggested that a system of *chinampas* or raised fields existed in the area of springs in the southwestern part of the valley (Millon 1957), although direct evidence for such features remains elusive (Gamboa Cabezas 1999a; 2000). In addition to the benefit from a possible raised-field zone around the springs, lands on the piedmont slopes may have profited from seasonal water during the rainy season (Cowgill 1992c). Remains of channels have been identified in various areas of the valley (Nichols 1987; Nichols et al. 1991), including areas that later became parts of the city core (Rubén Cabrera Castro and Sergio Gómez Chávez, personal communication 2007).

During the Patlachique phase, constructions began appearing in the area that later became the civic-administrative center of the city, along the Avenue of the Dead (Cowgill 1983:326; R. Millon 1973:51; Millon 1981:221). Unfortunately not much is known about architectural projects of the Patlachique phase, as early structures are obscured by later constructions. The site of Tlachinolpa, located on the slopes of Cerro Malinalco, provides a window into some aspects of this early phase in the development of the city. Blucher (1971:237-240) reports the formation of a complex of plazas and buildings that may have served civic functions.

While the nature of religion and ideology is poorly known for these early phases, it was during this period that important social, political, economic, and ideological changes occurred in Teotihuacan society and administration, leading to the transformation of this settlement into an important metropolis (Cowgill 1992c). The development that Teotihuacan was about to experience after the beginning of this era was unparalleled.

Tzacualli Phase (ca. 1 B.C. – A.D. 150)

By the Tzacualli phase (ca. 1 B.C.- A.D. 150) Teotihuacan had between 60,000 to 80,000 inhabitants, occupying an area of over 20 km^2 (Cowgill 1974:385-388; 1992c:96; Millon 1981:221). Cowgill (personal communication, 2009) thinks that this explosive increase in population (roughly doubling in around 150 years) can be explained by a high fertility rate based on an already large population, coupled with continuing high immigration rates. This immigration may not all have been voluntary—an examination of settlements in other parts of the Basin of Mexico indicates that by this time a great percent (ca. 70-80) of the total population of the Basin had moved to Teotihuacan (Millon 1981; Sanders et al. 1979:101). In relocating, people left behind large areas of highly productive agricultural land and rich lacustrine resources, possibly presenting a subsistence challenge to the city (McClung de Tapia 1977, 1987).

During the Tzacualli phase the settlement was rearranged and the plan of the city established (Millon 1976:212), at least in areas around the northern half of what came to be the Miccaotli or Avenue of the Dead—a north-south avenue-like structure that in later times reached ca. 5 km in length (Figure 2.2). Perhaps at this time the East and West avenues were planned as well (Cowgill 1974:387). The East and West avenues run outward from the core of the city, at the level of the Ciudadela, and divide the urban center in four sectors when joined with the Avenue of the Dead.

Construction of the most massive civic-ceremonial monuments of the city began in this phase, along with other smaller pyramid complexes (Millon 1981). The Pyramid of the Sun (Figure 2.2) was not only initiated, but mostly completed during this phase

(Millon et al. 1965). At least one or two early stages of the Moon Pyramid (Figure 2.2) were also built during this phase (Sugiyama and Cabrera Castro 2007:116-117), although the earliest may have been built during the previous Patlachique phase (Cabrera Castro and Sugiyama 1999).

South of the Río San Juan remains of structures that were later demolished have been found beneath the Avenue of the Dead (Cabrera Castro and Soruco S. 1982:217-219), including in the vicinity of the re-routed and channelized Río San Juan (Sergio Gómez, personal communication 2007). These structures correspond to what has been termed the Pre-Ciudadela occupation (Cabrera Castro 1991, 1998b; Cabrera Castro and Soruco S. 1982). Characteristics of these early buildings are largely unknown, due to their subsequent demolition. It is possible that they may have varied significantly in arrangement, construction materials, and orientation. Some of the more simple examples may have been similar to the insubstantial structures described later.

Cowgill (1992c:100) estimates that even from Patlachique times, Teotihuacan appeared to have acquired an exceptional sacred importance that would have been attractive to outsiders, and that might have been sufficient to explain the city's rise to supremacy. The high levels of fertility, immigration and the construction of monumental architecture may be somewhat related, and they denote a strong political power exercised by rulers even at this early period (George L. Cowgill, personal communication 2009; Robertson 2001). The success of the development of the Teotihuacan state appeared to have depended on a combination of military effectiveness, economic factors, and unusual religious appeal (Cowgill 1992c:101).

Miccaotli Phase (ca. A.D. 150-200)

By the Miccaotli phase (ca. A.D. 150-200) the edges of Teotihuacan appear to retreat from the north and west relative to the Tzacualli settlement, and there is a greater expansion toward the south and east (Cowgill 1974:388). Population appears to be larger than that of the Tzacualli phase (Cowgill 1974:389), but less than Xolalpan—when the city reaches its maximum density (Ian G. Robertson, personal communication 2010). The densest occupation appears to be located along the civic-ceremonial and administrative core of the city concentrated along the Avenue of the Dead (Cowgill 1974:388).

Monumental construction continued. Although work continued on the Moon and Sun pyramids, the largest project in the core of the city took place south of these religious buildings, in the form of a monumental quadrangular compound called the Ciudadela (Figure 2.4). This compound is formed by large platforms measuring 400 m per side, enclosing a plaza accessed from the Avenue of the Dead. In the east and central part of this plaza the third largest pyramid at Teotihuacan was constructed—the Feathered Serpent Pyramid. The foundation and construction of this building and above all the iconographic representations displayed in its facades have been associated among other things with elements of rulership (Sugiyama 1989b, 1992, 2005) and with cosmological (Cabrera Castro and Cabrera Cortés 1993; López Austin et al. 1991) and sacred symbols (Taube 1992b). A burial program that involved the interment of ca. 200 sacrificed individuals took place when this building was constructed (Cabrera Castro et al. 1989; Cabrera Castro et al. 1991; Sugiyama 2005). The sacrificial deposits included large quantities of objects made of valuable raw materials, or exhibiting a high degree of craftsmanship, some originated in distant places, reflecting the already important connections that Teotihuacan had with remote regions (Cabrera Cortés 1995; 2002b).

These external relationships also were manifested in the internal constitution of Teotihuacan's population. It has been suggested, based on ceramic data, and supported by architectural evidence, that a barrio of people from Oaxaca settled near the western edge of the city (Figure 2.2) at the end of the Miccaotli phase (White, Spence et al. 2004).

The Tlamimilolpa and Xolalpan Phases

Tlamimilolpa Phase (ca. A.D. 200-350)

Initial studies of ceramic data collected by the Teotihuacan Mapping Project suggested that, by the Tlamimilolpa phase (ca. A.D. 200-350), population growth had stopped at Teotihuacan and that little or no growth occurred in the subsequent phases (Cowgill 1974:389). However, a more recent reanalysis of TMP ceramic collections indicates that population levels likely continued to increase through Tlamimilolpa and even Xolalpan times, although at a lower rate than during the Tzacualli to Miccaotli phases (Robertson 2007 and Ian G. Robertson, personal communication 2009).

Building efforts during the Tlamimilolpa phase focused on the wide-spread construction of residential housing of unprecedented form. Many of the preexisting houses were apparently demolished and replaced with a distinctive and relatively standardized residential architectural unit that the TMP described as an "apartment compound" (R. Millon 1973). These structures consisted of large numbers of rooms, patios, courtyards, and passage-ways organized into apartments and packed into a tight square or rectangular group enclosed in most cases by a thick outer wall (Figure 2.4). The internal plan of these apartment compounds is quite variable, according to evidence from mapped and excavated structures (Manzanilla 1993c, 1996; Millon et al. 1973). The different stages of construction observed in the excavated apartment compounds indicate that these architectural units sometimes underwent repairs and remodeling throughout time (Angulo Villaseñor 1987; Manzanilla 1993c:92).

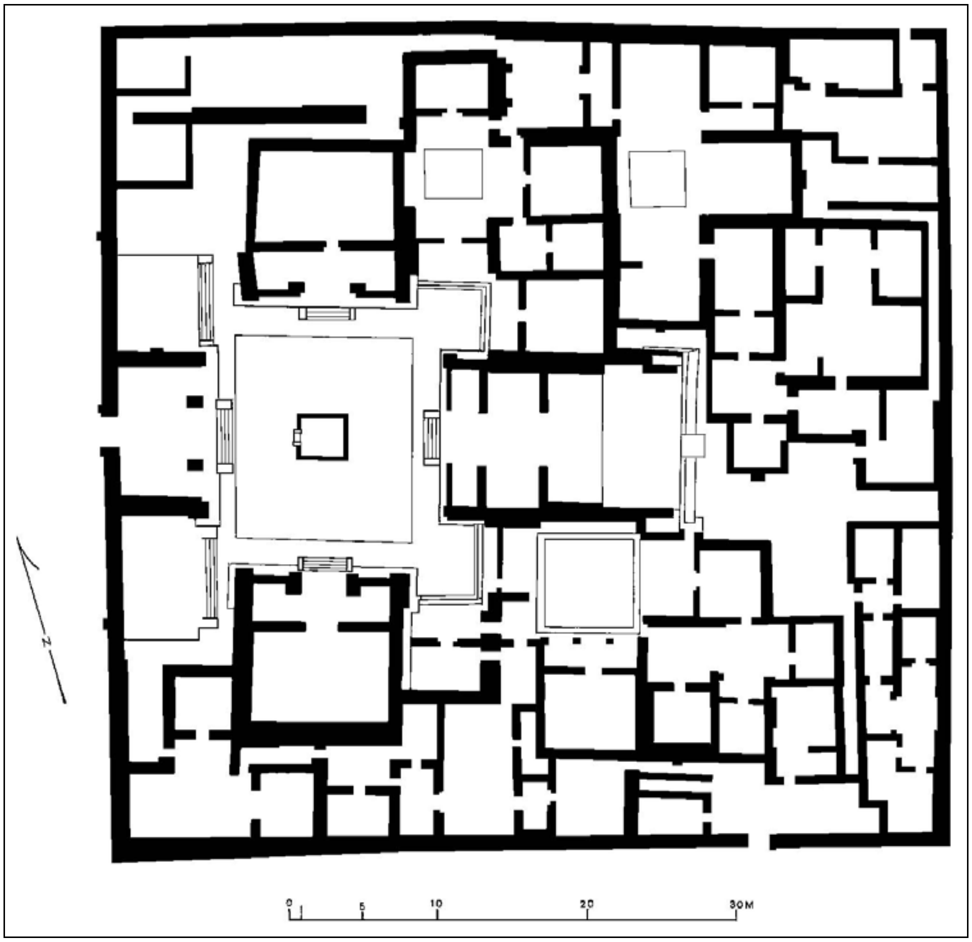


Figure 2.4. Example of an apartment compound. Plan of Yayahuala (modified from Miller 1973:Plan X).

Apartment compounds were inhabited by multiple households, which probably formed corporate groups often related by kinship, occupation, or both (Millon 1976). About 2,300 of these compounds have been identified within Teotihuacan, and the large majority of the city's inhabitants lived within them (R. Millon 1973). Other people may have lived in "insubstantial structures"—simple dwellings thought to have been made of adobe and perishable materials (Cowgill et al. 1984). Based on analyses of TMP surface collections, Ian Robertson has suggested that insubstantial structures may conceivably have housed as many as 10 to 15 percent of the population of the city (Robertson 2008). Only about 20 apartment compounds have been partially or fully excavated and reported[1]. Archaeological evidence from at least some of these apartment compounds (e.g., Oztoyahualco 15B:N6W3) suggests that within the compound each household had areas for food preparation and consumption, sleeping quarters, areas of refuse disposal, patios for ritual activities, and funerary areas (Manzanilla 1993a; 1993c:93). Communal spaces shared by households within the compounds also existed, often in the form of large courtyards.

The societal impact represented by the adoption of the apartment compounds must have been enormous, and this must have had a persistent effect on Teotihuacan society (Millon 1981; Robertson 2001). Relocating to apartment compounds possibly "…codified a particular kind of social group based on residence..." (Robertson 2001:26). Spence (1986:95) suggests that groups of craft producers were probably relocated to specific areas within the city at this time. Recent research indicates that this housing adoption shows a reduction in the internal diversity of neighborhoods throughout most parts of the city between Miccaotli to Tlamimilolpa phases (Robertson 2001). The massive investment in apartment compound construction during the Tlamimilolpa phase suggests a certain degree of sponsorship by central authority at Teotihuacan, at least in the acquisition of lime and possibly other construction materials in a somewhat short period of time (Murakami 2010; Robertson 2001).

During Tlamimilolpa, craft production activities grew considerably, and it has been suggested that by this time the Teotihuacan state had more control over the extraction of green obsidian from the Sierra de las Navajas in Hidalgo (Millon 1981:225; Spence 1981:777-779). Foreign trade expanded throughout other regions, and Teotihuacan influence became stronger in other parts of Mesoamerica (R. Millon 1988).

By Late Tlamimilolpa construction of the major religious buildings along the Avenue of the Dead was completed. However, evidence from the Ciudadela and other areas along the Avenue of the Dead suggests important political changes, including reactions against authority in the administration (Cabrera Castro 1987). The Feathered Serpent Pyramid, and the power that it represented, was the target of a series of events that included looting and desecration of some of the interments and offerings placed near the center of the building. There was also intentional destruction of some of the sculptures that decorated its façades; as well as the destruction and conflagration of the temple once standing on its summit. A new building (the Plataforma Adosada) was built covering the Feathered Serpent Pyramid's main façade (Cowgill 1992c:108-109). It has been proposed that at this time central authority shifted away from the Ciudadela, and was relocated in the Avenue of the Dead Complex (Cowgill 1992c:111), built a short distance north of the Río San Juan. Straddling the Street of the Dead, this complex had a size similar to that of the Ciudadela (Morelos García 1993), but with a very different internal arrangement of space.

Xolalpan Phase (ca. A.D. 350-500)

By the Xolalpan phase (ca. A.D. 350-500) the city had gained control of a territory of at least 25,000 km^2 (R. Millon 1988). Population settled within the city reached ca. 100,000 inhabitants (Cowgill 2007; Robertson 2007). The Teotihuacan state appears to have had direct and indirect influence over a larger territory, and over a larger population, perhaps exceeding a half million people (Cowgill 1992c).

Outside the capital there are a series of regional sites in the Mexican Highlands that had strong connections with Teotihuacan and that may have been under its direct political control. These include Azcapotzalco (Figure 2.1), a site near the northwest shore of Lake Texcoco, in the Basin of Mexico (García Chávez 1991); Cerro Portezuelo (Figure 2.1) in the southeastern part of the Basin (Nicholson and Hicks 1961); Tepeapulco (see Charlton 1978), Chingú (Figure 1.1), in Hidalgo (Díaz Oyarzábal 1980, 1981), and Calpulalpan, to the east in the state of Tlaxcala (García Cook and Merino Carrión 1996; Linné 2003b). Settlement in the eastern part of the Valley of Morelos underwent important rearrangements, possibly due to the direct intervention of the Teotihuacan state in its attempt to gain access to cotton products (Hirth 1978, 1980; Hirth and Angulo Villaseñor 1981). I and others have challenged this view (Cabrera Cortés 1999; Nalda 1997), while Montiel sees less control in adjacent areas (Montiel 1998, 1999). Direct intervention by Teotihuacan in the modification of settlement patterns has also been suggested for the Toluca Valley, to the west of the Basin of Mexico (González de la Vara 1999; Sugiura Yamamoto 1991, 2001), apparently to take advantage of the rich lacustrine and forest resources available in that area.

During Xolalpan times, Teotihuacan related symbols and objects are widely recognized in other regions in Mesoamerica, including places as distant as Kaminaljuyú, Tikal (Figure 1.1), and the Maya Lowlands, the Pacific Coast and Highlands of Guatemala (e.g., authors in Braswell 2003; Coggins 1979; Kidder et al. 1946; Miller 1978; Sanders and Michels 1977; Schele and Freidel 1990), West Mexico (Diehl 1976; Filini 2004; Pollard 2005), Oaxaca (Marcus 1983b; Martínez López 1994; Winter 1998), and the Gulf Lowlands (Daneels 1996; Ortiz and Santley 1998; Pascual Soto 2006; Santley 1989; Santley et al. 1987; Stark 1990). The nature and intensity of interactions between Teotihuacan and these distant places varied, being more commercial (e.g., to procure exotic materials) in some places (e.g., Santley 1984), and more politically oriented in others (Cowgill 1992c; Fash and Fash 2000; Stuart 2000). Elite emulation (Clark 1986; Demarest and Foias 1993), gift exchange (Spence 1996), and military conquest (e.g., Bove and Medrano Busto 2003; Cheek 1977) have also been suggested as the causes of flow of materials and ideas related to Teotihuacan.

Teotihuacan's external relationships were also reflected in the city's multi-ethnic composition, expressed in the form of at least two ethnic enclaves (Rattray 1987). A barrio of people from Oaxaca was located near the western edge of the city (Rattray 1993; Spence 1992) (Figure 2.2), while people with ties to the Gulf Lowlands, perhaps merchants (Figure 2.2), lived near the eastern edge (Rattray 1989, 1990a). In addition to these two best defined and best known enclaves, a small group of people from West Mexico (Michoacán) has also been identified near the Oaxaca Barrio (Cabrera Castro 1998a; Gómez Chávez 1998, 2002; Gómez Chávez and Gazzola 2007). A small group of people from the Maya region may have lived in Tetitla (Figure 2.2), a compound west of the city's core (Taube 2002).

Within the capital, there was less focus on the construction of monumental architecture, and more emphasis on modifications of apartment compounds. Teotihuacan mural painting and decorated ceramics, as well as stone sculpture, are best represented in this phase. Pasztory (1988) suggests that by Xolalpan times there might have been a strengthening of an individualistic ideology that weakened central authority in the last century or so.

By the latter part of Xolalpan, various socio-economic problems may have affected the ability of Teotihuacan elites and leaders to control local and possibly external affairs. Within the city, construction projects decreased (R. Millon 1988:142-144), and more social inequality is evident (Sempowski 1987, 1992; Sempowski and Spence 1994). Outside of Teotihuacan, an increased regionalization of certain areas in the "outer hinterlands" is observed, possibly reflecting weakened control over long-distance exchange (R. Millon 1988:141-142).

The Last Years of the City

Metepec Phase (ca. A.D. 500-600)

Metepec (ca. A.D. 500-600) is the final ceramic phase of the Teotihuacan period. The later years of the city are characterized by contradictory and conflicting processes that suggest that Teotihuacan was undergoing significant internal problems. Status differences within the various sectors of society were polarizing, reflected above all in funerary practices (Sempowski 1987, 1992). Also, members of military orders and high ranking priests are widely represented in mural painting, while common people are all but absent (R. Millon 1988:145). The quality of ceramics declined, including those placed in funerary contexts (R. Millon 1988; Sempowski 1992), although mass production of the most common utilitarian wares (San Martín Orange and the imported Thin Orange) continued (Rattray 1979a).

During the Metepec phase, the city's population dropped at a significant rate, possibly falling to around a third of Teotihuacan's maximum population in the previous Xolalpan phase (Robertson 2007). René Millon (1988:143) argues that the population decline during Metepec could be explained in part by the city's gradual inability to attract outsiders; this idea builds on a scenario in which low-status areas are seen as dependent on rural migration to maintain their population levels (see Storey 1985). Occupation of the rural hamlets within the Teotihuacan Valley but outside the city also ended (Charlton et al. 2000).

Although population declined significantly, considerable construction activities are seen during the Metepec phase in buildings along the Avenue of the Dead, although these constructions may have been rather selective (R. Millon 1988:144). Many apartment compounds also underwent significant remodeling, and some of the finest mural paintings that decorate the apartments' walls date to this phase (R. Millon 1988:144). It is conceivable that this episode of building activities may have been an attempt by the state to re-vamp its status in the eyes of an increasingly discontented population—a strategy that did not prove effective.

The most significant event occurring in the Metepec phase is the deliberate and devastating destruction by fire of many of the civic-ceremonial and public monuments and buildings in the vicinity of the Avenue of the Dead. It has been suggested that this destruction was probably the work of the city's own residents, rather than outsiders, possibly as a reaction against the political power and actions practiced by the ruling elite (R. Millon 1988:149-158). The socio-economic and political problems developed in the latter part of the previous Xolalpan phase likely were a factor in the loss of the power of the central authority and administrative skills of the Teotihuacan state (R. Millon 1988:141-144).

The demographic changes presented in this chapter are relevant to culture-historical changes documented at site San José 520. As will be more fully described in the following chapters, the main occupation at San José 520 falls during the Tlamimilolpa and Xolalpan phases, although a small proportion of Miccaotli ceramics recovered from surface and excavated contexts (see Chapters 4 and 5, and Table 6.1) indicates that at least some occupation occurred as early as the Miccaotli phase. Because this locality is located in the outer periphery of the city, it may represent immigrants that settled in this locality during the period of growth of the ancient city, forming a small hamlet. Results of isotopic analysis of human remains more fully described in Chapter 6 are generally consistent with this possibility. Evidence and interpretations of the socio-economic status of San José 520 inhabitants and the economic activities they were involved in are more fully discussed in coming chapters, but I will show that they represented people of low socio-economic status who were engaged in ceramic production. Occupation at San José 520 did not continued into the last phase of the city, following the trend observed in other parts of the urban center and its immediate rural hinterland.

Chapter 2 Notes

[1] Salvage excavations conducted by INAH archaeologists in various parts of the city since the early 1980s have uncovered variable portions of some apartment compounds. However, with a few exceptions, most of this information remains unpublished.

CHAPTER 3: EARLY URBAN CENTERS: ECONOMIC STRATEGIES AND URBAN IDENTITIES

Introduction

Cities have physical and spatial dimensions, but they exist simultaneously in the minds, perceptions, and identities of the individuals who make up their resident communities. Individuals living in large, spatially extensive settlements such as cities cannot possibly know all of the urban terrain, and much less all of their fellow citizens. And yet, the mind of each contains an image of community and a sense of urban identity and urban belonging. The mental image of affinity and personal and collective association with one's community is what has been called the "imagined community" [1] (Anderson 1991). Teotihuacan, for example, was an influential urban center whose prestige extended to distant societies who sometimes emulated its symbols. It is conceivable that, in addition to issues connected with economic concerns, many people migrated to the city because of the attraction and excitement of being part of the community they imagined that it encompassed.

Modern cities (and presumably ancient cities too) attract and retain residents because they appear to offer better opportunities for resolving social and economic problems than rural areas or small towns. Some people do very well in cities, enjoying much of what is offered in social and economic terms. With luck, such benefits may be passed on to subsequent generations. At the same time, not everybody gets equal access to the "imagined community" represented by a large city, and experience it in very different ways. Many people, above all new immigrants, are at the margins of key urban systems. Economically, they may be involved in economic activities that are risky and offer little profit. Socially, they may have trouble creating and conveying to other residents the kind of identity that might give them support as they try to obtain greater access to urban benefits. Social and economic marginalization lies behind many of the sociological problems that characterize modern cities, but such problems probably also existed in the past. Archaeological localities like San José 520 have the potential to improve our understanding of such issues.

My goal in this chapter is to create a framework that will make it possible to relate archaeological evidence from San José 520 to important issues concerning urbanism, and above all the socio-economic opportunities that Teotihuacan offered to some of its residents and denied to others. This is challenging to do—as described in Chapter 1, cities and the larger urban systems that they are part of are complex and difficult to study. Teotihuacan is certainly no exception. My approach is to simplify by centering discussion on just three key dimensions of urban variation. These consist of: (1) a spatial dimension, which refers to residential locations within the urban system characterized with reference to key features such as the urban core and the urban periphery, (2) an occupational dimension, which concerns socio-economic occupations and roles filled by urban individuals and their households, and (3) a dimension of wealth variation.

These dimensions are useful because they can be discussed in terms of things that are archaeologically tangible. Evidence from San José 520 can be related to all three of them. They therefore are a practical way of comparing a locality like San José 520 to other small subunits of the city (including residential units, and workshops) and for considering the ways in which its residents interacted with the broader urban system. At a more theoretical level, these dimensions provide a way of characterizing an analytical or *etic* urban identity that is relevant for considering issues of marginalization. I return to this issue at the end of the chapter.

1. The Spatial Dimension of Urban Systems

Urban systems are complex and spatially extensive phenomena. They include, but are not confined to urban centers—they have also an important rural component.

Scholars have generally approached the study of prehistoric urbanism by gathering information from one or (better) both of these two different analytical units: the urban community, and the larger region in which it is located. Urban communities are perceived on the basis of two general issues: the nature of the sociopolitical, economic and ideological functions that an urban community fulfills in the regional system, and its demographic, social, and morphological organization, that is, its size, layout, landuse, and architectural design. In contrast, the regional view is associated with the hierarchical position of the city in the region where it develops and the area over which it expands its influence. This hierarchical position not only is spatial but focuses on how the urban society at all levels relates to the rest of the region in demographic, political, ideological, and economic ways (Hirth 2000).

To understand the interaction between urban and rural systems we need to pay attention to both sides of the equation, and to do this we also must be able to break them down spatially. A useful first step is describing the elements that characterize cities in general, while discussing how specific types or examples of cities conform to concepts that are basically typological. Describing the forms and functions of cities is not a simple task, but it is a useful starting point that allows us to draw comparisons among multiple examples and helps us distinguish urban from non-urban ways of life.

External Urban Boundaries

To understand the internal and external divisions of social spaces within urban centers, it is important to understand the nature of their external limits. Cities' boundaries, both physical and conceptual, are important because they define, at least partially, spaces for economic and social interactions. In some cases, they may provide evidence for high level planning.

Identifying city boundaries that separate urban from rural areas is not necessarily a straight-forward or even objective process, because many cities never had sharply defined boundaries. Boundaries were often not static, but changed through time. Some ancient cities had artificial boundaries to separate urban from rural residents, as the case of many Mesopotamian cities that were surrounded by walls of very impressive magnitudes (Pollock 1999). Good examples of similar features in Mesoamerican cities include the Epiclassic city of Xochicalco, with its defensive ditches and terracing (Hirth 1995), and Monte Albán, with its extensive but discontinuous defensive walls (Blanton 1978). Nevertheless, even when such tangible evidence exists, it is common to find evidence for settlement on both sides of urban boundary features. On the one hand, external occupation may be a kind of urban sprawl, occurring after the construction of such features. On the other hand such features may sometimes divide what was originally a continuous occupation area.

Work on Mesoamerican cities over the last two decades (e.g., Gutiérrez Mendoza 2003; Hirth 2003; Lockhart 1992; Marcus 1983a) has brought attention to indigenous conceptions regarding urbanism, urban boundaries, and community affiliation, alerting us to the possible effect of western bias in how we understand urban spaces. For example, Marcus (1983a) has proposed that for Mesoamerican Indians the key element in identity was affiliation to a particular region and ruler to whom loyalty and tribute were owed, and not to a specific urban place. From this point of view, city boundaries, even if materialized by a wall, did not separate in any substantial way urban life from that of the countryside.

The incorporation of the indigenous points of view, when possible, is fundamental to the study of urban and rural relations. The *emic* conception of rural and urban as proposed by Marcus is clearly relevant to Mesoamerican society in certain places and times, but should not be applied uncritically beyond the 16th century sources that it is derived from, especially without other supporting evidence. The archaeological record shows us that there was significant variability in settlement patterns, internal structure, and function among Mesoamerican cities. Significant time depth separates the earliest urban centers in Mesoamerica and those encountered and described by the Spaniards. I suspect that emic notions of urban citizenship, an identity tied to being a resident of a notable city, may have been very important in some places, possibly including Teotihuacan, Monte Albán, and Tenochtitlan.

Boundaries at Teotihuacan fluctuated during the city's history and were not physically marked, at least in any obvious way. As will be more fully addressed in Chapter 4, the Teotihuacan Mapping Project team used a threshold in the density of artifactual and architectural remains to define the city's outer limits. During their systematic survey in the Teotihuacan Valley, places where gaps between such remains exceeded 300 m were considered to be outside the city (R. Millon 1973:8). The particular value used to make this determination was probably arbitrary and chosen for convenience, but it is none-the-less true that the resulting map makes Teotihuacan look like a city with surprisingly well defined edges in most places (R. Millon 1973:Map 1).

Arrangements Within Cities

Urban social stratification not only has a vertical hierarchical component, but is also likely to be expressed in the organization of a city across space. The location of residences within an urban settlement and the way they combine into larger units such as neighborhoods can be an important factor in determining social distinctions. This affects the way people interact with each other and may have an impact on how people perceived each other as well. The social experience of living in crowded parts of the city will differ from that associated with the more sparse margins of the urban center or even more distant places in the hinterland. People living in closer proximity to central parts of the city would have more frequent and more direct contact with zones where the main public and religious buildings of the city were located, and where markets and festivals would have been held.

While some researchers (Lockhart 1992; Marcus 1983a) have emphasized indigenous conceptions of community affiliation that lack distinctions between city dwellers and those living in the hinterlands, some recent research supports a broader range of interpretations. Work carried out at the Maya city of Chunchucmil, in northwestern Yucatan, indicates that distinctions between the urban center and settlements located in its immediate hinterland were important. Among other things, they determined the frequency of social interaction among different members of the broader urban community, making the day-to-day experience of living within the city very different than that of people living in its more dispersed periphery (Hutson et al. 2008). Spatial boundaries can serve as cultural divisions, and people living on the edges of a city may have perceived themselves, and may be perceived by others, as being distinct from people living in denser parts of the urban center.

Formal Urban Models: The form and settlement arrangements of ancient urban centers varied greatly, in part due to their geographical and environmental conditions, the number of people living in them, and their level of planning. Some cities were highly nucleated—that is, they concentrated large numbers of people together in a well delimited area. Prominent examples include Teotihuacan, Tenochtitlan, and Uruk. Other cities were organized around relatively dispersed internal settlement patterns. Examples of the latter include most Mayan cities (including Tikal and Copán), and urban centers in the Gulf area in Mesoamerica.

Geographers and sociologists have proposed various models that describe internal patterns of social and land-use variation in cities. Urban spatial arrangements have been described as following either concentric, sectoral, or multi-nuclei settings (for a more detailed synthesis see Marcus 1983a). In the concentric model (Burgess 1925), for example, land-use within a city follows circular, ring-shaped zones arranged around and expanding outward from a single center. In modern cities, the center is usually where the political and administrative sector is located and it may include the mercantile district as well. Larger zones arranged around the city center are associated with other land-use practices such as residential and industrial areas. The different zones of the city are also associated with different sectors of society. For example, the outermost residential ring, the 'suburban' zone, is usually occupied by the wealthiest residents of the city.

Although these models were developed in reference to modern cities, they may have some use in describing ancient cities. The Maya city of Dzibilchaltún, for example, is thought to have followed the concentric model (Sharer and Traxler 2006:275). Hirth (2000:228, 274) has described a kind of concentric model for parts of Xochicalco. The multi-nuclei model (Harris and Ullman 1945) describes settlements that have more than one central focal point, from which different sectors of society develop. Mayan cities such as Seibal and Uaxactún may be examples of this pattern (Hendon 1992:206; Marcus 1983a:206). Hirth (2000:274) has used aspects of a multi-nuclei model to describe or account for outlying parts of Xochicalco. In the sectoral model (see Hoyt 1939), different sectors of the city grow outward from a central focal point, following along important access routes, producing wedge-shaped zones that may crosscut concentric areas. Sectors within these types of settlements can be exemplified by residential areas of particular socio-economic levels, individuals engaged in similar professions, or enclaves of foreigners.

Joyce Marcus (1983a:210) suggested that the spatial arrangement of Teotihuacan, concentrating a large number of high-status residential areas that developed along the main axis of the city (the Avenue of the Dead), and containing defined sectors of immigrants, and neighborhoods of craft producers devoted to the same activities, may have a better fit with the structure described by the sector model. As Robertson (2001:26) indicates, Teotihuacan would be a better fit with this model if the Avenue of the Dead were to be understood as a route of access leading to and through the core of the urban center. The part of the Avenue of the Dead located in the ceremonial core is crosscut by a number of barriers that may make it more like a series of elongated plazas than a causeway or access route. Robertson's study of spatial patterning of wealth variation during the Miccaotli and Tlamimilolpa phases revealed complex internal divisions that are difficult to reconcile with the ideal urban models described above. In some sectors there are hints of patterning that may be broadly concentric, in which residential areas for wealthy occupants are concentrated towards the center, instead of the periphery as proposed by the original model of Burgess (1925; Robertson 2001:217-218). The association of city cores with wealthy elites settled in the areas surrounding the key governmental and religious structures is typical of ancient cities, particularly in Precolumbian Mesoamerica (see Sjoberg 1960), and including Teotihuacan.

Spatial Divisions Within Teotihuacan: Work by the Teotihuacan Mapping Project (R. Millon 1973; Millon et al. 1973), the Teotihuacan Valley Project (Sanders 1965, 1996), and the Basin of Mexico Survey (Sanders et al. 1979) has greatly increased understanding of spatial organization within the city of Teotihuacan, its immediate periphery, and important parts of its hinterland. As described in Chapter 2, during the Tzacualli phase (ca. 1 B.C. to A.D. 150) the settlement of this early urban center shifted to the southeast, and subsequent constructions grew around two main axes running through this new center. The Avenue of the Dead runs north-south and is flanked by the most important monuments. The East and West Avenues approach the Street of the Dead in the vicinity of the Ciudadela (Millon 1976:212).

The center of the city was dominated then, and throughout the rest of its history, by its major civic and religious buildings and plazas. René Millon (1973:43) has suggested that the dense residential areas that formed this important part of the city may have been regarded as a kind of "inner city." A less densely settled "outer city" may have been recognized for more peripheral areas—the more dispersed zone between the inner city and the outmost boundary mapped by the TMP. The latter is notable for heightened concentrations of insubstantial structures (see Robertson 2008).

Ian Robertson (2001, 2005) identified a number of what he called 'social areas,' which are districts composed of neighborhoods formed of residential units exhibiting similar mixtures of household wealth and status levels. Wealth/status levels were assessed on the basis of surface ceramic artifacts from the TMP, and the patterns suggest important changes over time. Earlier neighborhoods and social areas appeared to be more heterogeneous, but with time, both become less internally diverse and show a stronger tendency for higher proportions of high status people and households to concentrate towards the city center, and larger proportions of low status residents toward the edges. The spatial distinctions suggested by Robertson's social areas are conceptually similar to Millon's division between an 'outer' and 'inner city,' but are based on patterns in portable material culture (discarded pottery) rather than changes in the density of different kinds of architectural remains.

Urban Space Outside of Cities—Hinterlands

The 'footprint' of cities extends far beyond their actual physical limits—however well or poorly they may be delimited. The region that surrounds a city and is most closely connected to it in social, economic and political terms constitutes its hinterland. Hinterlands are crucial to the development of urban economies, since many products and resources (e.g., food, fuel, construction materials, etc.) usually must come from beyond the city's boundaries. The successful growth and persistence of urban systems rests not only on economic activities carried out within cities, but also on the interaction of cities with their hinterlands, largely rural areas which nevertheless usually will also have other kinds of settlements—towns and even other, smaller cities—embedded in them. Recent research has brought attention to the social, political, and economic complexity of rural sites and of their interaction with ancient urban centers (e.g., Plunket et al. 2005; see also authors in Schwartz and Falconer 1994). Urban systems—city and hinterland—are integrated by relationships based on the movement of materials, information, and services. Flow goes both ways, but is usually asymmetrical. In ancient states, tributary payments into cities may be the single greatest reason for such interaction.

'Inner' vs. 'Outer' Hinterlands: Although organized at a much larger scale, some of the same complexity that characterizes the internal organization of cities may exist in a hinterland. For one thing, the intensity of interaction between a city and different parts of its hinterland is likely to vary depending on a range of factors, including distance and costs of travel, resources available in specific places, and the political roles that hinterland settlements come to play in the urban system. Assessing the effect of all of these factors requires more information than we usually have available in archaeology, but, at least for analytical purposes, it is important to think about possible internal divisions of hinterlands.

For Teotihuacan, Kenneth Hirth (1978) has distinguished an 'inner hinterland' (the Basin of Mexico and perhaps some parts of a few adjacent areas) from a more distant 'outer hinterland' which includes the Tula region, portions of southern Hidalgo, northern Tlaxcala and Puebla, the Amatzinac River region in eastern Morelos, and the eastern part of the Toluca Valley (R. Millon 1988). Teotihuacan would have relied primarily on subsistence products within a ca. 20 km radius from the city (Sanders et al. 1979) and would have exercised a lesser degree of control over agricultural areas in more distant parts of its inner hinterland and above all its outer hinterland (Hirth 1978:325-331).

Partly for this reason, I argue that we might find it useful for some purposes to subdivide Hirth's inner hinterland based on closer measures of proximity with Teotihuacan. The psychological effect of living a rural life, clearly outside of the city but within (for example) clear view of its pyramids would be quite different from living in the southern Basin of Mexico, some 50 or 60 kilometers away. Such distinctions might be important for considering a number of behavioral differences, including those involving Teotihuacan's rich symbolic life. This could be addressed in different ways, possibly including viewscapes or cost surfaces based on travel times out of Teotihuacan. A less technical, but more provisional distinction might simply distinguish the Teotihuacan Valley from the rest of Hirth's inner hinterland. The Teotihuacan Valley extends approximately 15 km east of the city, and approximately 10 and 15 km southwest to the edge of the lake system. It is approximately 35 km across from northeast to southwest (Charlton 1976:137), and has an area of ca. 523 km^2 (Lorenzo 1968:53).

Because archaeological research has focused mostly on localities within the city, settlement elsewhere within the Teotihuacan Valley is less well understood. Nonetheless, excavations at small settlements (Charlton 1987; Charlton et al. 2000; Sanders 1994), document residential remains of various sizes, including some that follow the general characteristics of arrangements and orientations seen in residential apartment compounds within the city. The quality of construction materials is variable, but buildings often show less investment than is observed at structures in the urban center (Charlton et al. 2000; Sanders 1994).

Economic interaction between these settlements and Teotihuacan itself has been characterized primarily in terms of provisioning the city with imported goods. Excavations at the site of Maquixco Bajo, located a short distance to the west of the city, have provided evidence that the movement into Teotihuacan of raw materials originating from distant places (e.g. shell) was sometimes mediated by settlements located (arguably) outside the urban capital (Sanders 1995; Widmer 1996). Similarly, results from excavations in Site TC-87-89 (Charlton 1987; Charlton et al. 2000), located ca. 7 km to the east of the city's edge, indicate that its residents may had been involved in the trade and importation of Thin Orange vessels—a serving ceramic ware consumed widely by the city's residents but manufactured 160 km away in southern Puebla (Rattray 1979b, 1990b). Maquixco Bajo also appears to have been involved in the extraction and processing of local products (*pulque* and maguey fibers) made with resources available in the lands surrounding the urban center (Sanders 1995).

The Semi-Rural Transitional Zone

For the purposes of this study, a more relevant issue concerns the transitional zone between the city and the rural areas immediately adjacent to it. The value of distinguishing such a zone has largely been overlooked by approaches that dichotomize the city from the rest of the urban system—the rural areas—and analyze them in isolation from one another. I have noted above that the division between cities and rural areas is not usually very clear cut, although Teotihuacan may be to some extent an exception. I would argue, however, that analyzing the transition between cities and rural zones would be useful even if the boundary was extremely clear and well defined—as with some cities that are completely surrounded by walls.

This urban-rural transition zone has also been called "peri-urban" when applied to modern urban systems (Simon 2008). I have described this zone elsewhere (Cabrera Cortés 2006) as semi-rural. One practical advantage in dealing with the semi-rural zone is that it avoids in part some of the difficulties in deciding with precision whether a locality within such a zone is actually inside or outside of a city. This approach may therefore sidestep an impossible task.

At a more theoretical level, semi-rural communities may have had distinct kinds of socio-economic interactions with cities that distinguished them from settlements farther away. These may have been pre-industrial examples of the so called "edge cities" (Garreau 1991), small settlement concentrations on the periphery of modern cities, sometimes eventually absorbed by a larger and wider urban extension. While they last, they may enjoy advantages that come from being somewhat distant from the control of civic administrators. The concept of "edge city" has been used to describe small nodes of settlements around the outer periphery of the urban settlement of Caracol, Belize, connected to it through causeways (Chase and Chase 2001). It may be useful to examine from this perspective some of the small settlements that lie in the semi-rural periphery of Teotihuacan, including San José 520.

However, just as it may be difficult or impossible to define a precise outer boundary for a city, no very precise definition for a semi-rural periphery is possible or even necessary. While one's ideas about this will vary depending on the particular case and the particular research interests in question, it is nevertheless important to convey some general sense of the scale I have in mind in this study when describing the semi-rural periphery of Teotihuacan. I imagine a zone that is like a "buffer" around Millon's TMP boundary, extending outward something on the order of one (or perhaps at most, two) kilometers. Such a zone would take in terrain that is close enough to allow regular interaction with residents living well within Millon's boundary, but which would also be characterized by settlement that is distinctly dispersed, or perhaps even sparse compared to places within the city. The relative narrowness of such a zone reflects in part the fact that I am using "semi-rural" as a conceptual tool for investigating specialist potters who faced the challenge of getting relatively heavy products into the hands of urban consumers.

2. Urban Roles and Occupations

In addition to characterizing urban dwellers in terms of where they live in a broader urban system, it is also possible to characterize them in terms of who they are and what they do. The second dimension of urban variation that I consider has to do with the roles and occupations of the people who lived in ancient cities like Teotihuacan.

Cities are inhabited by large numbers of people forming a single settlement and living in numbers and densities that are not usually found in other kinds of places. The demographic scale of cities makes possible a number of new economic niches that would have been infeasible in preceding, non-urban systems. The special roles and occupations available to urban dwellers emerge from such niches and are probably the most important factor underlying the internal diversity that characterizes cities in general. Comparative studies indicate that ancient cities are no different in this regard.

I organize the following discussion around four broad categories: (1) members of the elite, notably including rulers, administrators, and religious personnel, (2) long-distance traders or merchants, (3) urban food producers, and (4) individuals and households participating in craft production activities, whether sponsored by the ruling elites or administrations, or functioning as independent enterprises. Although these categories are not mutually exclusive, or exhaustive, these broad groups would have subsumed a very high percentage of the inhabitants in a city like Teotihuacan.

Urban Elites

Although there are known exceptions (see Smith 2003), cities or urban centers are typically associated with societies that have achieved a level of socio-political complexity associated with the existence of a state. Presumably many or even most Mesoamerican examples of urbanism follow this pattern, including Teotihuacan. This indicates that at the top of the hierarchy of a city’s occupations, there are individuals involved in administrative positions from a developed bureaucracy, including the highest level rulers. For some Mesoamerican cities (e.g., Tenochtitlan, Palenque, Copán), the latter individuals are clearly identified as kings. In others, such as Teotihuacan, the occupation of rulership is hard to pin down (Cowgill 1992a:207), as no irrefutable evidence of a royal palace, tomb, or depiction of a ruler has been found. This is not to say that Teotihuacan did not have a ruling elite. A city of this magnitude required a powerful authority of some kind, and evidence for this includes not only its monumental architecture, but the consecratory ritual events that were associated with some of its main monuments (see Cabrera Castro et al. 1991; Sugiyama 2005; Sugiyama and Cabrera Castro 2007; Sugiyama and López Luján 2007). Rulers may have been regarded differently at Teotihuacan than at many other cities (e.g., cities in the Maya area; see Demarest 2006) and may have been associated with a distinct set of symbols and kind of leadership ideology.

For Teotihuacan, the strongest data regarding elites are probably represented by mural painting and architectural remains. Processions of individuals attired with tassel headdresses have been interpreted as indicating very high status and marking individuals who may represent the state in some way (C. Millon 1973, 1988). Possible residential structures for the ruling elite have been tentatively identified in various parts of the city at different times in the city's history (Cabrera Cortés 2000; Cowgill 1983; Manzanilla 2001a; Manzanilla et al. 2005; Sanders and Evans 2006). The iconographic representation of a particular type of nose pendant represented in mural painting and stone sculptures (e.g., the West Plaza Group in the Avenue of the Dead Complex and the Feathered Serpent Pyramid) has also been connected with rulership (Cowgill 1997).

Mural paintings, particularly in apartment compounds located in the 'inner zone' of the city (e.g., Atetelco), and individuals buried as dedicatory offerings in the main religious buildings of the city (e.g., Feathered Serpent Pyramid) provide evidence of priestly and military offices at Teotihuacan, also considered as roles high in the social hierarchy (Cabrera Castro 1995; Cabrera Castro and Cowgill 1991; Sugiyama 1989a, 2002).

Urban Traders

Exchange between urban centers, their hinterlands, and with other cities is typically organized around a variety of institutional arrangements, two of which are market systems and traders. These concepts are interconnected. Market systems have long been recognized as a key factor in the development and integration of complex societies, in part because they facilitate specialization in craft production activities and ease the flow of goods. Market places bring together large numbers of consumers because they are usually set in particular, and hence predictable, spaces and times. Market activities may be taxed (Berdan 1985; Biskowski 1997; Blanton 1983, 1996; Brumfiel 1980; Feinman et al. 1992; Sinopoli 1994; Smith 1974; Smith 2004; West 2002). With the emergence of complex market systems, traders or merchants also appear, that is, specialists involved in exchange among regions and cities.

At the time of the Spanish conquest, various regions in Mesoamerica were economically interconnected through a system of periodic markets (Berdan 1988; Freidel 1981; Hicks 1987). Mesoamerican merchants traveled among settlements to exchange a wide variety of products. Our best understanding about individuals engaged in long-distance trade activities in Mesoamerica comes from the study of the full-time professional Aztec merchants known as *pochteca* (e.g., Garibay K. 1995; Hassig 1985). The *pochteca* were essential players in the consolidation of economic and political power in Late Postclassic Central Mexico as they not only facilitated commerce, but also communicated vital information across the empire and beyond its borders. Classes of semiprofessional merchant-warriors involved in long-distance trade of exotic materials have been suggested even for societies as early as the Olmec (Coe 1968). Professional traders, similar to the *pochteca*, have also been suggested for Teotihuacan (Sanders 1977:407), although some scholars (Manzanilla 1992) are highly skeptical of their existence. Aspects of commercialization and marketing in Teotihuacan's economy have been examined in more depth by Kristin Sullivan (2007).

While mechanisms and associated roles remain unclear, there is abundant if indirect evidence for trade at Teotihuacan, mostly in the form of imported goods and raw materials. Some of the most important examples include obsidian, Thin Orange pottery, cotton, shell, semi-precious stones, and minerals like cinnabar. Some of these products were transported from regions to the east and southeast of the city, through proposed "Teotihuacan Corridors" (Charlton 1977, 1987, 1991; Charlton et al. 2000; García Cook 1981; García Cook and Trejo 1977). Evidence for materials being traded out of the city is less abundant. Michael Spence (1996) has argued that elite gift exchange may underlie the presence of green obsidian prismatic blades in the Maya Zone, many of which may have come from Teotihuacan.

Urban Food Producers

The most fundamental component of urban economies in antiquity was the provision of food (Smith 2003). The sheer existence of a city implies that the proportion of the population within the urban system involved in subsistence economies is sufficient to maintain a large, concentrated population, likely including significant numbers of non-food producing specialists (e.g., Calnek 1975; Childe 1950; Maisels 1993; Palerm 1972:16). While early urban societies solved their subsistence needs in a variety of ways, sometimes including hunting, fishing, and pastoralism, agriculture is regarded as the most essential economic activity for supporting cities. Agriculture is usually regarded today as a rural phenomenon, with modern cities occupied by people engaged in all kinds of activities except farming. This was not the case in the past. Cross-cultural studies indicate that many preindustrialized cities (including Early Dynastic Uruk and Harappan cities) were inhabited in part by people engaged in farming, who sometimes constituted large percentages of their population (McIntosh 2007; Pollock 1999:72).

In the case of Teotihuacan, René Millon (1981:220) has suggested that up to two-thirds of the people living in the city may have been involved in farming. This is a considerable percentage—conceivably ca. 30,000 to 50,000 farmers. A large and densely occupied settlement like Teotihuacan must have required a large number of laborers committed to the production of subsistence products. Teotihuacan's subsistence was based on maize agriculture and other domesticates, and included wild plants that grew naturally in the Teotihuacan Valley or that were possibly acquired from other areas within the Basin of Mexico (McClung de Tapia 1987:69).

It is worth pointing out that there was much variation in the quality of farm land available to the inhabitants of Teotihuacan. The most productive land was almost certainly land that was easily connected to irrigation systems, such as that fed by the system of springs located on the southwest edge of the city at the edge of the modern barrio called Puxtla (Gamboa Cabezas 1999a, 2000; Sánchez Sánchez 1982). The people who actually worked such lands were unlikely to have been the actual owners, who may have been very wealthy. Farmers whose land relied on rain would have been disadvantaged in comparison and at great risk from crop failures. Maguey must have been an important backup for such farmers (Evans 1990). The implications of unfavorable access to land for issues of craft production are considered in the next section.

Although it is difficult to assess the likely contribution, it is important to note that significant amounts of food consumed at Teotihuacan may have been acquired through both market systems and as tribute. This might have added important diversity to the urban diet. For example, faunal and malacological remains recovered from excavations at different apartment compounds at the city include species of animals obtained in the Teotihuacan hinterlands, as well as others from distant places (Rodríguez Galicia 2006; Starbuck 1987; Valadez Azúa 1993). Cultivated foods, such as maize, amaranth, maguey sap, and many other things were likely also imported—it is important to note, however, that for significant parts of the Teotihuacan Period, the rural hinterland of Teotihuacan was not very heavily populated. Unlike the later Aztec peoples, the regional population was not deployed in a way that would have maximized rural production.

Craft Specialists and Early Cities

Craft production is one of the aspects of ancient economies that has received the most attention by archaeologists in recent decades (see among many others Clark 1995; Clark and Parry 1990; Costin 1991, 2001; Patterson 2005; Schortman and Urban 2004; Shimada 2007; Sinopoli 1988; Spielmann 2002; Stark 1985, 1995). This is due to the fact that the study of craft production systems provides a window into ancient economies and above all ancient political economies (e.g., Brumfiel and Earle 1987; Carballo 2005:18; Costin 2004; Earle and D'Altroy 1989; Feinman and Nicholas 2004; Hirth 1996; Peregrine 1991; Ploeg 1991; Sinopoli 1994). Increasing sociopolitical complexity in archaic states is closely associated with the development of craft production systems, intensified specialization, and exchange, factors which may have made states more politically integrated and more economically interdependent (Brumfiel and Earle 1987:3; D'Altroy and Earle 1985; Wattenmaker 1994).

Craft production activities and resulting products have been examined from a variety of perspectives and using different methods. Researchers have aimed to understand technological, organizational, symbolic, social, behavioral, environmental, political, and economic aspects of manufacture in societies across the world and with varied levels of socio-political complexity.

Approaches directed toward understanding the role of craft production in processes of increasing sociopolitical complexity envision craft goods as sources of economic and/or ideological power for ruling elites (Schortman and Urban 2004:189-195). In this framework, elites seek to control labor, symbols, and the production and distribution of certain goods to promote and reinforce political centralization and social inequality (Brumfiel and Earle 1987; Inomata 2001; Peregrine 1991).

Craft production is multifaceted, however. In addition to its role in early political economies, some anthropologists have examined more autonomous craft production systems involving non-elite groups. One of the most influential approaches regards craft production as a response to challenging economic conditions. Under this framework commoners are drawn into independent craft production activities and specialized manufacture as a means of economic survival, particularly when productive land is not available or is insufficient to meet subsistence requirements (see Arnold 1985; Fry 1981; Kramer 1985; O'Brien 1999; Pool 1992). Under these circumstances, producers usually manufacture utilitarian items on a part-time basis, combining such activities with whatever opportunities may exist for farming. Products are distributed independently through markets.

Craft Production at Teotihuacan: Some scholars (e.g., Spence 1986:75) have suggested that the growth of urban centers promoted, among other things, the development and diversification of craft industries as the large numbers of potential consumers (the city's inhabitants) provided the basis for new economies of scale. Craft specialists become more abundant, and with time even more specialized. Teotihuacan is a good example of this phenomenon, as it exhibited occupational specialization at levels not witnessed previously in Mesoamerica.

At Teotihuacan large numbers of the city's inhabitants were engaged in crafts, both as part-time and full-time specialists. Members of different apartment compounds and of different socio-economic statuses participated in a variety of crafts organized at various levels. Some work was done at the level of household production (e.g., textile work), and others at the level of specialized workshop industries. Some of the materials that may have been involved in these specialized workshops include pottery, obsidian, and lapidary work. Probably all of these materials were also sometimes worked at smaller scales, including individual households.

Some apartment compounds housed individuals specializing in particular industries, while others were inhabited by individuals involved in a range of crafts (multi-crafting). Contiguous groups of apartment compounds also were possibly organized as craft-oriented *barrios*, concentrating groups of artisans involved in particular industries (e.g., ceramics, shell, semi-precious stones) in the same sector of the urban center (Krotser 1987; Sheehy 1992; Turner 1988, 1992). A prominent example of this is the Tlajinga district located in the southern part of the city, where specialization in San Martín Orange ware has been documented (Rattray 1988; Sheehy 1992; Sullivan 2006).

A wide variety of products and tools were involved in this work, some of which required the importation of raw materials from different regions in Mesoamerica. Some of these raw materials include obsidian, shell, fine stones, minerals, pigments, cotton, feathers and marine animals, among others (Cabrera Cortés 1995; 1999, 2002b; Gazzola 2003, 2004; Kolb 1987; Manzanilla 2006a; R. Millon 1988; Padró Irizarry and Manzanilla 2004; Pérez Roldán 2005; Rosales de la Rosa 2004; Turner 1988; Widmer 1991, 2004).

Often these imported materials were used in the production of elite and religious paraphernalia and were processed in specialized and often attached workshops. For example, at Conjunto A in Frente 3 of the La Ventilla 92-94 Project, a lapidary workshop making ornaments and ritual objects using imported shell, slate, and green stones was excavated. The finished products were probably destined for consumption by groups of higher socio-economic status (Gazzola 2005, 2007; Gómez Chávez 1996, 2000). Imported materials were not exclusive to elites; in less abundance they were also accessible to other individuals in the city. Slate, for example, was worked in specialized workshops where objects were destined for elite consumption (e.g., at Conjunto A of La Ventilla), but was also processed in more independent production areas (e.g., at Tlajinga 33) and even in individual households (e.g., Site 15:N1E6, see Robertson 2008), presumably with products distributed to broader sectors of the population.

Although the scale of obsidian production at Teotihuacan has been a matter of some debate (compare Clark 1986; and Santley 1983, 1984), obsidian is arguably the most visible craft industry at the city. For the obsidian industry local, regional, and precinct workshops have been suggested (Spence 1981:771-774), the latter apparently under the control of state authorities. Production within the precinct obsidian workshops may have been highly specialized and carried out by highly skilled knappers, as suggested by data from 6:N5W1 and a large plaza located to the northwest of the Pyramid of the Moon, where projectile points and eccentrics linked to militarism and sacrificial practices were made by obsidian workers, apparently under the control of the state (Carballo 2005, 2007).

In addition to obsidian precinct workshops, some other items were apparently also produced under some degree of control by the state administration. A possible mica workshop has been suggested for an area in the vicinity of Xalla (Rosales de la Rosa 2004:228-231, 293), a large administrative compound to the north of the Sun Pyramid, thought to have been at some time the home of Teotihuacan's ruling elites (Manzanilla and López Luján 2001). Other evidence suggests that, in addition to production in domestic residences, some weaving, tailoring, and textile enhancing, possibly involving cotton, was done in areas closely connected with administrative buildings at the core of the city (Cabrera Cortés 1999, 2002a). It also has been proposed that work on imported shell and animal bone to make decorations for the clothing of possible *barrio*-level elites was done in association with administrative buildings in the compound of Teopancaxco, to the southeast of the Ciudadela (Manzanilla 2006a; Padró Irizarry and Manzanilla 2004; Rodríguez Galicia 2006). Also a ceramic workshop for the manufacture of composite censers and censer ornaments, and some types of figurines (see Múnera Bermúdez 1985) was excavated in a location connected with the Ciudadela; an administrative and religious complex located south of the Río San Juan.

Ceramic production was probably the second industry both in size and importance (Millon 1981). Pottery production at Teotihuacan was apparently carried out by skilled potters, but organized according to various degrees of specialization (see

Krotser 1987, and Chapter 5). Figurines and composite censer *adornos* were manufactured both in administered (Múnera Bermúdez 1985) and independent workshops (Sullivan 2007). Recent research (Sullivan 2007) indicates that these objects appear to have been fairly available to different socio-economic sectors throughout the city, but commercial exchange became less prominent in the last two phases of the Teotihuacan period. A more detail description of ceramic production at Teotihuacan is provided in Chapter 5.

3. Wealth in Urban Centers

Partly because of the wide range of roles and occupations typically available in a large city, the wealth of its inhabitants can also vary widely. Because they are closely related concepts, wealth and status are often considered together in archaeological studies. They are not the same thing, however, and wealth can be studied much more directly using archaeological data. While I will consider status in more detail below, I am defining the third dimension of urban variation only in terms of wealth.

Wealth variation is related to differential access to both social and material possessions within a community (Schneider 1974:256; M. E. Smith 1987:299-301) and one manifestation is the use of valuable items in social and ritual display (Brumfiel and Earle 1987:4). The unequal distribution of wealth and power in antiquity has been a subject of anthropological research for various decades (e.g., authors in Chase and Chase 1992; McGuire 1983; Morris 1992; Price and Feinman 1995; Schneider 1974; M. E. Smith 1987; Tainter 1978).

Cross-cultural archaeological research indicates that ancient elites often displayed their status through elevated and/or exclusive use of symbols of wealth and power, prestige goods of high cost but with little utilitarian value, monumental architecture, elaborate residential construction, art, food, and elaborate funerary treatment. Often these features required a great deal of specialized labor, importation of materials from distant places, or specialized technologies or knowledge (Feinman et al. 1981; Hayden 1995; Helms 1993; Inomata 2001; Janusek 1999; Wattenmaker 1998). In some cases, usually where clear class differences have emerged, sumptuary laws may heighten the distinction between elites and non-elites by prohibiting the use of some materials and symbols among the latter (Anawalt 1980; Hassig 1988).

Because elites have unrestricted access to sumptuary goods, while individuals of lower wealth have reduced access to prestige goods of high value, certain kinds of material remains can be expected to be absent or to occur in smaller amounts within commoner households. Previous work (David and Kramer 2001; Hirth 1993b; Rathje 1983; Robertson 2001; M. E. Smith 1987) has demonstrated that relative quantities of different kinds of household possessions can be useful indicators of wealth in ordinary households.

Archaeologists have explored differences in wealth through the analysis of grave goods and burial placement (Clayton 2009; Joyce 1999; Merry de Morales 1987; Savage 1995; Sempowski 1987, 1992). Inequality also has been addressed by looking at differences in energetic investment of residential and public architecture (Abrams 1989, 1994; Murakami 2010), differential access to various kinds of material culture as reflected in household assemblages (Blanton 1995; Hirth 1993a; Smith 1994), and differential access to certain kinds of food (Clark and Blake 1994; Costin and Earle 1989; Haviland and Moholy-Nagy 1992; Turkon 2004; Wiessner 1996).

Wealth at Teotihuacan

Previous research at Teotihuacan (e.g., Millon 1976; Murakami 2010; Robertson 2001; Sempowski 1987, 1992) has begun to characterize the diversity in wealth of inhabitants at this ancient city, and scholars (e.g., Cowgill 1992a, 1997) have presented more complete syntheses elsewhere. Here I present a brief summary of some key ideas.

Apartment compounds exhibit a certain degree of uniformity in terms of the type of structures found within them, such as rooms and “temples” arranged around central patios or courtyards, with central altars within main courtyards serving the various families living in the compound (Cowgill 2008). At the same time, and as indicated in other chapters (Chapter 1, 2, 6), the overall size of the different apartment compounds so far excavated at Teotihuacan varies widely. Equally variable is the organization of internal space, accessibility, and interconnections (Hopkins 1987; Manzanilla 2005; Murakami 2010)—so far, no compound is identical to any other.

Based mostly on architectural differences in excavated apartment compounds, René Millon (1976) argued for the existence of at least six socio-economic levels within Teotihuacan society. Distinctions of these categories were based on the size of apartment compound rooms; the use of internal space; the presence or absence of decorative elements such as mural painting; and the quality of techniques and materials used in construction.

Residences of the uppermost elite are concentrated in the core of the city along or near to the Avenue of the Dead, and exhibit architectural features reflecting higher labor costs and access to better quality construction materials than other compounds in the city (see Millon 1976; Murakami 2010). Examples may be within or closely connected to precincts associated with the main religious, civic and administrative districts of the city:

Xalla Compound is connected to the Sun Pyramid through a direct causeway (Manzanilla et al. 2005), while Quetzalpapalotl "palace" is built into the southwest corner of the Moon Plaza. These structures are characterized by solid constructions of stone and masonry walls, concrete floors, and plastered surfaces. The walls of Quetzalpapalotl, for example, are not only decorated with mural paintings, but the main central courtyard of its later occupation contains elaborate sculpted columns decorated with symbolic images and obsidian inlays (Acosta 1964).

Millon argued that five other levels were represented by apartment compounds located in different parts of the city, each characterized by decreasing levels of architectural elaboration and spaciousness. Apartment compounds that probably represent lower levels of the socio-economic spectrum are Tlajinga 33 (Widmer 1987; Widmer and Storey 1993) and Oztoyahualco 15B (Manzanilla 2004), both located in more peripheral areas of the urban center. Althought still representing multi-household housing structures, architecture is less complex than observed in compounds closer to the core of the city. Cobblestone and adobe building materials are more abundant in Tlajinga 33, although plaster walls and floors are still present. Mural painting, and other decorative architecture or sculpture is absent in these examples.

A seventh level (likely marking the bottom of the socio-economic scale) is represented by "insubstantial structures" (Cowgill et al. 1984). As more fully described in Chapter 6, these represent small, simple dwellings, thought to have been made of perishable materials, and perhaps varying amounts of stone and adobe. Excavations at San José 520, and more recent work at Metepec 15:N1E6 (Robertson 2008) confirm the existence of these structures.

The degree to which formal variation exhibited by apartment compounds (and by implication the underlying social variation) is continuous or discontinuous is still unclear. The number of compounds that have been excavated is still very small, and the few examples that were available to Millon made it difficult to evaluate the possibility of continuity vs. gaps between posited wealth levels. Nonetheless, residential architecture that has been excavated at Teotihuacan shows clear distinctions between the two ends of the spectrum among apartment compounds, and even more so if insubstantial structures are included in the comparison.

Other research at Teotihuacan directed toward understanding differences in the social wealth of the city's inhabitants has focused on mortuary evidence (Cabrera Cortés 2001; Clayton 2002, 2009; Sempowski 1987, 1992). This work has demonstrated important differences among the grave goods deposited with individuals of different apartment compounds, age, and gender. Notably, Sempowski has used these kinds of data to argue that the gap between wealthy and poor residents of Teotihuacan increased over time (Sempowski 1987, 1992).

The study of iconographic representations in mural painting and certain kinds of ceramic decoration has also provided some information, particularly on groups of people in the upper levels of the society that held positions as possible priests and high-ranking military personnel (C. Millon 1988). Some of these individuals are portrayed as wearing elaborate costumes (Cabrera Cortés 1999) which contrast strongly with the few depictions of more ordinary people (e.g., in some Tepantitla and Atetelco murals).

Associations between architectural remains, categorized according to the probable status of their residents by TMP researchers, and relative quantities of different artifact categories from related surface collections have been used to identify signatures of status at Teotihuacan. Such signatures have been used to examine spatial variation in wealth and status (Cowgill et al. 1984; Gottscho [Sload] 1977; Sload 1982). As mentioned previously, more recent but conceptually similar kinds of analyses have been used by Robertson to identify internal divisions at Teotihuacan, separating districts associated with distinct mixtures of status levels (Robertson 2001, 2005).

In these last studies based on TMP surface data, researchers have been examining the intersection of the analytical dimension that I have been discussing in this last section (wealth) with the spatial dimension that I dealt with previously. In fact, it is probably the points of intersection of these dimensions that will provide the greatest insights. One of the things I do in the next section is consider how these dimensions come together in a consideration of urban identity and marginalization.

Issues of Urban Identity

In ancient urban settings, much as in modern times, people experienced different economic and social circumstances. Some people enjoyed economic, social and even political success, while others faced circumstances that led them to economic, and, even social conditions of marginality. In using the term ‘marginality,’ I mean to refer to people who are relegated or confined to lower economic opportunities or social standing and for whom the broader social system makes access to better prospects difficult and unlikely.

People need to make use of both economic and social strategies to survive in urban societies. Participation in economic activities (like farming, craft production, etc.) is crucial for almost all urban residents, and success or failure may have to do with factors that cannot be controlled. This is particularly the case for farmers, where environmental and ecological issues like weather, soil erosion and fertility can cause problems that may not have good solutions. Farmers also have to deal with social issues.

Maintaining control of agricultural land in the face of land shortages is one example of something that farmers cannot handle without broader support from others. Farmers need to forge and maintain social connections to deal with such problems, and whether or not they are successful depends in part on how they are able to present themselves to others. This is mainly what I mean by identity—the assessments made about others and about one's self when considering making or cutting social connections (see Barth 1969). In other words, the way in which individuals and collectivities negotiate with each other, and with themselves, as well as the similarities (sameness) and differences (boundaries) that structure their social relations (see Jenkins 1996; Meskell 2002). The negotiation of identity and status in different social settings (possibly involving reinforcing ethnic affiliation, adoption of certain ritual practices, social display, etc.) can be understood as part of a strategy for integrating oneself and one's family into a larger community.

Identity in this sense has both an external and internal aspect. People create identities that are favorable and reassuring to themselves, and they try to project this to others. Some households may try to present themselves as respectable people who are knowledgeable about local cultural practices, which may be particularly important if they are immigrants (see Barth 1969). Others may interpret their identity quite differently, however. One of the general things that may be important is deciding how different a person or family is from you or your own family, and whether any support offered to them will bring benefits or is likely to be returned in the future.

Studying identity is difficult in modern societies and is even more difficult archaeologically. This is in part because identity is fluid and situational, multiple, nested, and subject to negotiation between the self, and "others" (see authors in Berdan et al.

2008; A. Cohen 1994; R. Cohen 1978). This means that identity can be manipulated and changed depending on different circumstances.

There are many aspects of culture that can be described as having to do with identity, but not all of them can be or need to be considered here. Gender, age, sexuality, marital status, food, and language for example are important parts of most people's identity (see Berdan et al. 2008; Brumfiel 1992; Conkey and Spector 1984; Díaz-Andreu et al. 2005; Gero and Conkey 1991; Hopgood 2000; Janusek 2004; Klein 2001; Sandstrom 1991; Shennan 1989; Silverblatt 1995; Varien and Potter 2008; Voss 2008; Watanabe 1990), but are not closely related to what I am addressing here. Aspects of social identity that are most relevant for my work in this dissertation, as described below, concern the intersection of the socio-economic status of urban residents—that is, the degree of their wealth; their economic occupation; and the spatial location of their place of residence.

To this I would add concepts of identity relating to what is sometimes described as 'ethnicity.' This is a potentially thorny topic that I can't address in detail here (but see Stark and Chance 2008 for a lengthy and useful discussion). What I have in mind, however, are mutual assessments that a pair of social actors might make about differences and similarities in their respective cultural origin and cultural behavior—does someone share similar ideas about appropriate ways to construct a house, or engage in rituals associated with the interment of the dead? Are they likely to sell pots of familiar shape, decorated with appropriate symbols?

Urban identity can be considered both from *etic* and *emic* perspectives. An etic approach to identity may have analytical uses but has the disadvantage of being potentially arbitrary, at least to some extent. Archaeologists, as outsiders to an ancient culture, naturally focus on things that interest them and that they can see in archaeological data. Emic concepts about identity by definition would be more meaningful to people in the ancient societies we study. For certain kinds of archaeological interpretation they might be more useful than etic concepts. The problem is that emic ideas are much less accessible to us, and can usually only be characterized in the most general way.

We need to use etic perspectives to do useful analysis. One practical way to describe etic ideas about urban identity is to consider how individuals and households relate to points of intersection of the three main dimensions of urban variation I discussed earlier: space; occupation and role; and wealth.

As a hypothetical example, consider a household living in a residential structure near the core of Teotihuacan that is decorated with mural paintings suggesting that one of the most important individuals living there was probably some kind of religious specialist. The quality of the architecture and associated prestige goods suggest high levels of wealth. Another hypothetical scenario might involve a small site located on the edge of the city, inhabited by food producers (farmers) and associated with material culture suggesting a very low level of wealth.

As a descriptive way of characterizing some kind of urban identity, relating these cases to these three general dimensions seems useful, especially since it makes the contrast between the two cases very clear. These archaeological observations probably also reflect matters that would be meaningful at an emic level. It is almost certain that an ancient resident of Teotihuacan could use this kind of description to form at least a very general idea about how they might think about or even interact with an unknown individual living at either of these two places. We can only guess about the details, but depending on the perspective of the person in question, it is possible that someone might feel respect (or even fear) for a wealthy and powerful official from the city core, and regard a poor farmer from the edge of the city as a social inferior.

The hypothetical examples given above were created to represent what may be polar identities, both in an emic and etic sense. Most situations are more complex. For example, actual archaeological evidence from Conjunto A, Frente 3 at La Ventilla, Teotihuacan (Gómez Chávez 1996) indicates a residential group composed of lapidary workers, apparently of low wealth and probably attached to other households, living in an apartment compound of significantly poorer construction materials than in the surrounding compounds. The location of the apartment compound is not far from the Avenue of the Dead, but is clearly outside the ceremonial core. We can describe this locality in terms of the three dimensions of urban variation and use this as an etic assessment of identity. Nevertheless, we don't know enough about perceptions of social differences at Teotihuacan to say much about likely emic identities. Maybe the most important factor would be the apparently low level of wealth associated with Conjunto A, but that is only speculation. With more research and more comparative work, use of etic identities might lead to greater understanding of likely emic meanings.

I start on this type of examination with my analysis of San José 520. Material culture from San José 520 provides a good opportunity to explore issues regarding the status and social identity of small groups of possible immigrants arriving at Teotihuacan (see Chapter 7), settling in the margins of the city, and adopting ceramic production as an economic strategy. Relevant information will be presented in the following chapters.

Chapter 3 Notes

[1] The concept of "imagined community" developed by Benedict Anderson (1991) alludes to the ideological notion of nationalism. He suggests that all large communities (towns, cities, nations, or any community larger than those where social interaction is done at the face-to-face level), are *imagined* in the sense that most members of such nation feel a sense of solidarity and same identity even when they don't know each other or never meet. This concept has been applied to archaeological research (e.g., Canuto and Yaeger 2000) to address issues of personified experiences of peoples living in the hinterlands of urban centers (Hutson et al. 2008), and smaller communities (Preucel 2000).

CHAPTER 4: FIELD OPERATIONS AT SAN JOSE 520

Introduction

The contexts of ceramic production activities analyzed in this dissertation originated from surface and excavation operations carried out at San José 520, a site situated in the southeastern margins of the ancient city of Teotihuacan (Figure 4.1). To compile evidence about craft production activities and domestic life in this locality, a combination of systematic mapping, surface survey, and excavations were carried out between October 2004 and February 2005. These operations were followed by various seasons of laboratory analysis between 2006 and 2009. In this chapter I outline the methods used in the fieldwork carried out at San José 520 and present the contexts where domestic and production activities took place.

The principal objective of this research program was to gather data that would make it possible to describe spatial organization and variation through time of the ceramic production activities carried out at the locality of San José 520. Mapping and intensive surface artifact collections were used to define the spatial extent of the locality and document systematically the provenience of artifacts and architectural features. Ceramics collected in this survey were initially used to determine overall periods of occupation—data that was later combined with ceramics recovered in excavations. Results of the ceramic analysis indicate that the site was mainly occupied during the Tlamimilolpa (ca. A.D. 200 to 350) and Xolalpan phases (ca. A.D. 350 to 500) of the Teotihuacan Period (ca. 150 B.C. to A.D. 550) (Figure 4.2). A small proportion of Miccaotli ceramics from surface and excavated contexts (see Chapter 6, Table 6.1) indicates that some occupation of this locality probably also occurred as early as the Miccaotli phase. Only a handful of ceramic fragments were identified as belonging to the

Metepec phase, suggesting that Teotihuacan Period occupation of this locality was essentially over by this time. In fact, the reduced proportion of overall Xolalpan ceramics compared to Tlamimilolpa sherds might indicate that occupation did not continue throughout the entire Xolalpan phase. Artifacts recovered from the surface of San José 520 provided technological information about ceramic production activities and helped determine the likely locations of the most intensive domestic and production activities. Results from the analysis of these materials will be discussed in Chapter 5. Importantly, the results of this stage of investigation facilitated planning of the subsequent excavation phase.

My research focuses on understanding how craftwork was organized, how such activities relate to domestic life, and how the craftworker inhabitants of San José 520 were integrated with the rest of the city both economically and socially. The general kinds of data generated by surface materials would not have been sufficient to address these sorts of questions, and subsurface excavation was used to provide more detailed information about specific contexts, and above all the intensity, organization, and spatial relationships of ceramic production. Controlled excavations were also required to refine the chronology of the locality, crucial to assessing the period during which its occupants lived there, and to determine the length of occupation. These data were also essential to the possibility of a diachronic assessment of the success of craft production activities as a strategy for gaining access to and incorporation into the broader economy of the city. As is more fully described below in this chapter, and in Chapter 5, subsurface disruption caused by modern agricultural activities limited my abilities to use stratigraphic information to explore diachronic changes in the economic activities at San José 520, although it was possible to obtain some relevant information on the basis of ceramic chronological allocations. Strategically placed, extensive excavations were necessary to clarify relationships between production loci and domestic units within this locality.

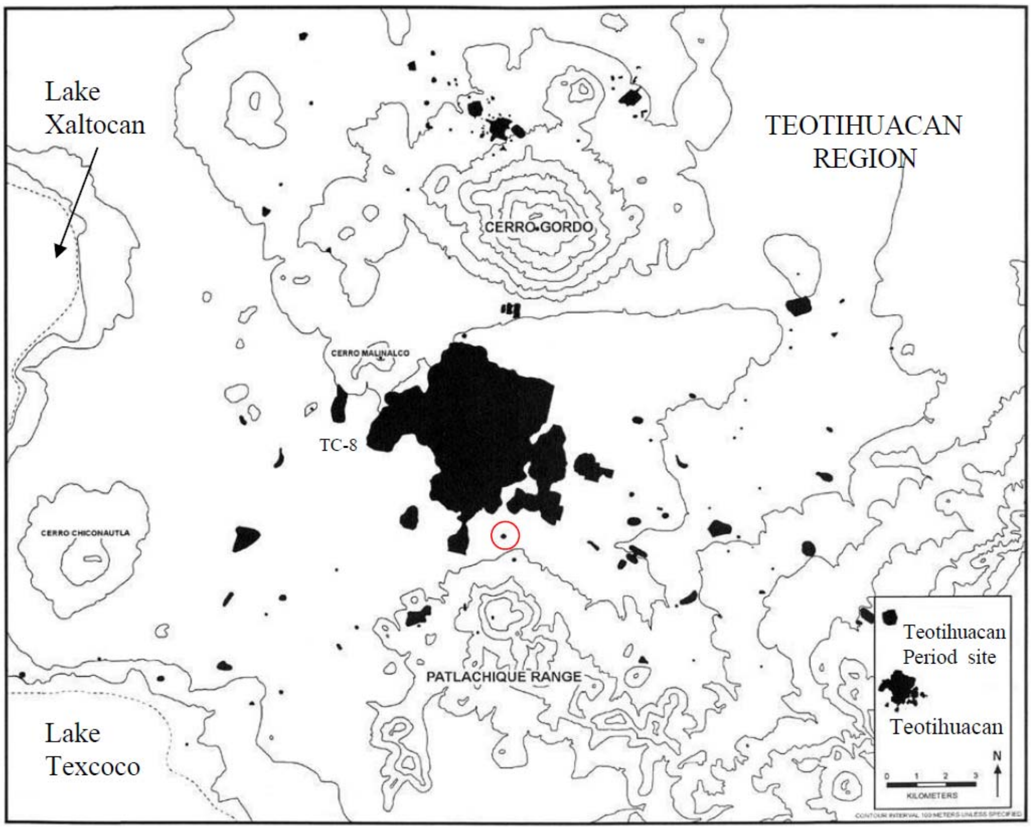


Figure 4.1. Distribution of Teotihuacan Period settlements recorded by the Teotihuacan Valley Project in the 1960s (modified after Gorenflo and Sanders 2007:Figure 4.17. The outline of the urban center was produced by Ian G. Robertson).

Previous Research in the Area

As has been discussed previously, the Teotihuacan Mapping Project (TMP) survey of the 1960s (R. Millon 1973) recorded a series of sites that were later excluded from the Teotihuacan map because they fell outside the site density threshold used to define the city's boundaries. It is worth adding here that, in peripheral zones of the city, certain sites were also recorded by the Teotihuacan Valley Project (TVP), an archaeological project that surveyed the non-urban portion of the Teotihuacan Valley in the 1960s under the direction of the late William T. Sanders (Sanders 1996). Significantly, this is the case for San José 520 (below).

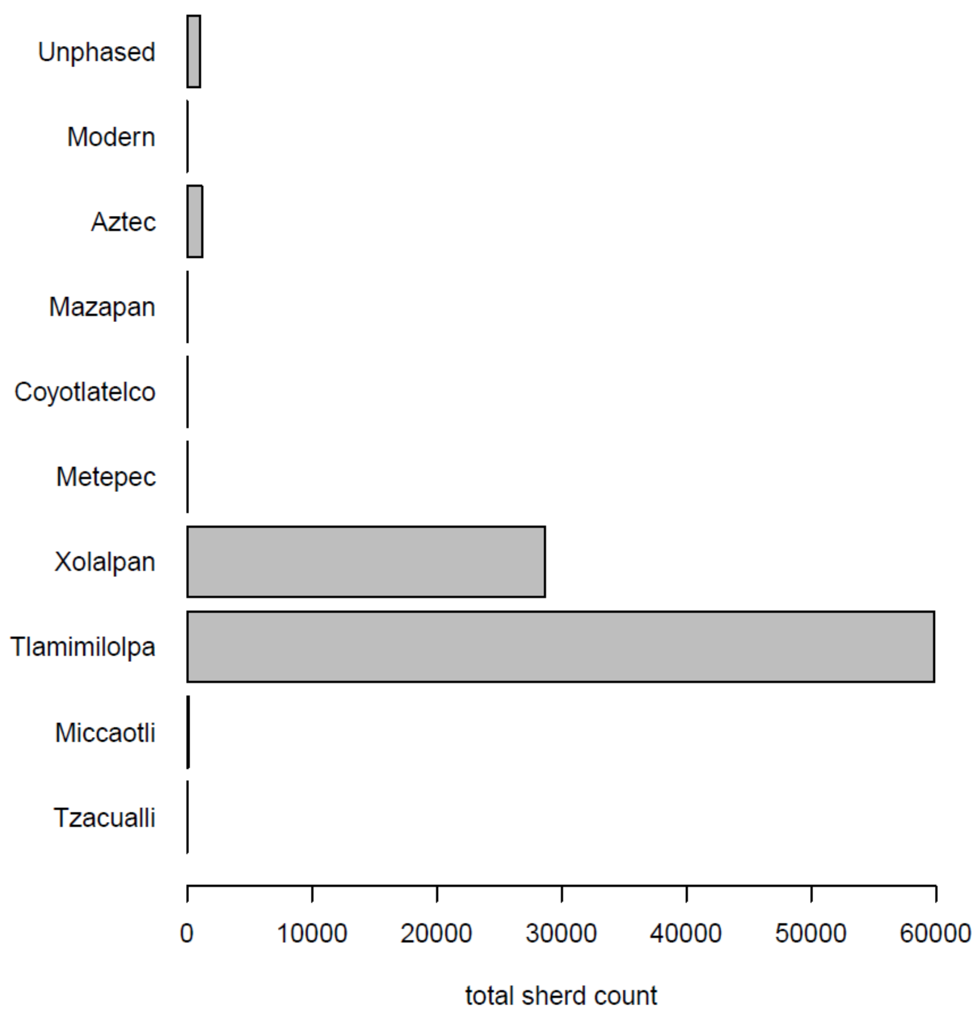


Figure 4.2. Distribution of total ceramic sherds by phase.

Ceramic and lithic artifacts from sites recorded around the semi-rural periphery of Teotihuacan were collected and analyzed in the 1960s in the same manner as materials from sites within the city. Among the artifacts recorded in the tabulation sheets were ceramic production tools. These tools included the so called lunates (Figure 4.3), finger-sized, banana-shaped pottery objects thought to have been made specifically for shaping and/or smoothing ceramic vessels during manufacture. For convenience, I retain the term "lunates" in this manuscript to describe these formal ceramic tools. In addition, analysts recorded flat, circular trays made of pottery that were likely used for shaping or supporting the bases of certain kinds of ceramic vessels during manufacture. These platforms were named by the TMP as sin formas ("shapeless [objects]"), but in this study, I refer to these artifacts as "ceramic modeling platforms." Examples of these artifacts are exhibited in Figure 4.4, and a more detailed description is presented in Chapter 5.

Figure 4.3. Lunates: pottery tools used for shaping vessels during manufacture.

Figue 4.4. Ceramic modeling platforms used for supporting vessels during manufacture.

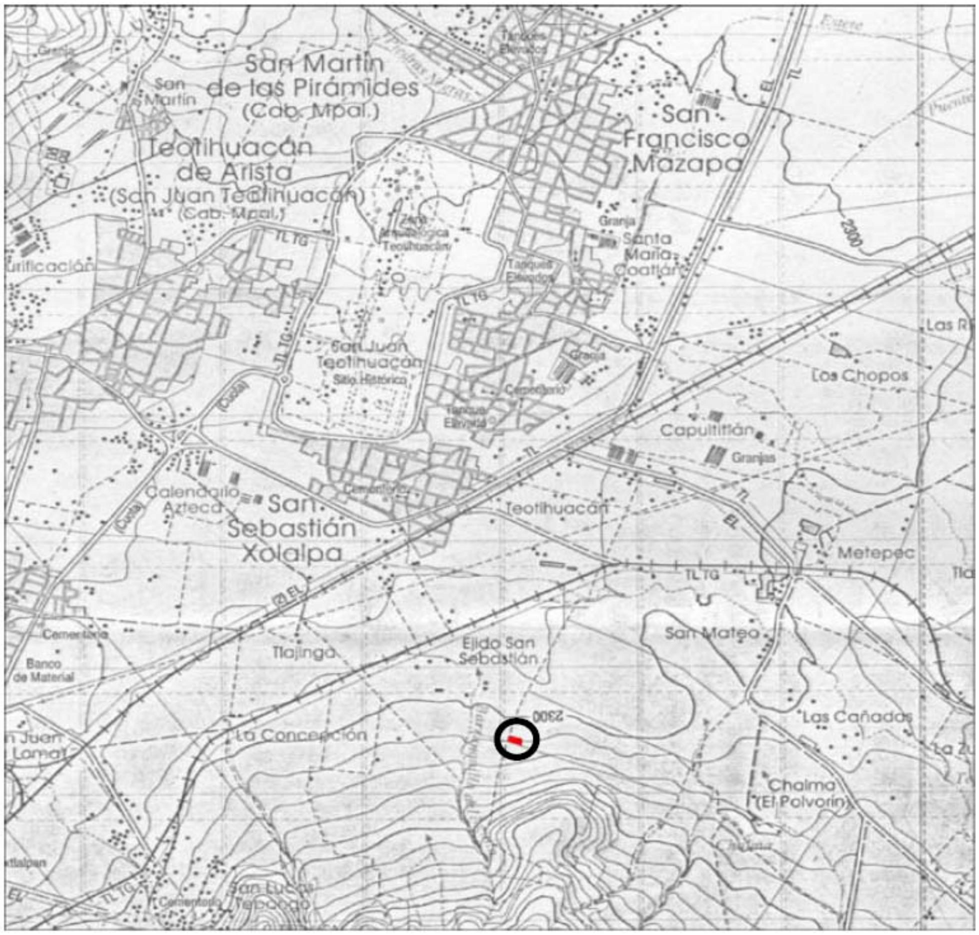


Figure 4.5. The location of San José 520 in relation to modern communities, located on the 1:50,000 INEGI map E14B21. (Note: various modern settlements here been mislabeled on this map by the original cartographers).

A review of available tabulation sheets from all the TMP sites determined to be outside the city (data not yet available in electronic form) indicated that a number of them reported ceramic-making tools, in particular lunates; the great majority, however, contained only small quantities of this type of artifact—in most cases one or two. San José 520, initially recorded by the TMP as site 520, and later as site 1:S5E4, was unique in exhibiting strikingly high proportions of lunates and more ceramic modeling platforms than other localities, suggesting the existence of a ceramic workshop. At this locality, the

TMP recovered a total of 58 lunates and possibly up to 21 ceramic modeling platforms found in an area no larger than a half hectare in size.

The density of these kinds of artifacts on the surface of San José 520—116 lunates/hectare and 42 modeling platforms/hectare—is not only higher than any of the other semi-rural sites surrounding Teotihuacan, but also higher than any other ceramic production locality recorded within the city. For example, the largest concentration of lunates recorded within the urban center is in the famous pot-making barrio known as the Tlajinga district (Figure 2.4). Residents of this part of the city specialized in the production of San Martín Orange pottery (see Chapter 5), a popular utility ware during the Xolalpan and Metepec phases (ca. A.D. 350 - 600) and found in apartment compounds throughout the city (Krotser 1987:421; Sheehy 1992; Sullivan 2002, 2006). Kristin Sullivan (2006:32) reports a total of 28 lunates from the Tlajinga district. The TMP ceramic analysis tabulation sheets that I reviewed in 2002 suggest a larger number, a total of around 62 lunates for the entire Tlajinga district. Being conservative, and using the larger lunate count for comparison, the density of lunates for the Tlajinga district would be approximately .5 lunates/hectare, based on an estimated area of around 55 hectares (Ian G. Robertson, personal communication 2011). Within the Tlajinga district, site 24:S3W2 has been identified as the locus where ceramic production was most intensive (Krotser 1987; Sullivan 2006:32-33, and Table 1). This locality reported a total of 24 lunates (Sullivan 2006:32) in an area of about .4 hectares. The density of lunates at this locality is therefore about 60/hectare, or around half the density documented by the TMP at San José 520. No production platforms were reported for site 24:S3W2.

The high density of ceramic shaping tools detected on the surface of San José 520 makes the locality stand out as highly unusual, and suggests a much larger scale of production than would be needed for domestic consumption. I suggest that inhabitants of San José 520 were engaged in the production of ceramics—likely consumed by individuals within the urban center—as a way of integrating themselves into the broader urban economy of Teotihuacan.

San José 520

San José 520 is located in the southeastern part of the Valley of Teotihuacan, very close to the slopes of the Patlachique range (Figures 4.1). It is situated approximately 3 km southeast of the Ciudadela (the southern part of the ceremonial core of Teotihuacan), and more than 500 m from the closest portion of the archaeologically defined boundary of the city. Data from the TVP suggests that Teotihuacan Period settlement in the vicinity of San José 520 was both very light and very dispersed (Figure 4.1). In this part of the valley, and in addition to San José 520, the TVP identified only a small ceremonial center ca. one kilometer south (Gorenflo and Sanders 2007:Figs 4.17 and 4.18).

As mentioned before, this locality was initially recorded by the TMP in the field as site 520. The site designation was later changed to 1:S5E4, although grid sector S5E4 was eventually excluded from the TMP map. Considered to be a site outside the city, the same locality was recorded in 1966 by Jeffrey Parsons as part of the Teotihuacan Valley Project survey (Figure 4.1). The site, classified as a small hamlet, was given the temporary field number of TA-233, but was later recorded as TE-CL-138 (Gorenflo and Sanders 2007:202). The land where San José 520 is located is now known as the San José section of the ejido lands of the town of Santa María Coatlán, Municipality of Teotihuacan de Arista, Estado de México (Figure 4.5). I renamed the locality as San José

520, after the number first assigned by the TMP, and the modern name of the land holding where this locality is situated.

San José 520 is approximately three quarters of a hectare in size (Figure 4.6), but its original size may have been a bit larger, as its southern and eastern edges were destroyed by modern secondary roads used to reach nearby cultivation fields (see below). Field activities of my project were concentrated in the southern portion of San José 520 (Lot 83), the only land on which I had permission to work. Lot 83 has a length of 95 meters E-W by 35-50 meters N-S. It is delimited to the north by an agricultural field that was under bean cultivation at the time of fieldwork, and to the west by an unpaved road connecting the Santa María Coatlán cemetery to a small chapel built on the Patlachique mountain slope. Its southern edge is defined by a drainage channel that is now used as a secondary road for accessing other fields in the vicinity. This channel cuts through the southern edge of San José 520. The surface scatter of ceramic and lithic artifacts that can still be observed on the northern part of the field located immediately south of this drainage show that the archaeological site extended to the south of the channel, although only 5 to 10 m. It is hard to know what was destroyed by the formation of this now secondary road, but both the stratigraphic profiles in the channel, as well as our excavations, indicate that the culturally sterile tepetate deposits are very close to the current land surface in this area.

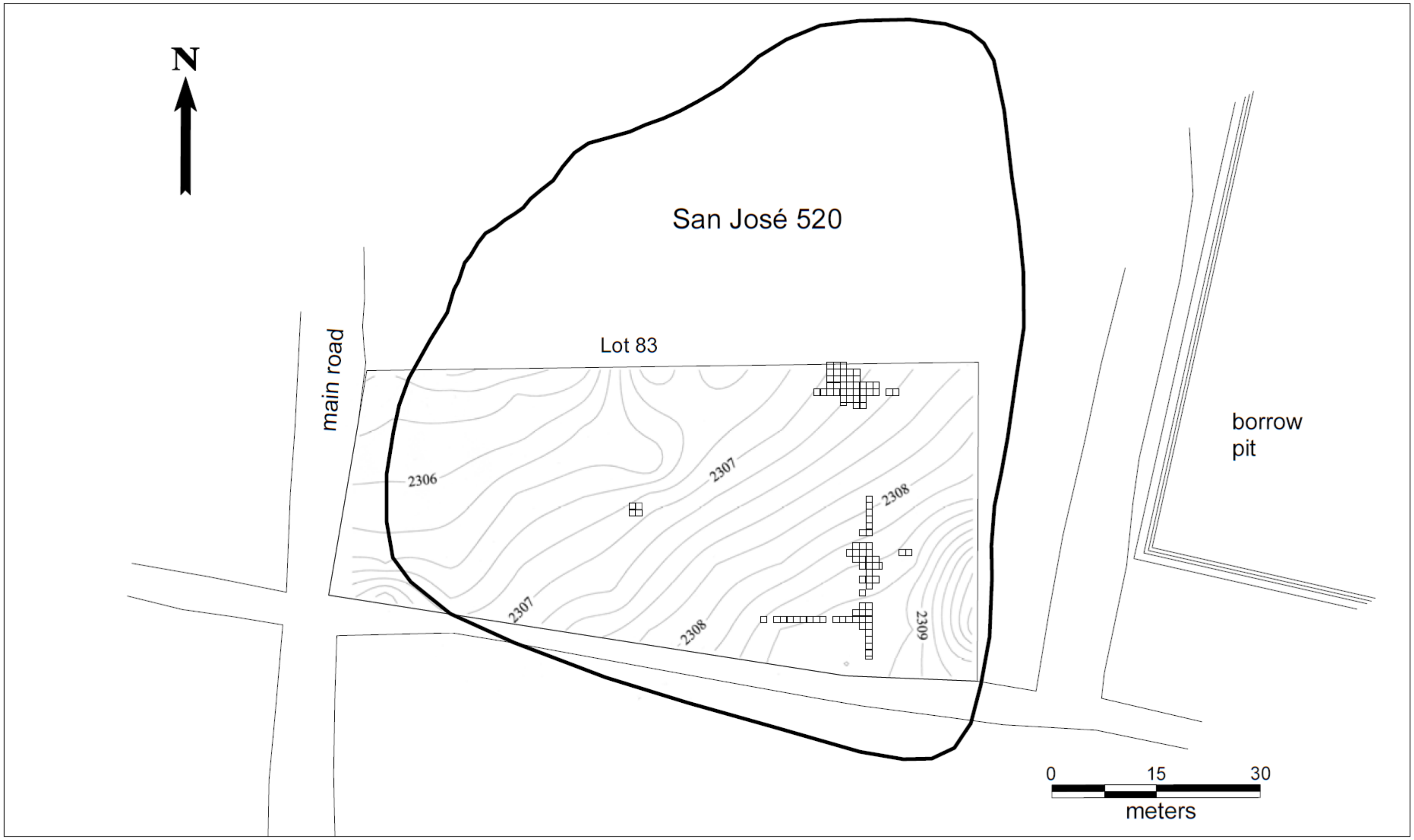


Figure 4.6. Boundaries of San José 520 and Lot 83.

A short distance east of the eastern edge of Lot 83 a very large, deep borrow pit was excavated some years ago (but post-TMP fieldwork) to extract bedrock to use as construction material for a highway built from Mexico City to Tampico (Figure 4.6). It is difficult to know if much destruction occurred on the eastern edge of San José 520 during the extraction of this material, largely because the area between San José 520 and the borrow pit was quite eroded at the time of fieldwork due to the passage of vehicles accessing nearby fields[1]. Nevertheless, surface artifacts form only a light scatter on the northeastern edge of the boundaries of Site San José 520, suggesting that the prehispanic occupation probably did not extend much further to the east, and may not have been much impacted by the borrow pit. Records made by the TMP on aerial photos used to survey that area in the early 1960s indicate that this site did not appear to have extended very much to the east beyond the eastern limit of Lot 83. However, it is difficult to know what was lost in the area where the deep borrow pit was excavated, as no data were collected on this land by the TMP, probably because no permission was given to survey the property on which it was later placed[2].

At the time of our field operations Lot 83 was used to cultivate nopal (Opuntia) plants for the seasonal production of prickly pear fruits, and subsequent visits to the site suggest that this is still the case. Although nopal plants are ubiquitous on the site, they are planted at sufficient intervals that surface and excavation work could be carried out without much impediment. Ground visibility was quite good, despite the fact that the land was also covered with wild grass. Most of this grass was cut off at the beginning of the field season in order to facilitate artifact collection work.

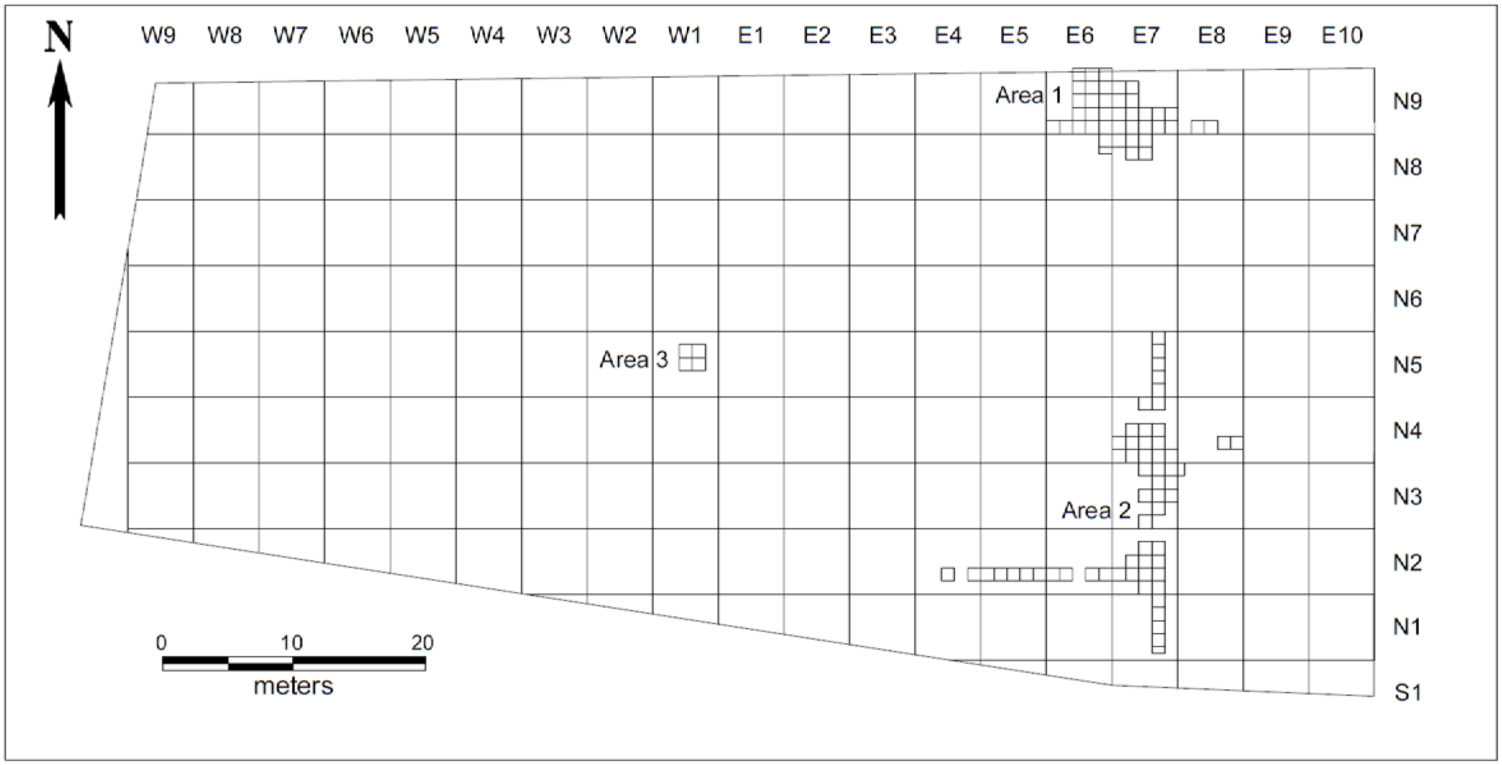


Figure 4.7. Sector grid units for surface collection and excavation units.

Fieldwork Operations

Mapping and Topographic Work

With the assistance of Fernando Sarabia and Hugo Desaide, topographers from the Zona Arqueológica de Teotihuacan del Instituto Nacional de Antropología e Historia, the surface of San José 520 was mapped between October 6 and 14, 2004. In addition to creating a topographic map of Lot 83, a 5 meter grid was imposed in order to provide provenience for a systematic collection of surface archaeological materials and subsequently for excavation. The grid was oriented to magnetic north, and the grid units (designated "sectors") were organized according to a coordinate system, using an arbitrary point in the south-central part of Lot 83 as the origin (Figure 4.7). Sectors were assigned numbers increasing incrementally in cardinal directions from the origin (e.g. N4E1, S1W3). Three permanent cement datum points were set in different parts of the land and used as reference points during the field work.

Surface Collection

Surface collection was carried out from October 18 to 22, 2004 with the aid of four local fieldworkers and two archaeology graduate students. The unit of provenience for all collections corresponded to the 5 m grid sectors. Within sectors, all recognizable artifacts were collected with the exception that ceramic fragments smaller than 2 cm were left on the surface unless they represented diagnostic elements (i.e., decorative elements, or rim sherds). Within individual sectors, field survey forms were used to record information about surface visibility, percentage of surveyed area within sectors (some were partially obstructed by *nopal* and/or maguey plants), and the type of artifacts collected. Particular care was taken to record the number of rocks per sector (*tezontle*, *lajas*, and other rocks larger than 10 cm), which could suggest the possible remains of architectural structures in the subsoil. These materials were (normally) not collected, however.

Surface activities produced diverse collections of flake and ground stone tools, ceramic production tools (lunates and ceramic modeling platforms), fragments or lumps of fired clay (possibly manufacturing debris, see Chapter 5), ceramic figurines, miscellaneous ceramic artifacts, and diagnostic ceramic artifacts (rim sherds and decorated body sherds). These materials were taken to the ASU-managed Teotihuacan Research Center for preliminary processing. There, all artifacts were sorted and tabulated according to very basic criteria such as material, and whether or not they were ceramic production tools. Results from this preliminary analysis allowed me to prepare density maps (see Cabrera Cortés 2006) that were used to aid in the selection of areas for subsurface excavation. The density of lunates, ceramic modeling platforms, ceramics, obsidian artifacts, and rocks larger than 10 cm, consistently indicated a higher density of artifacts towards the eastern portion of Lot 83, in particular the northeastern part of Lot 83, the area where excavations were ultimately focused.

Excavation

To provide greater spatial control, excavation was based on 1x1 meter units defined within the 5 m grid sectors. Excavation units were numbered within sectors, starting with “1” in the SW corner, with numbers increasing from west to east within rows, and then from south to north.

Excavations were initiated on October 29, 2004. Work was carried out using small picks and trowels. All the soil was sifted using ¼ inch metal screen. A total of 12 temporary datum points were set in strategic places adjacent to the excavation areas to aid with three-dimensional recording, and their locations and depths were established with respect to Permanent Datum 2, which has an altitude of 2,308.5 meters above sea level.

A total of 100 1x1 meter units was excavated (see Figure 4.7), half of which reached sterile sediments, typically at a depth of around 50 cm below the surface. These sediments correspond in the Teotihuacan Valley to volcanic bedrock known as *tepetate*. Due to time constraints, not all squares were excavated to sterile *tepetate*.

Excavations were done following natural and cultural layers. The stratigraphy of the site was for the most part very simple, formed by five main layers of sediment (Layers I to V) lying above natural bedrock (Layer VI). Layer I (the uppermost layer, ca. 5-10 cm below the surface) was the most altered by modern activities and defined by the high concentration of roots from grass and other wild plants growing in the area. Layers II to IV were harder to separate during the course of our work due to their being very similar in color, compactness, and a very high clay content which made them extremely hard when dry and highly sticky when wet. In all cases Layer IV (ca. 20-40 cm below surface) was the most compacted of all of all layers, and better defined than II and III. Layer V (ca. 5-10 cm thick) consisted of soft yellowish sediment formed by the transition between soil and the underlying bedrock *tepetate* (Layer VI).

During the excavation operations, soil samples for paleobotanical analysis were collected from specific areas within and around architecture features. It was hoped that these samples would generate broader information about economic activities at the site, such as plants available for domestic or ritual consumption, and possible remains of architectural structures. Unfortunately, results from their analysis (see Chapter 6) have so far provided little information regarding the plants available and consumed by San José 520 dwellers (McClung de Tapia and Martínez Yrizar 2007).

All charcoal observed during excavations was collected. Surprisingly, only very small quantities were encountered, in spite of the fact that a ceramic firing locus existed in the area. Given the scarcity of charcoal, only two contexts (the firing locus and a multiple burial described below) were represented in samples sent to Beta Analytic for C-14 dating. Results from these analyses are consistent with the ceramic chronology of San José 520 for Tlamimilolpa and Xolalpan phases, and will be discussed in more depth in Chapter 6.

Based partly on the density maps of surface materials, three main areas were selected for excavation. Two zones, located toward the eastern part of Lot 83, were selected because of high surface densities of ceramics and ceramic-making tools, and also because of the probability of deeper sediment deposits in the eastern part of the site. The third excavation zone, further to the west in sector N5W1, was selected because of elevated surface deposits of obsidian and the possibility that it might provide an important interpretive contrast to results obtained from units farther to the east. To facilitate discussion, I refer in this work to these three zones as Areas 1, 2 and 3, respectively (see Figure 4.7).

Area 1: Excavation was initiated in Area 1 (Figure 4.7), in sector N9E6, and expanded into adjacent portions of sectors N9E7, N9E8, N8E6, and N8E7. All squares excavated in sector N9E6 reached sterile soil, while the depth reached in other sectors varied depending on circumstances and artifacts recovered.

In Area 1 we located the remains of a very poorly preserved architectural structure (Architectural Feature # 7 or AF7). Part of this structure was represented by what appear to have been a pair of roughly circular, stone foundations (Figures 4.8 and 4.9). These foundations were 1 m apart from each other; they may conceivably have supported two posts or poles standing at either side of a building entrance, although not surprisingly no such remains were identified. These foundations were made with small irregularly-shaped stones, and had diameters of approximately 90 and 70 cm respectively. None of the stones used in their construction exhibited any evidence that they were shaped, or modified to form flat surfaces, etc.

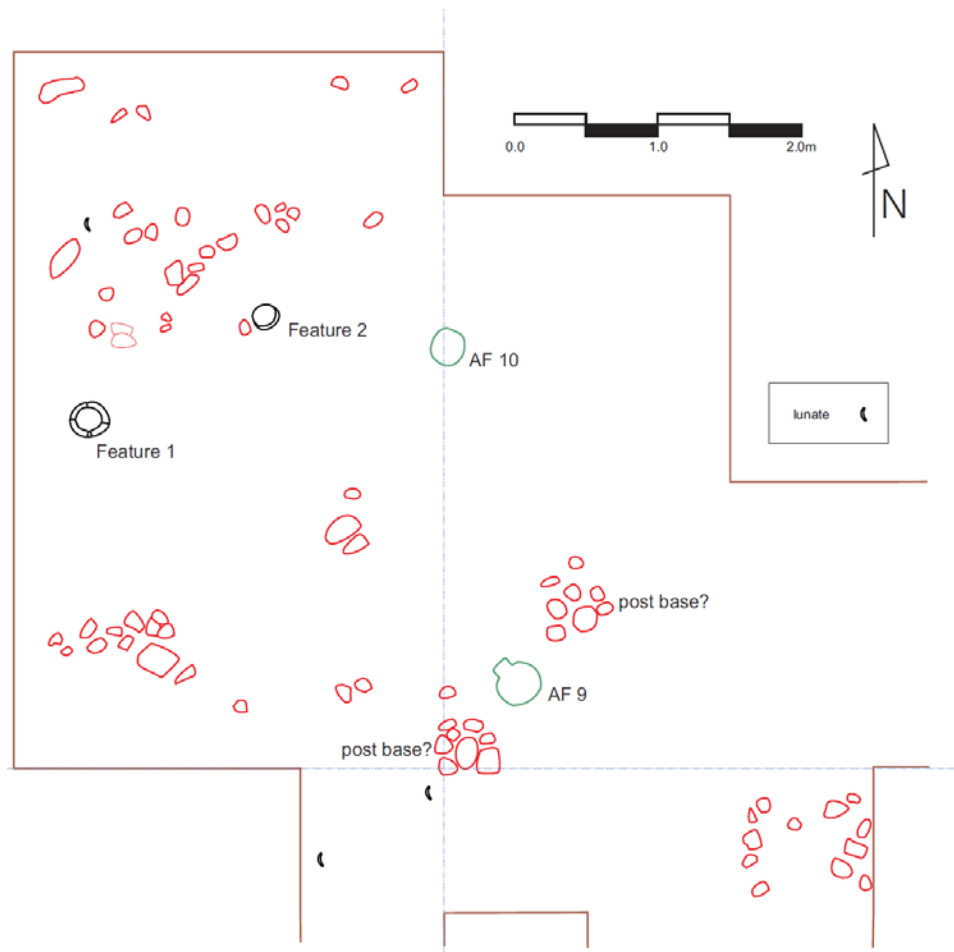


Figure 4.8. Plan of sub-features comprising Architectural Feature #7 (AF7).

No well-defined stone alignments that may have corresponded to the walls of AF7 were recognized, although two concentrations of stones found in the vicinity and to the west of these column foundations may have belonged to this hypothesized structure.

While its form and dimensions remain uncertain, if these concentrations of stones do represent the remains of AF7, it may have consisted of a room about 2.5 meters east-west, and about 2 meters north-south.

Figure 4.9. Detail of Architectural Feature #7 (AF7) showing the bases of two posts and a small pit (AF9).

The amount of stones found in association with this area is not consistent with the quantity that would have come from a building constructed entirely with stone walls.

It is likely that AF7 was a simple *ramada*-like structure—likely a simple room with a compacted-mud floor, roof and walls made of perishable materials (perhaps thatch and wattle-and-daub) constructed on top of a simple stone foundation.

It is very probable that this structure, including its wall foundations, was highly affected by modern activities. *Nopal* plants such as those that pervade Lot 83 are often planted with the aid of heavy machinery that opens deep trenches, a potential source of damage to stratigraphy and archaeological remains. Traces of two longitudinal channels running E-W, possibly trenches to plant *nopales*, were observed on the surface of this part of Lot 83 at the time of our fieldwork.

The two column stone foundations were aligned to one another at an angle of approximately 39º E of true north. If this corresponds to the overall alignment of hypothesized structure AF7, the orientation of the building contrasts with typical architectural features known within the ancient city of Teotihuacan, where most buildings are oriented ca. 15º E of true north.

Due to the characteristics of the soil at San José 520, which consists mainly of hard, dark clay-like sediments, not much evidence of AF7's floor was detected during our excavations. A compacted mud floor must have existed, however, as the stones from the poles' foundations were clearly embedded in a recognizable surface (Layer IV), and they didn't rest on the lower sterile soil. The concentrations of rocks to the west also rest on or were embedded in the surface of Layer IV. In addition, four small *fosas* or pits were apparently cut into this surface, two of which contained materials that were intentionally placed there. I refer to these features as "intentional deposits" because it is clear that their deposition was not accidental, but I am not certain if these features should necessarily be considered as "offerings" or "caches."

To the west of the poles' foundations, in a lower level of the stone concentration, and presumably under the floor of AF7, two intentional deposits were excavated. The westernmost (Feature 1) consisted of two fairly complete, although broken, vessels, nested on top of one another (Figures 4.8 and 4.10). The upper vessel was a bowl, the bottom an outcurving bowl. One prismatic blade made of green obsidian was placed between the two vessels. The blade was found broken in three pieces but all parts were present. It is possible that the blade was broken intentionally as part of a ritual deposit.

Figure 4.10. Detail of Feature 1, showing the intentional deposit of nested vessels.

The other intentional deposit consists of an outcurving bowl (Feature 2) also broken, but less complete than the vessels from Feature 1. Feature 2 was located to the north and east of Feature 1 (Figures 4.8 and 4.11), and was placed at a slightly greater depth. No artifacts were found inside Feature 2. The soil contained in this outcurving bowl was saved, but has not yet been analyzed to determine if macrobotanical remains may still be preserved within it.

Figure 4.11. Detail of Feature 2, showing the intentional deposit of an outcurving bowl.

Unfortunately, and due mainly to the characteristics of the very hard, clay-rich sediment of the site, we were not able to discern or identify the actual pits that likely contained Features 1 and 2. However, particularly for Feature 1, it is very clear that the materials within it were not randomly abandoned or discarded on the surface. The status of Feature 2 as an intentional deposit is somewhat more ambiguous, given that the vessel in question is incomplete. Nevertheless, most ceramic fragments at San José 520 are heavily fragmented and eroded; the outcurving bowl in Feature 2 preserves 50 to 75 percent of the original vessel and therefore stands out as strikingly complete in comparison. Missing portions may be due to recent *nopal* planting activities. The practice of intentionally depositing vessels under the floor, or in association with architectural structures, was not unique to Area 1 at San José 520. Farther south in Area 2, a similar pattern was observed, as will be described below. As is more fully described in Chapter 6, this practice has also been reported in some apartment compounds.

In addition to the intentional deposition of Features 1 and 2, a circular depression between the two stone poles' foundations was also detected, on the surface of what should have been the AF7 mud floor (see Figures 4.8 and 4.9). This feature appears to be the top of a small pit (AF9), measuring ca. 30 cm in diameter. No artifacts or bones were found inside this pit, nor did the analysis of the soil contained within it indicate the presence of any macrobotanical remains.

At about 1 m to the east of Feature 2, another pit (AF10) was revealed in the unit profile on the edge of the excavation area. This was also a pit cut into the surface of Layer IV. It had a diameter of ca. 30 cm but did not contain any artifacts.

No burials were located in Area 1, but the presence of the intentional deposits, some domestic utility objects such as a fragment of a *mano* (hand stone), and some ritual objects such as a fragmented slate anthropomorphic figurine and a small fragment of a *candelero* in association with AF7 (see Chapter 6), suggests that this structure may have been a domestic residential unit. Results from the analysis of artifacts associated with this structure, and from various categories of surface artifact collections indicate a much higher proportion of ceramic-making tools (above all lunates), and manufacturing debris, and ceramic sherds in general in Area 1 and its vicinity than in other parts at San José 520 (see Chapter 6). It is possible that such high concentrations may be indicative of areas where ceramic production debris was discarded or accumulated, and that AF7 may in fact have been a roofed shed where production activities took place, rather than a domestic structure. The current data is not conclusive regarding the function of AF7, but future extensive excavation in the adjacent areas will help clarify this issue.

Area 2: The second excavation was placed further to the south, starting in sector N3E7 and expanding into portions of sectors N4E7, N4E8, N5E7, N2E7, N1E7, N2E6, N2E5, and N2E4 (Figure 4.7). Our excavations in this area were driven initially by the limited information regarding architectural structures that we had encountered so far in our excavations in Area 1, although we continued working simultaneously in both areas. Area 2 provided us with more information regarding domestic architecture, but it also yielded crucial data regarding social aspects of San José 520 dwellers (e.g., ritual funerary activities) and additional information about ceramic production (an open ceramic firing hearth).

In Area 2, Architectural Feature # 2 or AF2 was found mostly in sector N4E7, but extended slightly to the south into N3E7, and to the east into N3E8 (Figures 4.12 and 4.13). AF2 was found in a poor state of preservation, and no intact alignment of stones marking its foundation was evident. However, a considerable concentration of rocks and irregular fired clay blocks were uncovered, and their overall distribution suggests the remains of a roughly square structure that may have been ca. 2.5 m N-S, by ca. 2.5 m E-W. This more or less regular patterning of stones and clay blocks also had an orientation of ca. 39 degrees east with respect to true north, as did the column features associated with structure AF7, described above. Based on these data, I interpret AF2 as the remains of a room foundation, which likely had a compacted mud floor (not identified), and walls and roof made out of perishable materials. Walls of this structure could have been made of wattle-and-daub (*bajareque)*, or adobe, which in any case did not preserve.

AF2 is currently interpreted as a domestic structure because household artifacts (including a groundstone *mano* fragment) were located in its vicinity. Burials are often associated with domestic spaces in apartment compounds within the city, and the three burials revealed by these excavations were associated with this structure as well. An overall description of these three burials is given here, although they will be more fully discussed in Chapter 6.

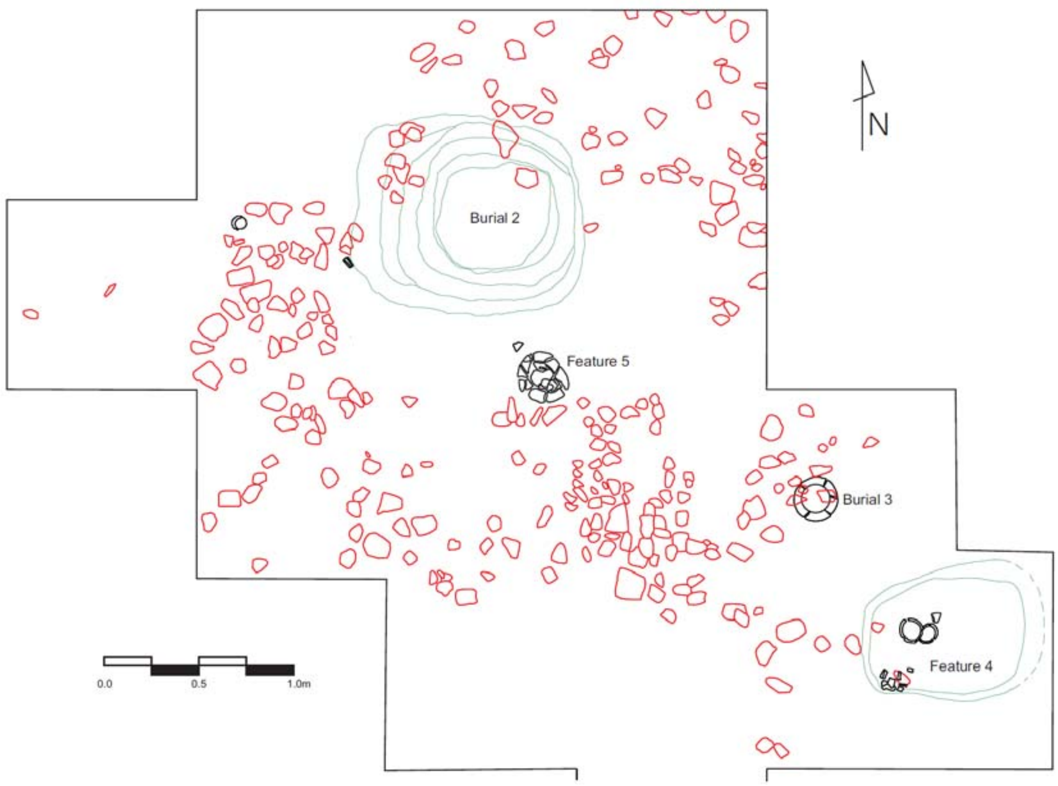


Figure 4.12. Plan of Architectural Feature #2 (AF2), and associated features.

Figure 4.13. General overview of Architectural Feature #2 (AF2).

Burial 2 (Figure 4.14) was located underneath of what appeared to be the northwest foundation of AF2, and consisted of a multiple burial of up to nine individuals (including a fetus) deposited in different episodes into a pit cut into the *tepetate* (AF8). A number of objects were found in association with the individuals of Burial 2, including complete and broken ceramic vessels, fragments of figurines, a fragment of a pyrite object, and a few “greenstone” beads. Of particular interest are offerings of two complete lunates, a stone polisher, and at least three ceramic platforms made by reusing the flat bottoms of vessels—all tools used in ceramic manufacture (see Chapters 5 and 6). Under the southeast wall of AF2, or possibly just outside of it, our excavations located another burial (Burial 3; Figures 4.12 and 4.15) containing a fetus deposited within an outcurving bowl (Feature 8). This bowl was deposited in contact with *tepetate*, but had been introduced from above, presumably in a pit excavated downward from the level of where the AF2 floor must have existed. Preservation of this individual is extremely poor. No additional offerings or other objects were included with this individual.

Figure 4.14. Overview of multiple Burial 2, showing funerary objects placed within a mortuary pit cut into the *tepetate*.

Approximately 2 m south from AF2 we uncovered the third burial associated with this structure. Burial 1 (located within sector N3E7 square 14; or N3E4.14) consisted of a secondary burial containing the very poorly preserved long bones and cranium of a single individual. These remains were deposited within a pit, and were lying directly on the surface of the bed rock or *tepetate* exposed by its excavation (Figure 4.16). The bones of this individual, an adult ca. 30-35 years old, were arranged as if the individual were in a flexed position, with the cranium located toward the south. The individual was accompanied by a group of 29 ceramic vessels, four stones of a reddish color, a basalt flake, a greenstone bead, and a stone polisher—a tool used in the manufacture of ceramics (see Chapter 6). Given the distance between it and AF2, it is possible that Burial 1 may have been associated with a separate building that was not identified by the current project, but the evidence so far suggests that it was probably associated with AF2.

Figure 4.15. Burial 3, consisting of a fetus contained within a Polished outcurving bowl. Left, in the excavation context; right, after initial exploration in the laboratory. Arrow is 20 cm long. Lab scale is 10 cm.

Roughly at the center and underneath of AF2 an intentional deposit was recovered that was similar to those found under AF7. Designated Feature 5 (Figures 4.12 and 4.17), this deposit consisted of a single outcurving bowl, broken but complete, containing a green obsidian prismatic blade. The blade was found broken in two pieces, but was otherwise complete.

Figure 4.16. Overview of Burial 1 and associated objects.

To the southeast and outside of AF2 our excavations located another small pit (AF3) containing three small bowls (Feature 4). Two of the bowls had been placed close together near the center, while the other bowl was found in its southwest corner (Figures 4.12 and 4.18). All were broken, but complete. This pit was less than 1 m away from AF2, and corresponds to the same occupation level. This intentional deposit likely was associated with AF2.

A later event than all those already described for AF2 was detected by our excavations. In the same area where Burial 3 was found, but in a higher level (Layer II) another small, shallow pit (AF1) was identified. This 15 cm deep and irregularly shaped pit contained a fairly complete small bowl (Feature 3), very similar in form to the ones from Feature 4. The bowl looked more as if it were part of the pit fill, rather than intentionally and carefully placed within it. This pit overlapped with some of the stones of AF2, but was clearly above them; this indicates that it represents a later event than all other contexts associated with AF2. No other deposits contemporaneous with AF1 were identified in Area 2. Given how shallow this upper feature is, it is possible that if they ever existed, they may have been destroyed by modern activities.

Figure 4.17. Detail of Feature 5, an intentional deposit of an outcurving bowl containing a fragmented but complete obsidian blade.

Also in Area 2, but almost 10 m south of AF2 (in sector N2E7), a circular feature (AF6) partially delimited with rocks and fired clay blocks was exposed. This feature contained large quantities of broken sherds, many belonging to the same vessels, and some exhibiting burned surfaces. These sherds were mixed with fired clay lumps and stone pebbles, and small fragments of charcoal were also identified. This structure is interpreted as a ceramic firing location. In addition to the artifactual and other evidence described above, results from a magnetometry survey described below show that this area was associated with a strong magnetic anomaly consistent with an area exposed to intensive heat (Shragge et al. 2005). Further data from this feature will be discussed in Chapter 5.

Figure 4.18. Overview of Feature 4, consisting of a pit containing three small bowls.

Area 3: The third excavation zone, in sector N5W1 (Figure 4.7), was the least extensive of all the excavated areas. Due to time constraints, the lack of architectural or other features uncovered, and the shallow deposits encountered, this last area was not explored beyond four excavation units (i.e., a 2 by 2 m area). These four units were excavated until reaching sterile soil, at a depth varying from 20 to 40 cm below the surface. Survey data had suggested a high concentration of obsidian artifacts in the area, but the subsoil deposits did not contain many artifacts.

Magnetometry

Although not part of the initial research strategy, the opportunity arose in the course of the field season to carry out a magnetic radiometric geophysical survey out of San José 520. This was done in January 2005 by a group of doctoral students from the Department of Geophysics from Stanford University. The purpose of this operation was to determine (1) if the suspected ceramic firing area detected during excavation would yield magnetic susceptibility values consistent with this interpretation, and (2) to perform a reconnaissance survey throughout the unexcavated areas in Lot 83 in the hope of detecting other anomalies of potential interest. The broader survey was of limited utility, however, since the magnetic anomalies detected in areas beyond the probable firing area were probably caused by the steel rebar stakes used to mark the grid set up for surface collection (Shragge et al. 2005). However, as mentioned above, results regarding the ceramic firing location (AF6) show that this feature was associated with a strong magnetic anomaly consistent with an area exposed to intensive heat (Shragge et al. 2005).

Summary

Surface and excavation operations at San José 520 generated data that allow me to explore further the question of socio-economic interaction between a semi-rural hamlet and the ancient city of Teotihuacan. Ceramic artifacts place the main occupation of San José 520 in the Tlamimilolpa and Xolalpan phases (ca. A.D. 200 to 500), and these dates are supported by the results of radiocarbon analysis (see Chapter 6).

Details regarding evidence bearing on the organization and scale of ceramic production at San Jose 520 will be discussed more fully in Chapter 5. However, in anticipation I note here that results from the field operations confirm that inhabitants from San José 520 were engaged in ceramic production activities. The scale of ceramic production at this location exceeds what would be required for domestic consumption, and it is assumed that a portion of these ceramic products were consumed elsewhere—likely within the city to the northwest.

Large quantities of lunates were recovered from surface collection (ca. 100) and excavation (ca. 184), as were large numbers of fragments of ceramic modeling platforms (surface, n=96; excavation, n=100). Most of the lunates (complete or fragments), exhibit clear wear patterns. Along with these tools, large quantities of fired clay lumps—likely debris from ceramic manufacturing activities—were also recovered from both surface and excavated contexts (see further description of these materials in Chapter 5).

Subsurface evidence confirmed several expectations that were generated by surface collections (in particular, data related to architectural structures and production evidence) but not all. As indicated earlier, the units excavated in Area 3 were placed in a part of the locality where the survey data had suggested a high concentration of obsidian artifacts. The subsoil deposits did not confirm a concentration of obsidian in this area.

Field operations also provided important information about other aspects of the domestic life and socioeconomics at San José 520. For example, despite the proximity of San José 520 to the city, its inhabitants did not live in the distinctive type of architectural structure—the apartment compound—that was most commonly used in the city of Teotihuacan. Instead, remains of what are probably examples of "insubstantial structures"—simple dwellings thought to have been made of stone, adobe, and perhaps perishable materials (Cowgill et al. 1984; Robertson 2008)—were located in two different areas of the site. These appear to consist of vestiges of stone and clay foundations of smaller and poorly preserved structures apparently made largely of perishable materials.

The semi-rural residents of San José 520 appeared to follow the same general mortuary behaviors used by residents within the city and also had access to other kinds of material culture common within the city (e.g., figurines), including some imported goods (e.g., Thin Orange pottery, greenstone, obsidian). Issues regarding the social and economic integration of the inhabitants of the hamlet represented by site San José 520 will be discussed in more depth in Chapter 6.

Chapter 4 Notes

[1] In a visit to San José 520 during the fall of 2007 I observed that the area between the eastern limit of Lot 83 and the deep borrow pit to the east, previously characterized by exposed *tepetate*, has now been covered with soil that was brought from somewhere else in order to prepare it for cultivation.

[2] The air photos used by the TMP survey shows the hand written annotation "NP" on the field to the east of San José 520. Both René Millon and George L. Cowgill (personal communication 2008) confirmed that "NP" means that "No Permission" could be obtained to survey this land.

CHAPTER 5: ASSESSING CERAMIC PRODUCTION AT SAN JOSE 520

Introduction

In this chapter I describe the evidence and methods used to assess the ceramic production activities at San José 520. To provide context for the description of issues regarding ceramic production evidence at this locality, the initial part of this chapter presents a brief description of the main characteristics of Teotihuacan ceramics and of our current knowledge about the ceramic production indicators at Teotihuacan. A brief summary of the main evidence used for identification of ceramic production in archaeological contexts, particularly in Mesoamerica, also provides a preamble to presentation of the data from San José 520.

Teotihuacan Ceramics

The making of ceramic vessels at Teotihuacan, as with many other preindustrial, urban societies, was one of the largest and most important craft production activities to take place there, possibly only matched by the obsidian industry in terms of scale (Krotser 1987:417; Millon 1981:151; Rattray 1988:249). Many domestic tools used by the Teotihuacan inhabitants were made of fired clay. Urban centers like Teotihuacan provide large numbers of potential consumers within short distances, lowering transportation costs, and making it more likely that significant numbers of residents will engage in specialist production (Sanders and Santley 1983).

At Teotihuacan, cooking, storing, serving, and ritual pots and clay figurines were made in much greater abundance than any other type of clay object, but the Teotihuacan artisans also used clay to make ritual paraphernalia (e.g., effigy figures), utilitarian tools (e.g., molds, stamps, and potters' tools such as the ones that will be described below), personal ornaments (e.g., earplugs, beads), musical instruments (e.g., flutes, rattles, and whistles), some objects used as architectural features (e.g., the so called *almenas*, and molded decorative friezes), and other miscellaneous objects the functions of which are not always easily discernable (e.g., small pellets, solid elongated cylinders, small tablets, etc.).

Over the history of archaeological work at Teotihuacan, a number of researchers have embraced the complex task of classifying the Teotihuacan ceramic complex, often applying dissimilar typological systems (Bennyhoff 1967; Bennyhoff and Millon n.d.; Manzanilla et al. 1993; Müller 1967; Rattray 2001; R. E. Smith 1987). In this study, I follow the classification system used for the analysis of the TMP ceramic collections. More complete descriptions of this system and the characteristics of Teotihuacan ceramics complex have been presented by other researchers (Bennyhoff 1967; Bennyhoff and Millon n.d.; Rattray 2001; Robertson 2001:Appendix A); I present here a very brief summary to contextualize further discussions of Teotihuacan ceramic wares and forms used in this dissertation.

The TMP ceramic classification system makes use of ware groups distinguished on the basis of surface finish, paste, and vessel form (Rattray 2001:39). The major pottery ware groups made at Teotihuacan consist of Matte (Fine and Coarse), Burnished, Polished, Painted (monochrome, bichrome, polychrome, and stucco-painted), Copa, Dense, and San Martín Orange. While it has been suggested that Copa was an imported ware (Manzanilla et al. 1991), neutron activation analysis indicates that the clay used for its manufacture comes from a local source (Cowgill and Neff 2004).

In addition to the wares known to have been made at Teotihuacan, some imported wares were also available to the Teotihuacan inhabitants. The most abundant was Regular Thin Orange Ware (RTO), known to have been made in southern Puebla

(Rattray 1990b; Sotomayor and Castillo Tejero 1963), followed by Granular Ware, possibly imported from Guerrero (Cowgill and Neff 2004; Kolb 1988b; Rattray 2001:95, 337). Small quantities of Maya, Oaxacan, and Gulf Lowlands ceramics, including Lustrous Ware from Veracruz, were also imported to Teotihuacan (Clayton 2005; Cowgill and Neff 2004; Manzanilla et al. 1991; Rattray 1979a), although their distribution throughout the city was limited.

Fine Matte Ware was used to make handled covers, the majority of miniatures, and censer *adornos* (the ornaments of composite censers). Coarse Matte Ware was employed to make composite censers (see Figure 6.23), three-prong burners or braziers, and most *candeleros*. With the exception of three-prong burners, which possibly served for portable heating and cooking purposes, all other forms were used for ritual activities.

Burnished Ware was mostly used to make cooking and utilitarian vessels, including ollas, red-rim ollas, cazuela/craters, scraped basin/bowls, and comales. Jars have typically been classified in TMP-related analyses as a Burnished Ware category, and for consistency I have classified jars as burnished vessels as well; many jars, however, may actually exhibit a degree of finish better described as polished. San Martín Orange Ware (SMO), characterized by a tan-orange color, and fired at a relatively higher temperature than other wares made at Teotihuacan (Sheehy 1992:688-697), was made during the Xolalpan and Metepec phases and used to make mostly utilitarian vessels such as craters, amphorae, and scraped basins. These forms were widely distributed throughout the city; serving vessels and potters' tools were also made of San Martín Orange Ware in much smaller numbers and for consumption only within the Tlajinga district (see below for more details).

Polished Ware was used to make some serving and ritual vessels including out-curving bowls, Polished bowls, Polished vases, Direct Rim Cylindrical tripod vases (including the "form adornos" that often decorate them), vases and Cylindrical Tripod lids, floreros, and Storm God or "Tlaloc" vessels. Copa Ware, made of a fine-grained and compact ceramic paste, was used to make copas and some cylindrical tripod vases and is a good indicator of post-Tlamimilolpa occupation. Finally, Dense Ware was mostly used to make small incurving bowls of compact paste (Rattray 2001; Robertson 2001).

Ceramic Production at Teotihuacan

On the basis of TMP surface ceramics from around 500 localities within Teotihuacan, Paula Krotser suggested that ceramic production activities at Teotihuacan were organized according to various co-existing levels of specialization (Hopkins 1995:144; Krotser 1987:417-427). At the largest scale, two specialized production districts were suggested (Krotser and Rattray 1980). One of these areas corresponds to the Tlajinga district (Figure 2.2), located in the southern part of the ancient city, south of the San Lorenzo barranca, where a series of spatially concentrated workshops specializing in the large-scale production of San Martín Orange Ware (SMO) utility vessels were proposed to have existed (Krotser 1987; Rattray 1988; Sheehy 1992; Sullivan 2006). The other district was located in the northwest part of the city, where Krotser inferred workshops specializing in the production of Coarse Matte and Handled Covers (Krotser 1987:417).

Excavations at Tlajinga 33 (an apartment compound in the Tlajinga district) confirmed the existence of specialized production of San Martín Orange Ware mainly during the Xolalpan phase (ca. 350 to 500 A.D.) (Sheehy 1992; Widmer 1987). Evidence used to infer ceramic production includes various types of potters' tools including lunates (see below), possible basal molds, and possible rotary platforms (Hopkins 1995:133; Sheehy 1992:118, 506, 513-516, 531, 748). Raw materials for pot making, a pit kiln for firing ceramics, and *de facto* (Stark 1985) wasters were also reported (Rattray 1988; Sheehy 1992:506; Sullivan 2006).

Data from Tlajinga 33 and the Tlajinga district in general have been the subject of considerable research regarding ceramic production within the city (Hopkins 1995; Krotser 1987; Krotser and Rattray 1980; Rattray 1988; Sheehy 1988, 1992; Sullivan 2002, 2006). Results from this work have indicated that ceramic production in this district was organized both at the level of individual compounds and at the level of the broader community (Rattray 1988; Sheehy 1992; Sullivan 2006). Potters from this locality concentrated primarily on the manufacture of San Martín Orange Ware craters, amphorae, and scraped basins, but also produced smaller numbers of jars, bowls, three-prong burners, small outcurving bowls, and vessels with hollow cylindrical supports, as well as the potters' tools just mentioned above (Sheehy 1992:506). Craters, amphorae, and scraped basins were made for broad consumption by Teotihuacan's inhabitants, while the other vessel forms were produced at smaller scales, apparently for consumption within the district. Some were copies of vessels usually made in other wares in workshops located outside the Tlajinga district (Sheehy 1992:506).

Analyzing ten percent of the TMP surface collections (Hopkins 1995:144), Krotser suggested the existence of "dozens" of small, individual workshops focused on the production of utilitarian vessels such as Burnished ollas and jars; and Polished bowls. The products of such small workshops were presumably destined both for domestic use by the potters themselves and to supply immediate neighbors (Krotser 1987:417). Unfortunately, excavation data has produced little or no evidence to confirm the presence of these smaller ceramic production localities. Interestingly, the manufacture of Polished and Copa Ware at the apartment compound of Teopancazco (Figure 2.2), as proposed both by Paula Krotser (1987:419-421, 425), and Evelyn Rattray (2001:225) on the basis of TMP surface collections, as well as a test excavation (TE 20) carried out by Krotser, has not been confirmed by more recent extensive excavations at that locality by Linda Manzanilla (personal communication 2008), despite the fact that the TMP excavation also uncovered what appeared to be a firing pit (Krotser and Rattray 1980).

Although not detected by Krotser's analysis of TMP surface collections, excavations conducted by members of the Proyecto Arqueológico Teotihuacan 80-82 at the Cuadrángulo Norte de la Ciudadela (Figure 2.2), uncovered an important ceramic workshop specializing in the production of composite censers and censer *adornos*, as well as some types of figurines (Múnera Bermúdez 1985; Rodríguez García 1982). Evidence from this workshop included ca. 15,500 molded censer *adornos* (including censer masks) and figurines, along with ca. 3000 molds and *hormas* (solid molds used to make chimneys and censer lids). Related materials included blocks of unfired clay, stone tools associated with ceramic production, pigments, abundant fragments of mica used to prepare the decorative inlays for composite censer ornaments, defective products, manufacture debris, and remains of an open firing location (Múnera Bermúdez 1985). The location of this workshop within space clearly controlled by the Ciudadela, as well as the scale of production, suggests that this was a precinct level workshop (Costin 1991; Spence 1981), attached to high levels of city or state administration.

In addition to the Ciudadela workshop, the intensive surface survey recently carried out by Kristin Sullivan (2007) at the locality of 23:N5W3, also known as Cosotlán 23 (Figure 2.2), suggests that *adornos* for composite censers were also manufactured outside of a context of direct elite administration. Some types of figurines were also made at this site, located within a residential area in the northwestern part of the city, more than 2 km away from the Ciudadela. Evidence of production at Cosotlán 23 included 75 molds, production errors, manufacturing debris, and concentrations of some types of *adornos* and figurines (Sullivan 2007:94-129). The comparative analysis of the Cosotlán 23 collections, with the analysis of *adornos* and figurines from the TMP surface collections, and those from the Cuadrángulo Norte de la Ciudadela, has led Sullivan to suggest that the products from Cosotlán 23 and the Cuadrángulo Norte workshop were consumed somewhat differently by residents of various socioeconomic status at the city, possibly indicating differences in demand and use of the types of figurines and *adornos* made at these two different locations (Sullivan 2007:34).

Possible manufacture of *adornos* in Plaza 5 of the Xalla compound (Figure 2.2) has been suggested by Linda Manzanilla (2006b), based on the excavation of an apparent activity area containing some *adornos* (plaques), bone tools, and pigments. No molds, *hormas* (described above), manufacturing debris, or evidence for firing locations have been reported for Xalla; it is possible that this activity area only represents small-scale production for consumption within this locality.

Detailed analysis of Teotihuacan cooking vessels (ollas and cazuelas/craters) conducted by Mary Hopkins (1995) has provided detailed characterization of technological aspects of an important subset of the Teotihuacan ceramic complex. Results from Hopkins's study indicate changes over time in the scale and organization of production, as well as manufacturing techniques. Among these changes revealed by craters are: (1) a trend of increasing scale in production; (2) the adoption of a new fabric or ware (i.e., SMO); and (3) the adoption of techniques that allowed more efficient and rapid work. Although fewer changes are observed in the fabric of olla pastes or in the associated manufacture techniques, they appear to become coarser over time (Hopkins 1995:651).

It has been suggested that a high proportion of the ceramics of Oaxacan tradition used by the Tlailotlacan (Oaxaca Barrio) residents are of local manufacture (Rattray 1987). Recent ceramic characterization analysis (XRD, ICP-OES, and LOI) of a few samples from the Oaxaca Barrio were inconclusive on this issue (Croissier 2007:123-124, 139). Excavations by Michael Spence at Tlailotlacan (TL6), within the Oaxaca Barrio (Figure 2.2), uncovered a group of unfired and rejected vessels, suggesting the possibility of a ceramic production area in the vicinity (Spence 1989:93), but so far no ceramic production areas have been identified by excavations at this barrio.

Archaeological Indicators of Ceramic Production in Archaeological Contexts

Various lines of research have begun to characterize the variability that existed in prehispanic Mesoamerican ceramic production in terms of scale of manufacture, organization of production, and technologies used to produce pottery, both across the landscape, and through time (e.g., Arnold III et al. 1993; Arnold III and Santley 1993; Feinman 1985, 1986; Feinman et al. 1992; Feinman et al. 1981; López Varela et al. 2001; Pool 1992, 2000, 2003; Pool and Bey III 2007; Rice 1987; Santley et al. 1989; Stark 1985, 1992, 1995, 1999; Stark and Garraty 2004; among others). This work has indicated that some of the key technological features of the Mesoamerican ceramic tradition include forming techniques based on hand modeling and molding; a general lack of glazing, but the common use of slipping and paint; and a frequent use of open firing areas. Nevertheless, remains of pit and updraft kilns have been found in various parts of Mesoamerica including the Puebla-Tlaxcala region (Abascal M. 1996; Castanzo 2004), the Tuxtlas (Arnold III et al. 1993; Pool 1990, 2000), the Oaxaca Valley (Balkansky et al. 1997; Payne 1982:191), the Maya area (López Varela et al. 2001:181-183), the Balsas region (Cabrera Castro 1976; Litvak King 1968), Tula (Hernández et al. 1999), Coastal Nayarit (Bordaz 1964), and more recently in the Huastec site of Tamtok (Instituto Nacional de Antropología e Historia 2008), among other locations (Ciudad Ruiz and Beaudry-Corbett 2002; Pool 2000).

No forming techniques involving fast wheel throwing were used for pottery manufacture prior to the arrival of Spaniards in the 16th century. The use of simple tools to support and aid in the manipulation of ceramic vessels during formation (similar to modern potters' bats and plates) have been reported in a few locations based on archaeological data (e.g., Inomata et al. 2002), including Teotihuacan (Hopkins 1995:78; Rattray 1988; Sheehy 1992).

While the production of pottery was pervasive in prehispanic Mesoamerica, the identification of specific loci involved in archaeological ceramic production presents important challenges (Arnold III 1991:89-91; Arnold III and Santley 1993:227; Hopkins 1995; Pool 2000; Stark 1985; Stark and Garraty 2004). This is due in part to the nature of the raw materials involved, preservation issues, variability in the scale of production, past and modern cultural behavior, formation processes (Sullivan III 1988:32-33), and even inadequacy of archaeological field and laboratory methods. For example, masses of raw clay may be stored in ceramic workshops, but they dissolve easily in water unless they are fired, and they are difficult to identify even in excavated deposits. Ethnographic work in modern Mexican pottery communities (e.g., Arnold III 1991:39-40; Foster 1960a:206-207, Fig. 3; Reynoso 1982:23-24) indicates that many tools used in ceramic manufacture are organic in nature (e.g., wooden paddles and anvils, corn cobs and fragments of gourds used as scrapers, banana leaves, wooden sticks, rags, avocado seeds, maguey thorns, etc.). Similar tools were probably used by ancient potters but are unlikely to survive in the archaeological record. Locations where open firing was carried out can be elusive, and evidence of their existence (ash concentrations, broken pottery, etc.) might easily disappear through cleaning of activity areas and/or subsequent erosion and leaching. The scarcity of ceramic production indicators is also exacerbated by the lack of screening during some excavations—a practice still common in many Mesoamerican field projects—the lack of sufficient detail in analyses (Stark and Garraty 2004:124), and the infrequent use of geophysical methods that aid identification of subtle signatures in the archaeological record made from past activities (Balkansky et al. 1997:153).

Despite these problems, specific archaeological indicators have been used successfully to identify ceramic production loci in various parts of Mesoamerica. Ethnoarchaeological work (e.g., Arnold 1985, 1987, 1988; Arnold III 1990, 1991, 2000; Deal 1988, 1998; Fournier García 2007; Lackey 1982; Reina and Hill 1978) has provided a great deal of comparative assistance in this regard. Among these categories of evidence are remains of the facilities or installations where key activities took place (e.g., pottery kilns), and the presence of non-organic tools used in the different stages of ceramic manufacture (e.g., molds, stone polishers, stone mortars, etc.). Another crucial category of material evidence for ceramic production loci involves "defective" sherds or wasters, artifacts which are the result of manufacturing errors. A third major category involves the end-products of manufacture—unusual concentrations of particular ceramic wares, and particular vessel forms in a given locality (Santley 2007; Stark 1985; Sullivan 2006).

The most convincing interpretations of production loci come when several of these indicators are identified together in the archaeological record. Such is the case with the site of San José 520, which has provided a rich corpus of archaeological evidence indicating that it was a ceramic production workshop. As discussed in Chapter 4, previous work at San José 520 carried out by the Teotihuacan Mapping Project had revealed the existence of tools likely used in the manufacture of ceramic vessels at a scale that contrasted with other localities. My surface and subsurface operations at this locality confirmed the presence of a specialized ceramic workshop. Evidence of ceramic production includes a wide range of specialized potters' tools, an open firing area, and by-products in the form of amorphous fired clay fragments, as well as defective pottery sherds of various types. Details of this evidence are presented in the following section.

Evidence of Ceramic Production at San José 520

Stratigraphic and Chronological Problems

Prior to describing and discussing the evidence for ceramic activities at San José 520, I address issues regarding the stratigraphy of deposits. These are important because of limits they place on chronological interpretations of socio-economic activities based at this locality.

As discussed in Chapter 4, supra-*tepetate* sediment deposits in the three areas excavated at San José 520 (Figure 4.7) are mostly quite shallow, but based on subtle differences in texture and color, it seemed possible to distinguish four or five poorly defined, roughly horizontal strata. These were used to define excavation levels, but unfortunately analyses after the excavation suggest that the strata appear to be natural, post-occupation soil-formation layers rather than cultural levels.

The evidence for this conclusion lies in the relationship between excavation levels and potsherds tabulated by phase. Figure 5.1 is a Ford plot ("battleship" curve) showing the proportion of sherds from five principal phases within individual excavation levels.

(Horizontal lines projecting from the sides of bars represent a 95 percent confidence interval for bar widths, based on the standard error of proportion estimates.) Focusing only on data from the Tlamimilolpa and Xolalpan phases, it is clear that (1) levels contain high and roughly similar proportions of pottery from both phases, and (2) sherds from the earlier Tlamimilolpa phase do not tend to be more common in deeper levels, and those from the later Xolalpan occupation do not tend to be more common in shallower levels. This suggests that cultural materials are thoroughly mixed within the deposits. This may be due to a long history of farming on Lot 83 (the land holding where I concentrated my research, see Chapter 4) after the Xolalpan phase. Recent cultivation practices involving the use of mechanical backhoes for planting *nopal* (*Opuntia* sp.) may have been particularly destructive to stratigraphy (and probably largely destroyed the architectural remains described in Chapter 4).

Regardless of the reasons, the excavation levels have no obvious analytical value, and I make no use of stratigraphic information in attempting to deal with interpretive issues involving chronology. To the extent that I can make diachronic interpretations, I rely on the typological variation in ceramics that allows most of them to be assigned to specific occupation phases. However, much of my description of ceramic production tools and activities at San José 520 is necessarily presented as pertaining to both Tlamimilolpa and Xolalpan phases.

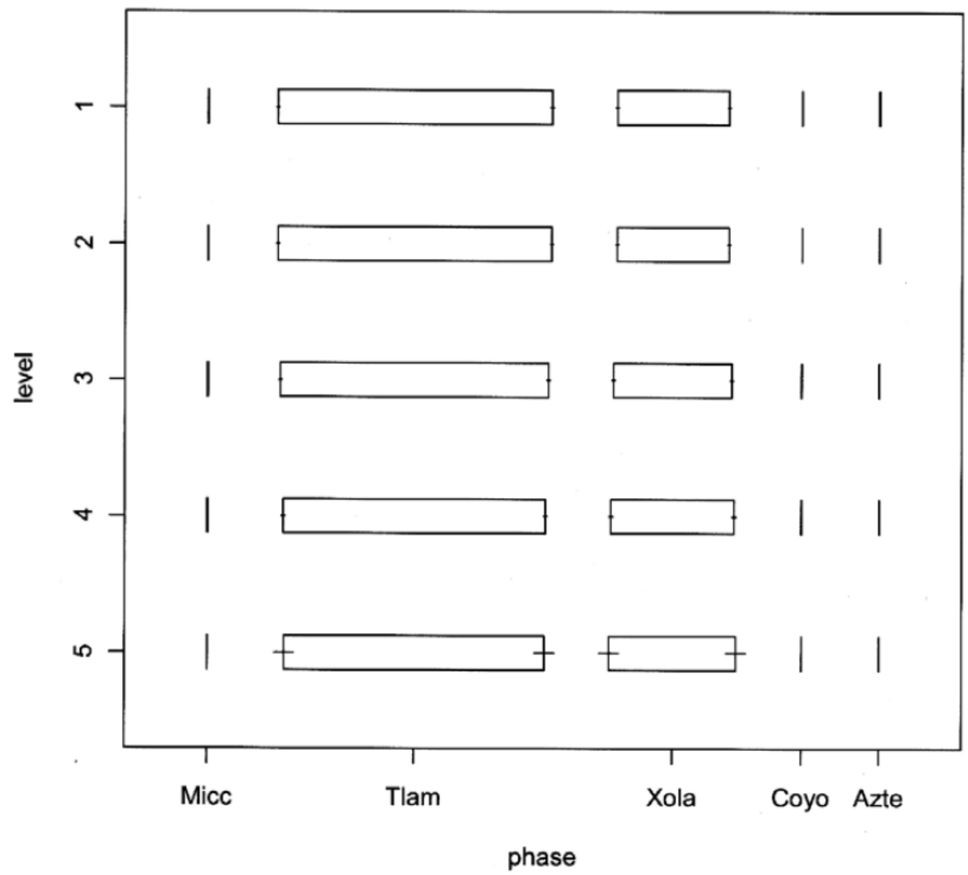


Figure 5.1. “Ford” plot showing the proportion of sherds from five principal phases within individual excavation levels. Level 1 corresponds to the uppermost level of the archaeological deposits, Level 5 to the deepest. Phases go from left to right, from earliest to latest. Horizontal lines projecting from the sides of bars represent 95% confidence intervals for bar widths, based on the standard error of proportion estimates.

Tools

Lunates: One of the main categories of tools associated with ceramic manufacture at San José 520 corresponds to what the TMP called “lunates” because of their shape (Figure 4.3). For similar reasons, they also have been called “banana stones” (Widmer 1987:361). As indicated in Chapter 4, these are curved, finger-sized pottery objects thought to have been made specifically for shaping ceramic vessels.

Objects similar to lunates from Teotihuacan have been reported in various Mesoamerican sites dating from the Preclassic to the Postclassic Periods (ca. 1400 B.C.-A.D. 1520) where they have often been interpreted as ceramic manufacturing tools. In some cases they were found associated with other kinds of potters' tools, ceramic firing facilities, wasters, or exhibit wear patterns similar to those observed in the lunates from San José 520 (see below). Examples have been reported from Chalcatzingo (Grove 1987:282-283); Huixtoco, Chupícuaro, Chiapa de Corzo (McBride 1974:214-216); Tula (Hernández et al. 1999:76, and Figs. 15-16); and Tamtok (Stresser-Péan and Stresser-Péan 2005:609). In the Basin of Mexico (Figure 2.1) they have been found at Cuicuilco (Müller 1990:202, Lám. 54 S and T, 210); Ticomán, Tlatilco, Atlamica (McBride 1974:214-216, Plate 35h, 347-348); and Azcapotzalco, where they were found in contexts possibly dating to the Tlamimilolpa and Xolalpan phases (Raúl García, personal communication 2008). In all cases, these types of artifacts have been reported in small quantities.

At Teotihuacan, ceramic tabulations of surface collections from the TMP indicate that lunates are present in various localities within the city (Figure 5.2), but generally in small quantities (mostly 1 or 2 per collection tract, where they occur at all). They appear to be more common in peripheral locations within the city. As already discussed in Chapter 4, apart from San José 520, the largest concentration of lunates registered for the urban center is in the Tlajinga district. Some examples of lunates were reported from excavations at Tlajinga 33 (Widmer 1987:362; Widmer and Storey 1993), the only extensively excavated apartment compound at Teotihuacan with clear evidence for ceramic workshops, but the exact quantity was not specified. Recent excavations at an insubstantial structure site near the eastern edge of the city (15:N1E6) recovered a single lunate (Robertson 2008) showing use-wear similar to examples observed at San José 520 (Ian G. Robertson, personal communication 2007). Laurette Séjourné (1966a:Fig. 211) also illustrates an object that might be a lunate, found among materials recovered from burials excavated at Tetitla. It is possible that excavations in other localities within the city have recovered examples of this type of artifact, but without identifying them as ceramic production tools or reporting them.

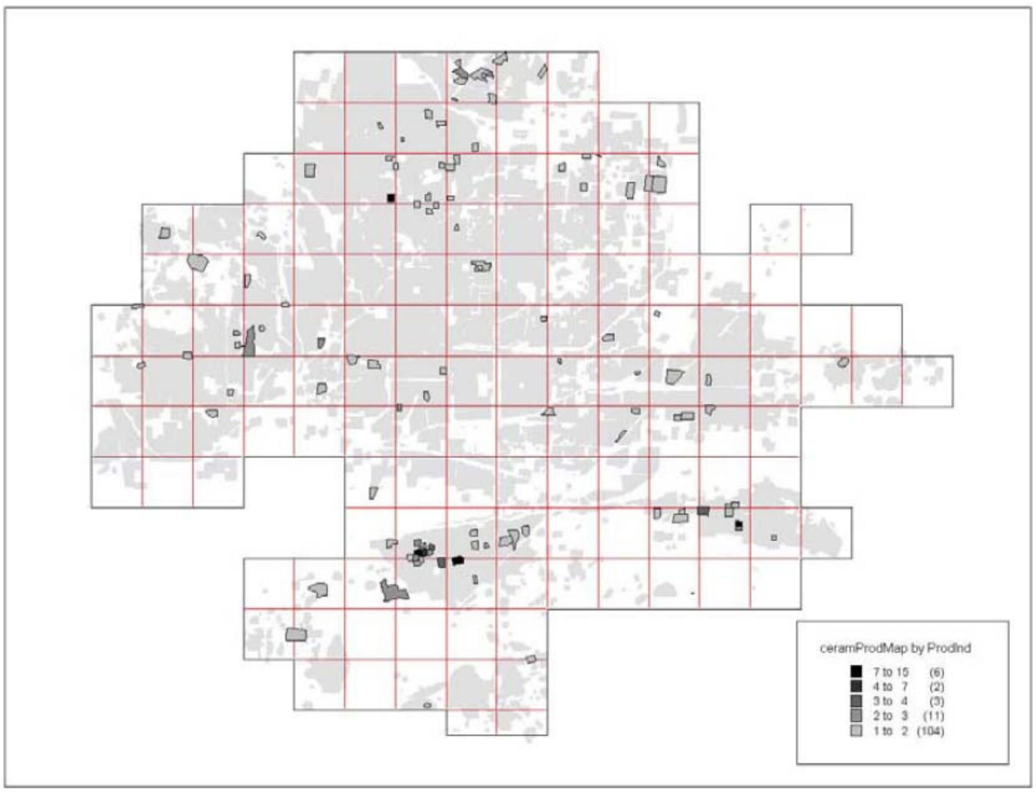


Figure 5.2. Distributional map of Teotihuacan Mapping Project surface collection ceramic production tools (lunates, and formal modeling platforms). Counts are based on TMP surface collection ceramic analysis tabulation sheets (map made by Ian G. Robertson).

In addition to the 58 lunates that were collected by a TMP field crew at San José 520 in the 1960s, operations of the San José 520 Project carried out during 2004-2005 under my direction, recovered a total of 100 lunates from an intensive systematic surface collection, and 184 from excavations. TMP lunates were excluded from quantitative procedures that I used to prepare distributional maps of these artifacts at San José 520 (see Figure 5.3), but all lunates from both projects were subjected to the same laboratory analyses used to record their dimensions and describe their characteristics.

Most lunates were fragmented. Several complete pieces recovered indicate a range in length between about 6 and 10 cm, and weight between ca. 13 to 67 grams. It was possible to determine maximum thickness for around 60 percent of the lunates. The largest values observed were ca. 2.5 cm, but depending on the degree of use-wear present, maximum thickness could be as low as 6 mm.

Detailed descriptions of the wear patterns exhibited on all lunates collected by the TMP and recovered by the San José 520 Project were recorded on special forms as part of post-excavation laboratory procedures. Preliminary results from this analysis indicate that around 85 percent of the lunates exhibit some type of discernable use-wear (Figure 5.4), which I interpret as related to their use as ceramic smoothers, shapers, or scrapers.

Most lunates (ca. 80 percent) exhibit wear consisting of one or more flattened surfaces on some portion of their sides. These wear facets were probably produced by rubbing or scraping action on a relatively broad side wall of a still-plastic ceramic vessel. This kind of wear was sometimes combined with “channeled” wear patterns, more focused indentations likely caused by forming and smoothing vessel rims. Channeled wear was observed on 24 percent of the lunates.

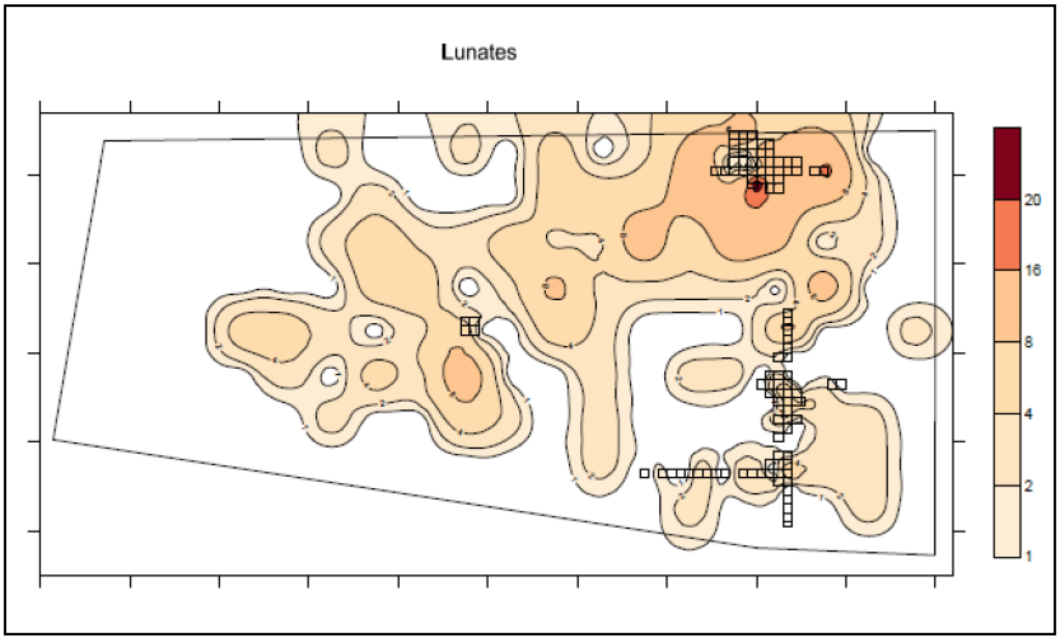


Figure 5.3. Spatial distribution of lunates at Lot 83.

More detailed analyses of descriptive data gathered from these artifacts will be carried out in the future, above all with the aim of further clarifying their variable roles as specialized production tools. The most relevant observation to be made here is that the widespread presence of use-wear indicates that the large number of lunates recovered from this locality cannot be explained simply as a result of the production of this type of artifact at this locality. Analogy with tools of modern potters and their association with other lines of evidence for ceramic production at San José 520 suggest that lunates were made to be used as vessel formation tools by potters living at this locality. Wear patterns show that they were used extensively.

Figure 5.4. Examples of lunates exhibiting flat and channeled types of use-wear resulting from ceramic vessel forming activities.

Possible Stone Anvils: Carlos Múnera reports a small (but unspecified) number of *tezontle* (porous volcanic tuff) tools from the excavations in the Cuadrángulo Norte de la Ciudadela workshop. These tools were not only found in association with very clear evidence for ceramic making activities, but also exhibited remains of clay that had been trapped within some of the stone pores (Múnera Bermúdez 1985:48). Múnera supports the interpretation that these are ceramic forming tools by noting the use of forming tools made of *tezontle* by modern potters of the Teotihuacan Valley (Múnera Bermúdez 1985:48, 73-85).

The artifacts described include two small, rectangular *tezontle* tablets, and at least one small, handled *raspador* (scraper/smoother). *Tezontle* scrapers have been interpreted in other contexts in Teotihuacan as tools for applying and polishing stucco on floor and wall surfaces of apartment compounds (Lizárraga and Ortiz Butrón 1993), but it is likely that they were used for other purposes as well (George L. Cowgill, personal communication 2009).

At San José 520 a small number of *tezontle* and basalt artifacts were found both in the surface and subsoil deposits. These include fragments of five *tezontle* scrapers, two circular *tezontle* tablets, and one tabular basalt polisher (Figure 5.5). Two of the *tezontle* smoothers and one of the *tezontle* tablets come from surface collections, but all the other artifacts were associated with the two architectural structures exposed by our excavations (AE7 and AE2). The basalt polisher was found in close proximity to the open firing hearth described below (AE6).

Ethnographic work by Patricia Fournier in the Mezquital Valley also reports the use of basalt and *tezontle* tools as *aplanadores* (flatteners) in the formation of vessels (Fournier García 2007:239, Figs. 52, 54, and 61). These tools have shapes similar to the *tezontle* scrapers from Teotihuacan. In addition, stone tools of similar forms have been reported as pottery anvils from archaeological and ethnographical contexts from the American Southwest (see Adams 2002:155 and Figure 6.1).

While no remains of clay were easily detected on the basalt and *tezontle* artifacts just described, their association with other evidence for ceramic manufacture, their similarity to the tools found by Múnera in the Cuadrángulo Norte workshop, and the fact that no architectural remains with stucco surfaces, or stucco fragments were found at San José 520, suggest that these were probably tools used in the ceramic production that took place at this locality. The *tezontle* and basalt tools from San José 520 just described may have functioned as pottery anvils as well.

Figure 5.5. Examples of *tezontle* anvils. The upper two have handles; the lower examples lack handles and are tabular in form.

Stone Polishers: Smooth quartzite pebbles have also been reported as ceramic manufacturing tools in archaeological and ethnographical studies from various places in Mesoamerica (Bryant and Brody 1986:83; Deal 1998:40-41, Fig. 3.9, Table 3.9; Hernández et al. 1999:76, and Figs. 15 and 16; McBride 1974:216; Nebot García 2004:74). Ethnographic work suggests that they are used for burnishing and polishing the surface of vessels. This helps to reduce porosity by compacting the surface of the clay, as well as providing desired decorative effects (Deal 1998:48-49).

Figure 5.6. Examples of quartzite stone polishers. The artifact towards the top was found directly associated with the single individual in Burial 1. The lower piece was found in the upper part of the pit containing multiple Burial 2.

At San José 520 three smoothing stones with highly polished surfaces were found (Figure 5.6). One of these, rounded in shape and broken in half, was associated with Burial 1. The other two had faceted, but rounded, surfaces and were found within the pit that contained Burial 2 (see Chapter 4). The three objects were all made of quartzite, and whitish in color. They weighed between 24 and 60 grams, and measured between 3.4 and 3.7 cm long by 2.8 to 3.5 cm wide, and 2 to 3 cm thick.

Sherd Scrapers: The reuse of pottery sherds as tools in connection with pottery manufacture has been long-established by archaeological studies in various parts of the world (Pozzi-Escot et al. 1993; Schiffer 1989; Skibo 1992), prehispanic Mesoamerica (Lesure 2009:165; López Varela et al. 2001; Stark 1985:189; Urban 2007), and even Teotihuacan (Krotser 1987; Múnera Bermúdez 1985). These "informal" tools are thought to have been helpful for removing irregularities from the surface of pots when the clay is still wet, and/or to scrape any remnants or impurities (e.g., small rocks) from leather-hard surfaces that might otherwise be prone to pitting during firing (Pozzi-Escot et al. 1993:473-476).

A sherd-by-sherd macroscopic analysis of all surface sherds and ca. 80 percent of almost 91,000 excavated sherds from San José 520 indicated that a large number (n=602) show evidence of wear from reuse, most likely in ceramic manufacture. These sherds, mostly shaped in irregular triangular, pentagonal, and rectangular shapes (Figure 5.7), exhibited use-wear of different intensities on one or more of their edges. A small proportion also exhibited the complete removal of exterior surfaces as a result of intentional abrasion.

My analysis indicated a preference in this kind of reuse for body sherds (70 percent of all sherds reused as scrapers) over rims (21 percent) or bases (nine percent); possibly the curvature of many body sherds was desirable for scraping or smoothing tasks. I also detected a preference for the use of Burnished ollas (38 percent), Polished outcurving bowls (39 percent), and Polished bowls (10 percent), over other wares and forms. This likely was due to the higher abundance of these types of vessels (see below), and possibly their compositional fabric and hardness, as has been observed in other places (López Varela et al. 2002; Varela Guarda 2002:231), although no compositional analyses were carried out on these ceramics to test this hypothesis.

Figure 5.7. Examples of sherds reused as scrapers and exhibiting use-wear as a result of ceramic vessel formation activities.

As will be discussed below, chronological allocation of some tools such as lunates and ceramic modeling platforms was not possible, but informal scrapers made from reused sherds have the advantage of frequently carrying chronological information, since ceramic vessels used at Teotihuacan can usually be allocated to occupation phases—often on the basis of characteristics of paste. Results from my analysis indicated an increase over time in the use of these artifacts as potters' tools. Thirty-five percent of the sherd scrapers are made from sherds from the Tlamimilolpa phase, while ca. 65 percent corresponded to the Xolalpan phase. Standardizing counts of this type of tool with respect to total number of sherds per phase indicated that 0.37 percent of the Tlamimilolpa ceramic fragments were reused as sherd scrapers, while during the Xolalpan occupation 1.33 percent of the sherds were used as this type of tool—more than 3.5 times as much. It is worth noting that, while some Tlamimilolpa sherds could well have been picked up and reused by Xolalpan potters, this would only mean that the apparent intensification of this practice during Xolalpan would be even stronger than I have suggested.

Ceramic Modeling Platforms: Ethnographic and archaeological work in various parts of the world has indicated the use of plates or platforms, made of ceramic or wood, as devices to support and hold pots during their manufacture. Examples include the still-used *tillas* from the Conchucos Ancash, Perú (Druc 2005:40, 97, Figura 14), and their archaeological predecessors from Wari sites (Pozzi-Escot et al. 1993:476, and Figure 5), as well as the Mogollon artifacts called *pukis* and "plates" (Mills 2007:32-33, and Figures 1.4, and 1.5) from the Southwestern US.

Within Mesoamerica, there are numerous ethnographic accounts of the use of tools to support vessels during forming and drying, and sometimes to permit slow rotation during vessel formation. Examples come from various regions such as Oaxaca, Guerrero, Puebla, Yucatán, and Quintana Roo (Arnold 1987; 2008:234; de la Vega Doria et al. 2005; Foster 1959, 1960b; Nahmad et al. 1988:137-138; Reynoso 1982:23-27; Stevenson 2009:22-23, Figs. 4.1-4.3, 4.8-4.9). These devices often consist of circular or square wooden planks or clay platforms (including thin bricks), that rest directly on a rock, bowl, saucer, block or wooden log, or that with the aid of a small flat sherd facilitate slow rotation, with the help of the potter's feet or hand. Among the most well known rotating trays are the *kabal* from Yucatan (Foster 1959), and the *molde* from Oaxaca (Foster 1960b). Most of them are used by potters seated close to the ground, but some allow craftsmen to work in a standing position by placing the tray on a wooden log (Reynoso 1982:26-27).

Much less appears to be known in Mesoamerica about the archaeological equivalents of such tools. They have been reported from the Tlajinga district in Teotihuacan (Rattray 1988), where they were described as *tablas* (Sheehy 1992:506). At Aguateca, Guatemala, fifteen round reworked ceramic sherds with diameters between 10 and 15 cm were found *in situ* on a floor representing an abandonment episode. Burned and unfired clay lumps were associated with these objects, suggesting their possible use in ceramic manufacture activities (Inomata 2007:124; Inomata et al. 2002), and I think that they were likely used as ceramic production platforms. Recent archaeological work in the Naco Valley, Honduras, reports the use of "pot stands" during the finishing and firing stages of production (Urban 2007). These are not flat trays, but circular devices with outflaring bases surmounted by somewhat straight necks. In addition to the formal potstands, a number of recycled olla rims, intentionally cut below their necks, were also recovered, and interpreted as having been used as potstand tools during pottery manufacture.

At San José 520 a group of 21 flat, circular trays made of pottery, likely used for supporting the bases of certain kinds of ceramic vessels during manufacture, were recorded by the TMP during the analysis of the collections recovered in the surface operations of the 1960s. They were originally given the name of "*sin formas*" ("shapeless [objects]") by the TMP, but I refer to these artifacts as "ceramic modeling platforms." These artifacts are distinct from *comales*, which are relatively thin, shallow griddles, with smooth upper surfaces and roughened bases (Rattray 2001:213-214; Robertson 2001:260). Ceramic tabulations from the TMP surface collections indicate the presence of ceramic modeling platforms in a few other localities within the city (see Figure 5.2), including one found in 18:S3W2 at the Tlajinga district (Sullivan 2006:32, and Fig. 5d). No other locality, however, has reported as many platforms as San José 520.

In addition to the 21 pieces reported by the TMP surface collection at this locality, a total of 196 ceramic modeling platform fragments were recovered from the surface (n= 96) and sub-surface (n= 100) deposits from San José 520 during the 2004-2005 operations (see Figure 4.4). Eighty-three percent of these artifacts preserve part of the outer (rim) section, while 17 percent are simply parts of the flat “body” portion. Fifty-seven percent (57 percent) of the platform fragments with preserved rims also exhibit a raised ledge or ridge running around the border. This may have served as a molding feature, perhaps aiding in defining the angle and join between the base and the wall of the vessel being formed on it. The remaining 43 percent appear to have had a simple flat or direct outer edge.

These platforms were fairly crudely made with smoothed but not polished surfaces. Macroscopic observations indicate that their paste often contained large quantities of crushed obsidian, but no compositional analyses have yet been conducted. Basal portions are relatively flat, but when fragments are large enough it is possible to observe a small depression towards the center of the platform. Diameters of these artifacts may range between 13 and 30 cm, but it is important to emphasize that these estimates were mostly taken from small rim portions and may not be reliable. The average thickness of bases of these platforms was 1.35 cm.

In addition to formal, intentionally made ceramic modeling platforms, our sherd-by-sherd analysis also identified a total of 182 fragments of what appear to have been modeling platforms made out of old, flat-bottomed ceramic vessels. In some cases, vessels appear to have been recycled in this way because they had been damaged during manufacture, as some examples exhibit evidence of misfiring. To make these tools, walls of such vessels were broken off close to the base and remaining portions carefully ground down. In some cases, grinding continued until the wall-stub was completely eliminated, leaving it flush with the base (Figure 5.8). In 59 percent of the cases observed, however, a small ridge was left, probably serving the same function as the raised edge often added to the platforms that were made specifically for vessel modeling, rather than from recycled bowls.

Recycled bases or mouths of pots (e.g., ollas), are used as supports and/or slow-rotational devices during pottery formation in different regions of rural Mexico (Reynoso 1982:26-27), and the evidence from Aguateca and the Naco Valley described above indicates that similar practices were followed in prehispanic Mesoamerica. These data strengthen the interpretation that bases of vessels from San José 520 were used in ceramic production. Interestingly, complete examples of such recycled bases with removed walls were deposited as mortuary objects in Burial 2 (Figure 5.9), along with other tools associated with ceramic manufacture as well as other complete vessels (see Chapters 4 and 6).

My analysis indicates that there was a strong preference for recycling the bases of outcurving bowls (90 percent), over vases (nine percent), and bowls (one percent). For reasons that will be discussed below, this probably largely reflects the fact that outcurving bowls would have been particularly available to the potters and had the right form to be useful.

Figure 5.8. Examples of recycled vessel bases likely used as informal modeling platforms during ceramic manufacture. The bottom example comes from Burial 2.

Figure 5.9. Recycled bases of a Polished outcurving bowl (top) and a San José bowl (bottom) from Burial 2, probably used as informal modeling platforms.

Finally, and parallel to what I observed about the use of recycled sherds as scraping tools, I note that that there may have been an increase over time in the use of recycled pot bases as modeling platforms. Forty one percent of the recycled bases correspond to the Tlamimilolpa phase, while 59 percent belong to Xolalpan. Standardizing the counts of this type of tool with respect to total number of sherds per phase indicates that 0.13 percent of the Tlamimilolpa sherds show evidence of reuse as modeling platforms. During the Xolalpan phase occupation, 0.38 percent of the total sherds show evidence of this same use—a ratio almost three times as high.

San José Bowls or Basal Molds: It has been suggested that potters engaged in ceramic production in the Tlajinga district used specific kinds of bowls as basal molds for forming the bases of craters and amphorae and to reproduce more bowls (Rattray 1988; Sheehy 1992; Widmer 1987). The "Tlajinga bowl" (Figure 5.10), as it is often called, was made of San Martín Orange Ware as were almost all of the vessels made in the Tlajinga ceramic workshops. They were made for local use as specialized tools and possibly as serving vessels as well, and their distribution is mostly restricted to the Tlajinga district (Sheehy 1992:506, 517-519, 532-534).

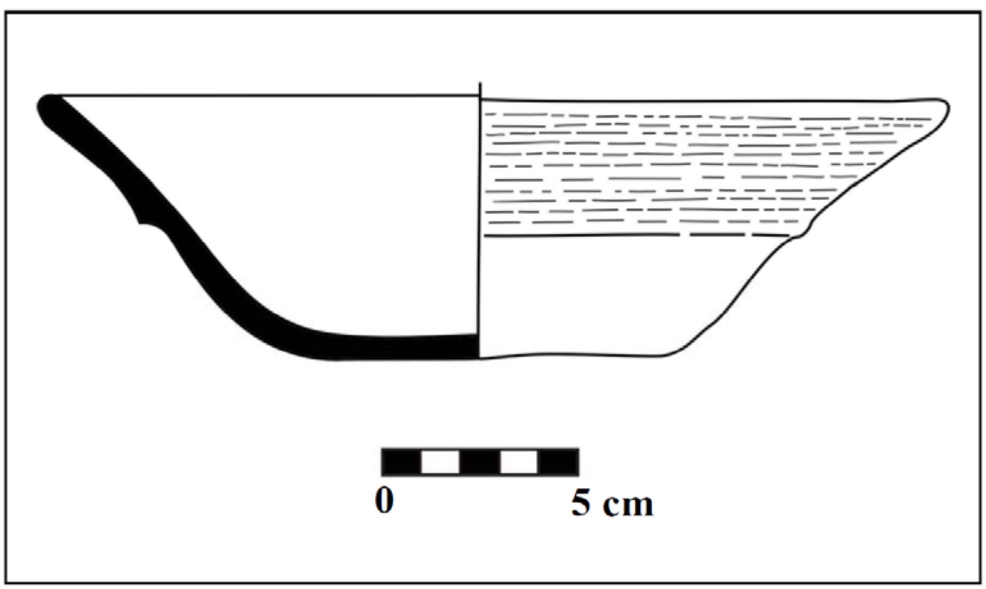


Figure 5.10. Tlajinga bowl (redrawn after Sheehy 1992:Figure 9.1).

Figure 5.11. Examples of San José bowls from Burial 2.

The Tlajinga bowl is similar in shape to the basal molds (*paradores*) used by potters in Acatlán, Puebla (Lackey 1982:65-66, Figs. 27-28), and Santa María Atzompa, Oaxaca (Stevenson 2009:22-25, and figs. 4.1-4.3, and 4.8), as well as other places. In these, and other modern communities, basal molds are used to construct the bases of large ollas and *cazuelas*, the walls of which are then completed using coil or slab techniques.

Detailed studies of San Martín Orange Ware products conducted by James Sheehy, also suggest a similar vessel construction method for craters and amphorae (Sheehy 1992:517-534).

At San José 520, our operations uncovered a total of 307 fragments of a type of bowl that was similar in form to the Tlajinga bowl, but which was not made of San Martín Orange Ware. While no compositional analyses have yet been carried out on any of the ceramics from San José 520, macroscopic observations indicate that these bowls were made with a paste similar to what was used to make lunates and ceramic modeling platforms—a paste containing abundant amounts of crushed obsidian temper. These bowls have thick, outflaring walls and flat bases (Figure 5.11). They are relatively crude in terms of surface finish and labor investment. Because they are not made with San Martín Orange Ware (and because they may be specific to this site), I am referring to them here as San José bowls, instead of Tlajinga bowls.

Seventy percent of the San José bowls identified are rim fragments. Nineteen percent of all San José 520 bowl fragments exhibit firing defects. Three complete San José bowls were deposited as funerary objects with Burial 2, along with other vessels and potters' tools (see Chapters 4 and 6).

Tlajinga bowls aside, San José bowls do not fall into the category of other bowls known in the Teotihuacan ceramic repertoire. Their crudeness, similarity in appearance and form to Tlajinga bowls, and their association with a ceramic workshop, makes me suspect that these also could represent basal molds used in the production of large vessels. The possibility that they represent crude bowls made for serving purposes within this locality can not be entirely excluded until more detailed research (e.g., residue analysis) is conducted. As will be discussed below, however, Burnished craters may be one of the categories produced in this workshop; similar to Tlajinga bowls, San José bowls may well have been used as basal molds in the manufacture of craters.

Small Open Molds: In addition to the possible basal molds just described, fragments of two small open molds were found in the subsoil deposits at San José 520. One of these objects (Figure 5.12a) corresponds to a circular mold for making a type of appliqué decoration sometimes fixed to the flanges of cylindrical tripods dating to the Late Xolalpan phase (Rattray 2001:253-255). Although fragmented, the example from San José 520 is sufficiently large to allow me to identify that the mold was used to make the head of an image usually known in Teotihuacan iconography as the "Fat God." As Hasso von Winning (1987:144-145) indicates, this image probably does not actually represent a god. I believe the swollen face and body and closed and drooping eyelids may be intended to depict a dead individual in an advanced stage of decomposition. In addition to evidence presented below, this mold supports the idea that cylindrical tripods were made by San José 520 potters.

The other small mold fragment (Figure 5.12b) was used to make one of the forms of heads associated with articulated or "puppet" figurines (see a more complete description of this type of figurine in Chapter 6). Although also quite fragmentary, it appears that similar types of molds have been reported elsewhere in Teotihuacan, including 23:N5W3, or Cosotlán 23 (Sullivan 2005:Figure 8; 2007:Figure 4.18), where evidence for manufacture of figurines and *adorno* censers has been reported. The finding of this mold complements evidence in the form of some defective limbs of this type of figurine, which suggests their manufacture at this locality. This will be more fully described below.

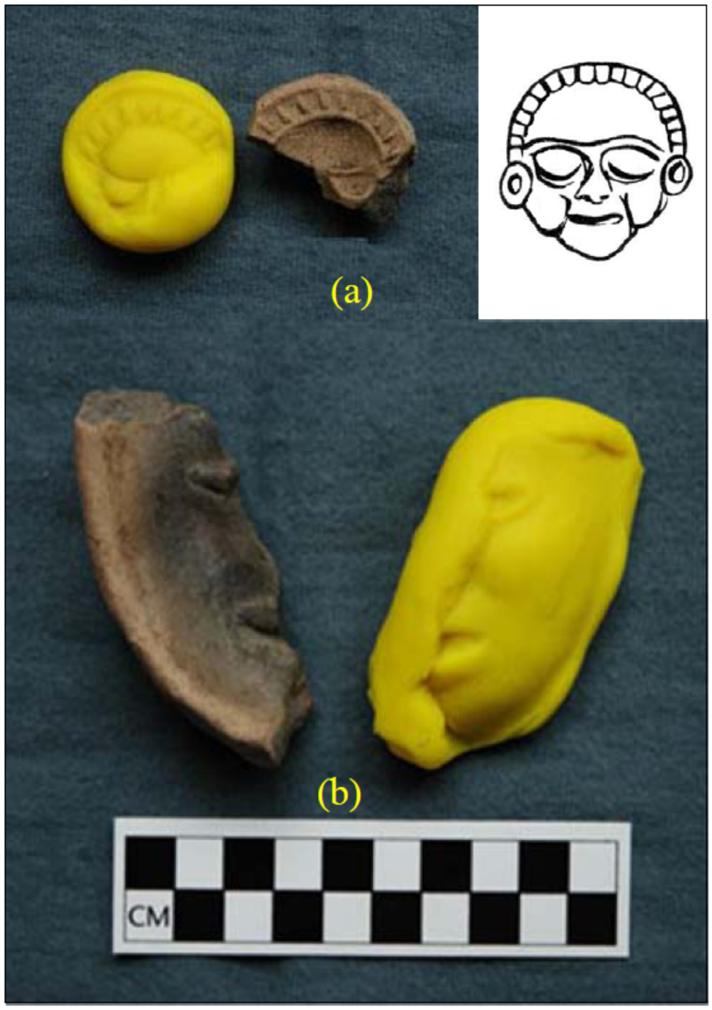


Figure 5.12. Small molds (a) for an appliqué vase decoration (possibly representing a dead individual) and (b) for an articulated or "*Puppet*" figurine head. The inset drawing of a complete example of (a) is modified after Séjourné (1966a:Fig. 101),

Obsidian Blades: Among the tools associated with ceramic manufacture activities at the Cuadrángulo Norte de la Ciudadela workshop, a total of 22 obsidian blades and macroblades were interpreted as cutting tools used for ceramic production (Múnera Bermúdez 1985:45). This interpretation was based on the distinctive wear patterns exhibited by obsidian tools used in experimental work that involved removing remains of soft, wet clay from molded pieces, and the microscopic identification of clay residues observed in the archaeological blades found at this locality. The lithic artifacts are described as having dull edges, consistent with use-wear involving soft materials (Múnera Bermúdez 1985:45). Unfortunately I am aware of no other systematic use-wear analysis of obsidian tools that would confirm this observation. This is due to the fact that use-wear and experimental analysis on obsidian and other flaked lithic tools (e.g., Aoyama 1995; Hirth and Castanzo 2006; Lewenstein 1981, 1987), has been directed toward testing their use on other types of raw materials such as meat, wood, hides, shell, bone. Their possible use on clay seems to have been overlooked.

Archaeological lithic artifacts made of chert and obsidian are reported as tools used in ceramic manufacture in Pakistan (Méry et al. 2007) and Ethiopia (Phillipson 2000). Within Mesoamerica, however, they are not commonly reported in connection with this production activity, despite the fact that ethnographic studies (e.g., Arnold III 1991:40; Fournier García 2007:240; Lackey 1982:62) indicate the frequent use of sharp-edged tools (knives, cutters) made of metal during pottery formation. Large numbers of obsidian tools from San José 520, however, exhibit a highly distinctive type of edge rounding that seems very similar to the use-wear patterns reported by Múnera for obsidian tools from the Cuadrángulo Norte workshop, and in his experimental work. While future and more detailed experimental and use-wear analyses are needed, I believe that these patterns suggest the use of obsidian artifacts, in particular blades, as ceramic manufacturing tools at San José 520.

Surface collection and excavation procedures yielded close to 3000 fragments of obsidian blades (n=2938). The large majority of them (95 percent) were made out of green obsidian, with a smaller percentage (five percent) made of gray obsidian; one blade was made from a reddish-brown mottled obsidian known as "*meca.*" Eighty-two percent are medial fragments, 16 percent correspond to proximal fragments, and the remaining two percent are distal fragments. In addition, two complete but broken blades were found associated with offering deposits (see Chapter 6).

A judgmental sample that represents 37 percent of the entire obsidian blade collection (n=1077) was selected to conduct a detailed macroscopic analysis of use-wear patterns on blade edges to record the particular use-wear roundness thought to be associated with ceramic production activities (Figure 5.13). The sample was selected in this manner with the aim of equally representing different sectors excavated at this locality and thus potential intrasite differences.

Figure 5.13. Example of an obsidian blade fragment (front and back views) with a rounded, dull edge, probably used in ceramic manufacture activities.

Sampled materials indicate that 55 percent of the blade fragments (n=606) exhibit dull and rounded edges of variable intensities. The other 45 percent include blades with edges that were (1) not used; (2) used but unrounded (presumably used in other activities); (3) retouched; or (4) broken (one percent). The intensity of rounding was classified, admittedly judgmentally, as low, medium, and high. Light rounding represented minimum use-wear, while high rounding was distinguished by a very smooth and heavily rounded edge; medium for something in between.

Results from this analysis indicate that only four percent of the sampled blades appear to have been used until they exhibited a 'high' level of rounding. Instead, most blades were discarded after exhibiting low (29 percent) or medium (23 percent) rounding. Most blade edges that presented rounding thought to be associated with ceramic production activities are straight along the entire edge or at least along in the portion where rounding is observed. When edges are "highly" rounded there is always an opaque wear band adjacent to the edge, on the ventral side of the blade.

Other obsidian artifacts, particularly informal scrapers also presented rounding (n=8) on edges, but clearly there was a preference for the use of blades in the ceramic work, since only 8 percent of obsidian scrapers exhibited such evidence.

Firing Location

As indicated above, no remains of formal or up-draft kilns for the manufacture of ceramics have yet been identified at Teotihuacan, and they probably were not used. However, open and pit firing facilities have been reported (Múnera Bermúdez 1985; Sheehy 1992). Our excavations at San José 520 uncovered the remains of an open firing facility as well. This consisted of an irregular circular feature (Figure 5.14) that was partially delimited with rocks and fired clay blocks, and that at the bottom presented a grayish-tan discolored soil that contrasted with the darker soil of the layers above (see Chapter 4). This feature contained large quantities of broken sherds, many belonging to the same vessels, and some exhibiting burned surfaces. These sherds were mixed with fired clay lumps, and stone pebbles, and a few small fragments of charcoal. In addition to the artifactual evidence, as already described in Chapter 4, a magnetometry survey conducted by a group of doctoral students from the Department of Geophysics at Stanford University indicated that this area was associated with a strong magnetic anomaly consistent with an area exposed to intensive heat (Shragge et al. 2005).

Figure 5.14. Architectural Feature #6 (AE6), probable open firing location.

Amorphous Lumps of Fired Clay

Another category of evidence for ceramic manufacture at this locality was represented by amorphous fired clay lumps in sizes 2 to 8 cm long. They constitute pieces of clay that had been manipulated or kneaded in some way (some still retaining the finger prints of the individuals who worked them), and that had been discarded after firing

(Figure 5.15). Many of them also contain black temper fragments, such as that observed in lunates. At San José 520 a total of 1461 fragments of kneaded clay lumps were recovered from surface (n=179) and excavated contexts (n=1282), representing a total of 10 kg in weight. It seems very likely that some of these small fired clay lumps were fired accidentally, while others may have been parts of defective pieces or the result of small children's practice objects, or attempts to make figurines.

Figure 5.15. Examples of amorphous, fired clay lumps, possible manufacture debris.

These lumps of clay do not represent fragments of burnt *bajareque* (wattle-and-daub) from architectural structures, but are a type of manufacture debris connected with ceramic production. *Bajareque* fragments often present a more chunky appearance, and retain recognizable imprints of the cane or wooden branches over which the clay was plastered. In the case of San José 520, the appearance and consistency of the kneaded lumps of clay related to manufacture debris is distinct from other fragments of clay lumps (Figure 5.16) that likely do represent *bajareque* fragments, and also from clay blocks (not adobe) that were used as architectural construction materials (see Chapter 4).

Figure 5.16. Example of possible *bajareque* fragment.

Fired clay lumps have been a common category used in the identification of ceramic production activities in many Mesoamerican sites, including Teotihuacan (e.g., Charlton et al. 1991:107; Feinman 1982; Finsten 1983:57-60; Sullivan 2005:8; 2006:33). Ethnographic work suggests that to test the correct consistency of clay to be used in vessel formation, potters often prepare small clay lumps. These are often fired in kitchen hearths, and then discarded. Lumps of clay are also reported as tools used in pottery production. For example, Lackey (1982:63-64) indicates that modern potters from

Acatlán, Puebla use lumps of clay in the form of a pestle, or as other shapes needed, to tamp the paste of a vessel being formed, until it conforms to the shape of the mold being used to form it. After its use, such pieces of clay lumps are returned to the piles of unfired clay to be used for other pots.

Potters from Ocotlán, Morelos use a ceramic pestle-shape tool, with a punctated working surface called *azotador*, to make vessels in a technique similar to the one used at Acatlán (Houston and Wainer 1971:2). Almost identical archaeological tools have been reported from the sites in the Coast and Valley of Oaxaca (see Houston and Wainer 1971:2-3). Fragments of possible ceramic pestles with small circular depressions on the working surfaces have also been reported at Patarata, Veracruz, and are thought to have been associated with pottery production (Stark 1989:105, Figures 5.1a and b). Unfired clay lumps in the shape of cones, and resembling pestles, were uncovered in Tomb 2 at Lambityeco, Oaxaca (Paddock et al. 1968:16, Figure 21), and may represent similar tools used in antiquity. I think all of them were likely used as pottery anvils. Ethnographic observations at Ocotlán indicate that lumps of fresh clay are also used by potters to remove the marks left by the *azotador* punctations (Houston and Wainer 1971:4, Figure 10). If the *tezontle* tools described above were used as anvils, small lumps of clay could have been also used to smooth the appearance left by the porous *tezontle* stone. Fresh clumps of clay would also have been useful to remove other impurities on the vessels surfaces.

Defective Sherds

In addition to the manufacturing tools, discarded clay lumps, and the firing facility already described, evidence for ceramic production activities at San José 520 is also represented by defective sherds. The presence of ceramic wasters or defective products has been one of the most common archaeological indicators for identifying ceramic production localities, particularly when dealing with surface collections. Defective products, however, are problematic to interpret, and not always easy to identify or define. This is due in part to the fact that defective sherds are mostly produced by production errors during firing; since Mesoamerican ceramic firings did not reach the high temperatures characteristic of many cultures in the Old World, defective wasters are not as dramatic or obvious in the prehispanic New World (Hopkins 1995:73-74). The rate at which defective sherds are produced also varies widely from one ceramic system to another (Stark 1985:174-176). Also, depending on cultural, economic, and technical factors some products that are imperfect may still be accepted and consumed rather than discarded in places of manufacture (Pool 1990:104). An example of this might be represented in the San José 520 materials by an outcurving bowl, complete but warped by firing (Figure 5.17) that was used as one of the funerary objects deposited with the individuals in Burial 2.

A sherd-by-sherd analysis conducted on all surface materials and 80 percent of the excavated sample (n=90,930 sherds) indicates that 11 percent of the ceramic sherds exhibit characteristics that make them likely wasters. The same percentage emerges when only rims (n=16,083) are considered. In this analysis, all of the sherds with features suggesting that they had been to some degree misfired were considered defective sherds (Figure 5.18). The intensity of mis- or overfiring varies, but in general, they were characterized by sherds exhibiting bright red and some times pink-reddish (almost fuchsia) color pastes or surfaces. In some cases, misfired sherds exhibit a “rainbow” core exhibiting a series of red and pink tones that contrast strikingly with the more yellow tones of pastes in other, normally fired ceramics. Surface spalling was also observed on some ceramic fragments, but was not common. An abundant presence of small concavities resulted from the explosion of temper fragments was observed on surfaces and sections of many sherds (Figure 5.19), possibly indicating problems of clay kneading (Rye 1981:39-40), or possibly temper selection, but this was not considered a defective feature. While many of the misfired sherds are overfired, it also appears that temperatures involved were never high enough to cause bubbled surfaces.

Figure 5.17. Defective (warped) outcurving bowl from Burial 2.

The initial ceramic analysis of the San José 520 ceramic collections by lab technician Zeferino Ortega detected some of these defective sherds, but a more complete identification was made using comparative collections of defective ceramic sherds from the TMP surface collections, previously identified by Paula Krotser. Krotser's categories of defective sherds included ceramic fragments with "…large voids, large stones in the paste, bond failures, atypical forms, spalling, warping, extreme firing temperatures and atmosphere (Krotser 1986:20-24, 28-31, cited in Hopkins 1995:79).

Figure 5.18. Examples of defective (misfired) sherds.

The criteria that I used to assess levels of misfired ceramics may lie on the generous side—other archaeologists, for example, have only used the most defective examples of sherds as evidence for wasters and production failures (e.g., Feinman 1980). With regard to this issue, I note that the 11 percent waster rate described for this site contrasts with lower values suggested for other places: 3.3 percent for Tlajinga 33, and 6.4 percent for the entire Tlajinga district, for example (Sullivan 2006:30, and Figure 4).

Figure 5.19. Examples of concavities on the surface of sherds.

It is possible that the high degree of fragmentation (and erosion), which characterized the surface and also excavated ceramic collections from San José 520 may be contributing to the apparently high proportion of waster representation. Technical details related to the specific production practices used at this workshop may also be factors. More technical analyses of potsherds (clay and temper characterization, refiring, etc.) would probably be helpful, as might a more refined typology for describing degrees of misfiring evidence.

Nevertheless, I feel that my use of criteria for describing misfiring evidence was internally consistent for this analysis, useful for making contrasts within and among the various samples of ceramic wares and forms recovered from San José 520. Other results from this analysis are described in the following section, as evidence of defective sherds was used in part to define the products being made at this locality.

Products Made at San José 520

Methodological Issues

At the core of the analysis of San José 520 ceramic materials was a tabulation of all pottery fragments from surface and excavated contexts. These included rims, body sherds, and any other parts of the vessel. In this dissertation, however, I concentrate on the results of quantitative analysis of rim fragments. Focusing on rims provides a kind of standardization of sherds that leads to more reliable comparisons and conclusions within the San José 520 collections. This is due to the fact that all vessels produce rims, but there is less variation in rim diameters than in overall vessel sizes. Some vessels (e.g., ollas) produce many more sherds than others and a much higher ratio of body to rim sherds. More broadly, rim-based counts strengthen comparisons with the results of other projects, including the TMP, which concentrate collection activities on such materials.

All the ceramic sherds from San José 520 were subjected to a basic tabulation according to phase, ware, and form. However, due to time constraints, more detailed analysis leading to tabulations of rim counts, weight, and recognition of defective sherds was carried out only on all the ceramic sherds from the intensive surface collections, and 88 percent of pottery recovered by excavation. In determining which of the excavation collections would be subjected to the secondary, more detailed analysis, priority was given to excavation units that exposed architectural features such as rooms, the firing area, and surrounding areas of these features. The small number of units excavated in the western portion of Lot 83 was also subjected to more detailed analysis in order to generate descriptive data from a possibly contrasting part of the settlement. Areas that were excluded from the more detailed analysis tend to emphasize excavation units that, due to the shallowness of depths in the deposits, would have less impact on interpretations. Such areas will be included in future analyses, however.

Problems with Quantitative Analysis of Total Sherds: While, as noted above, most discussion and interpretations derive from rim sherd data, I must first briefly consider an issue that emerges from total count data because it presents an important and unresolved problem. Figure 5.20 is a plot that shows total counts of all sherds per vessel category for Tlamimilolpa and Xolalpan phases. As illustrated in this plot, total olla sherds constitute the largest number of sherds per vessel category in the Tlamimilolpa assemblage, and the second most numerous in the Xolalpan phase. When quantities of different vessel categories are evaluated using total counts of all sherds, ollas represent ca. 50 percent of Tlamimilolpa, and ca. 35 percent of Xolalpan sherds (Figure 5.21, and Tables 5.1 ad 5.2). A very different result is indicated when only rim data are considered (Figures 5.22 and 5.23): Tlamimilolpa olla rims are reduced to about five (5) percent of total Tlamimilolpa rims, and Xolalpan olla rims are only about three (3) percent.

The differences between total sherd and rim counts for ollas are very large for both phases. While this disparity may be explained in part by the fact that ollas are vessels with relatively large bodies, therefore producing more body sherds relative to rim sherds than other forms, there are probably also other causes. A possibly more important factor concerns the fact that form identification was sometimes quite difficult due to the highly eroded and fragmentary nature of both surface and excavated ceramics; my

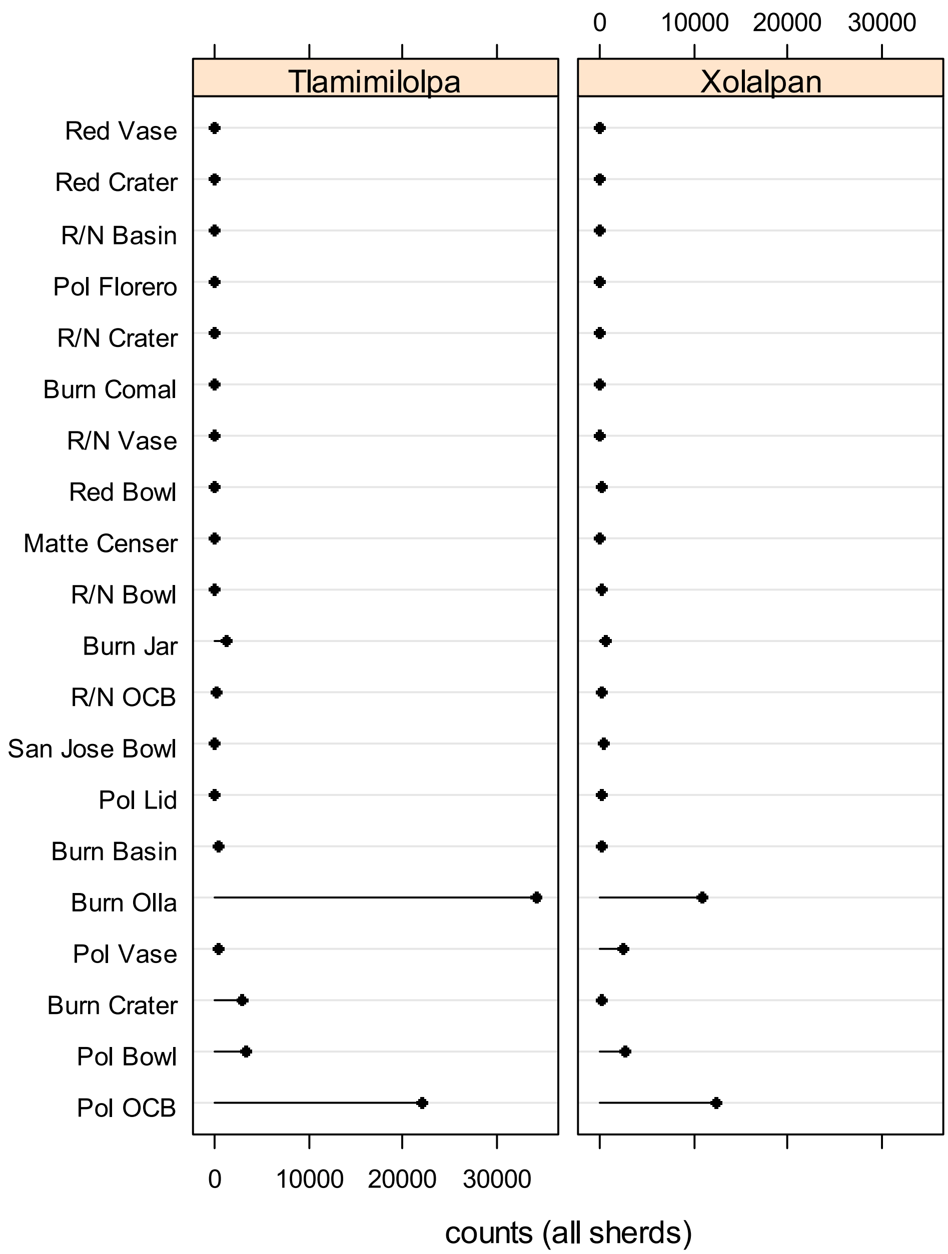
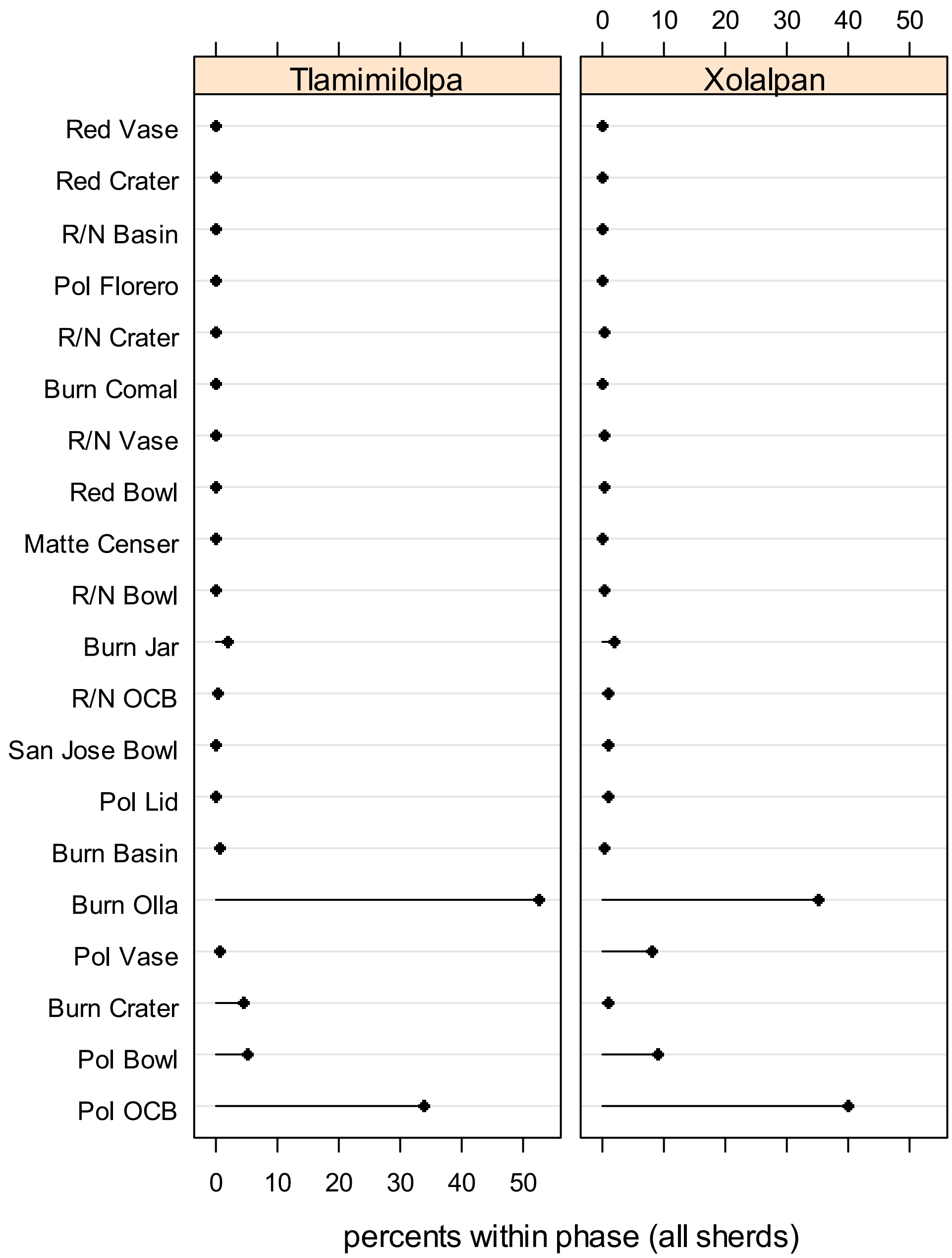


Figure 5.20. Total sherd counts by vessel category for the Tlamimilolpa and Xolalpan phases. Only the 20 most common vessel categories (according to rim counts for both phases) are included.



Figuire 5.21. Total sherd percents by vessel category for the Tlamimilolpa and Xolalpan phases. Percents are calculated on the basis of total sherd counts within phases; only the 20 most common vessel categories (according to rim counts for both phases) are included.

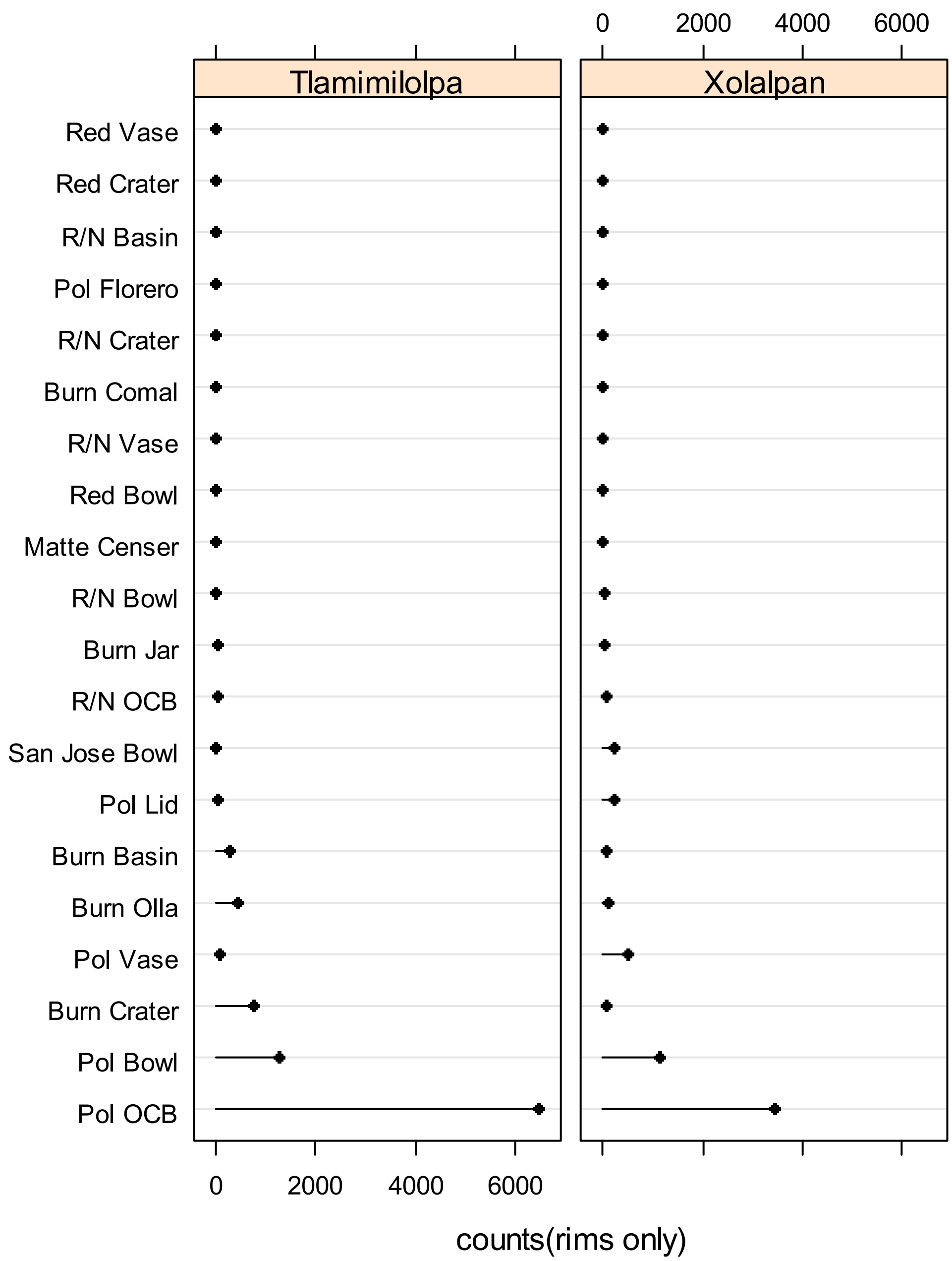


Figure 5.22. Total sherd counts by vessel category for the Tlamimilolpa and Xolalpan phases. Only the 20 most common vessel categories (according to <u>rim</u> counts for both phases) are included.

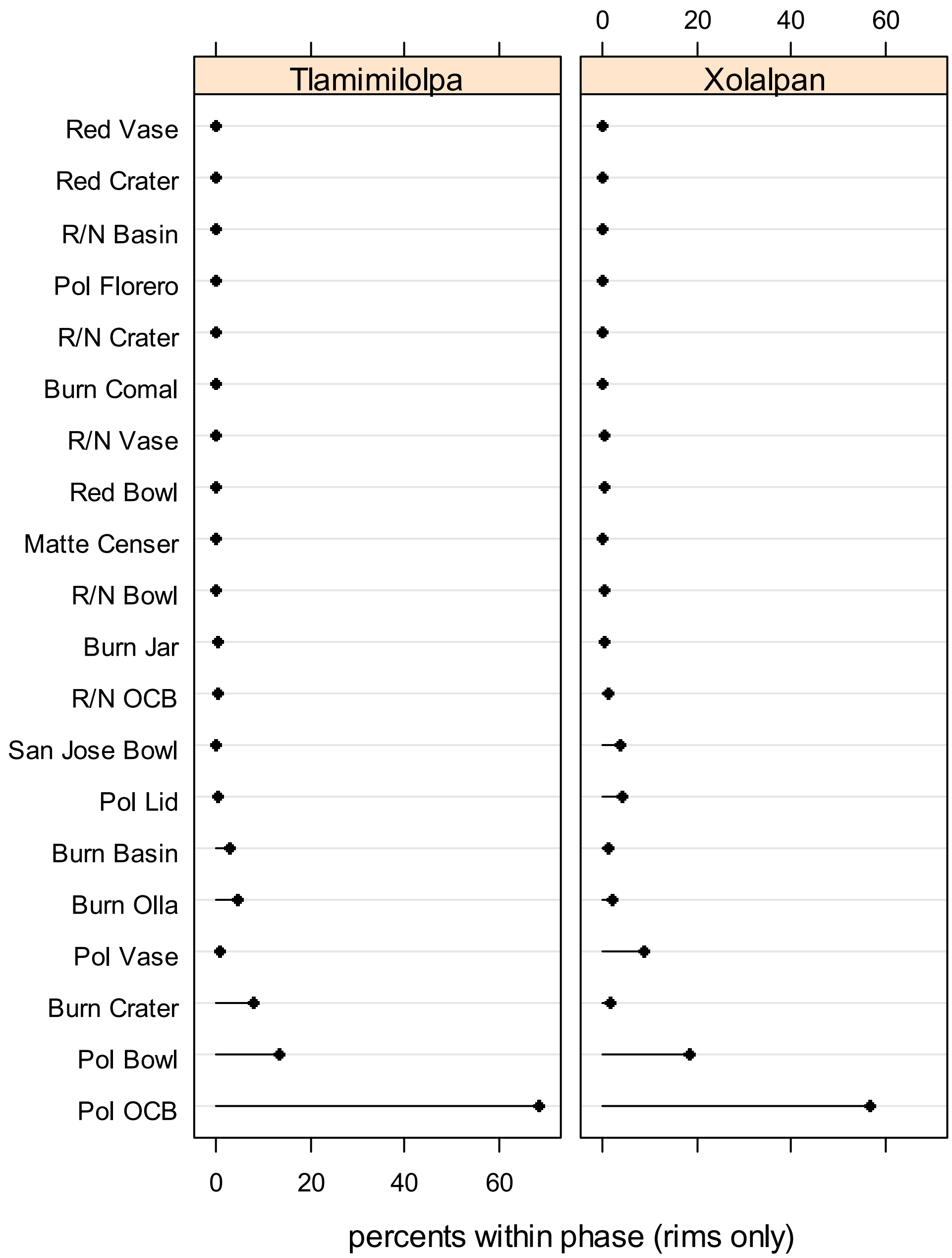


Figure 5.23. Total rim percents by vessel category for the Tlamimilolpa and Xolalpan phases. Percents are calculated on the basis of total rim counts within phases; only the 20 most common vessel categories (according to rim counts for both phases) are included.

suspicion is that large numbers of essentially unidentifiable body sherds were classified as ollas, even though they may have originally belonged to other forms made with similar pastes such as jars, craters, or scraped basins. During my sherd-by-sherd analysis I was able to correct some sherd classification errors, but in dubious cases I relied on the expertise of Sr. Zeferino Ortega. Ortega was trained by Dr. Evelyn Rattray in the TMP classificatory system and had ca. 30 years experience with Teotihuacan ceramic analysis prior to his recent retirement. Sr. Ortega conducted the broader classification analysis of the San José 520 ceramics with the assistance of trainee Heriberto Ortega, and this analysis formed the basis of the more detailed analysis of these collections that I conducted. The problem suggested by comparing olla total and rim counts will require further review of collections in the lab in the future. It also provides a good example of why rim data are preferable and more reliable for conducting quantitative analyses aimed at drawing conclusions about ceramic production activities at this locality.

Diachronic Differences in Ceramic Assemblages

As indicated in previous chapters, the main occupation at San José 520 is signaled by the very large proportions of ceramics dating to the Tlamimilolpa and Xolalpan phases (ca. AD 200-500), compared to proportions of ceramics representing both earlier and later periods (Figure 4.2, Table 6.1). The Tlamimilolpa phase is represented by 60 percent (n=9,398) of the total rims belonging to these two phases, while the Xolalpan phase is represented by only 40 percent (n=6,193). These differences in proportions could be explained by differences in occupation length within these phases, differing intensity of ceramic consumption or production activities, or a combination of both.

Both the Tlamimilolpa and Xolalpan phases are currently thought to represent similar lengths of time (ca. 150 years) in the Teotihuacan Period. These are, however, rough estimations that still require refinement on the basis of a larger number of radiocarbon dates from controlled excavations throughout the city. The small, but not negligible number of rims (n=66) from the Miccaotli phase (ca. AD 150-200), indicate that there was probably occupation at this locality prior to the Tlamimilolpa phase. It is difficult to evaluate, however, how an early, pre-Tlamimilolpa occupation might relate in economic terms to later pot-making activities. It is significant that 17 Miccaotli rims (35 sherds overall) show some evidence of misfiring. On this basis, I currently lean toward the idea that pot-making at this locality likely began during Miccaotli.

The later phase bracketing the main occupation, Metepec (ca. 500-600), is represented by only three rims (four sherds in total). Even though some of these sherds were recovered during excavation, the combined effect of modern agricultural activities and slope erosion in and around Lot 83 mean that these artifacts may be intrusive. There is also a possibility these few sherds are actually Xolalpan, attributed to the Metepec phase due to imperfections in our current classificatory practices. Although these sherds cannot be discounted as possible evidence of a very light occupation during the Metepec phase, it is likely that there was little or no Teotihuacan Period occupation beyond Xolalpan.

Pottery production was an economic activity of the San José 520 inhabitants in both phases. As will be more fully described below, there is a significant reduction in the proportion of possible wasters in the Xolalpan phase, which could be interpreted as a decrease in ceramic production activities in later times or as an improvement of firing procedures. However, as already discussed above, sherds exhibiting evidence for reuse as informal smoothing tools for ceramic manufacture and ceramic vessel bases reused as modeling platforms indicate a marked intensification in Xolalpan in comparison to the previous phase. The vessel category (outcurving bowls) considered as the main product made by San José 520 potters (see below) suggests that production outputs were still relatively high in Xolalpan. All this evidence suggests that labor investment in ceramic production activities was significant in both phases. The reduced proportion of ceramic materials attributed to the Xolalpan phase is likely the result of a shorter period of Xolalpan occupation, possibly combined with some reduction in the production of some ceramic categories, and better handling of firing techniques that allowed them to produce pots with lower breakage rates.

Types of Vessels Made at San José 520

The relative quantities of different kinds of pottery recovered from San José 520 vary strikingly (see Tables 5.1 and 5.2). Some of the observed variation may relate to the numbers, size, and consumption rate of different kinds of vessels used by the inhabitants of this site as part of their domestic economy. Some types of pottery, however, were recovered in such high relative proportions that another explanation needs to be sought.

Unusual counts or concentrations of sherds from particular wares or forms has sometimes been used in archaeology to support arguments for ceramic production activities, the logic being that their inflated numbers are due to high levels of manufacture, combined with high levels of breakage during firing or other prior stages of manufacture (Balkansky et al. 1997; Curet 1993; Hopkins 1995; Stark 1985; Sullivan 2006). What constitutes “unusual” in such an argument can be problematic; such levels can usually only be judged in a relative sense, in comparison to levels of consumption that can be characterized as “normal,” in part because they are associated with contexts in

Table 5.1. Tlamimilolpa total sherd and rim counts and percents summary.

Ware	Form	Total sherd counts	Total sherd percents	Rim counts	Rim percents
Burnished	Basin	321	0.54	270	2.87
Burnished	Comal	2	0.00	2	0.02
Burnished	Crater	2852	4.76	765	8.12
Burnished	Jar	1151	1.92	56	0.59
Burnished	NI	1	0.00	0	0.00
Burnished	Olla	31276	52.22	428	4.54
Dense	Bowl	1	0.00	1	0.01
Matte	Burner	1	0.00	1	0.01
Matte	Censer	16	0.03	10	0.11
Matte	Mini	3	0.01	1	0.01
Matte	Tecomate	1	0.00	0	0.00
NI	NI	1	0.00	0	0.00
Polished	Bowl	3093	5.16	1255	13.33
Polished	Florero	11	0.02	6	0.06
Polished	Lid	64	0.11	58	0.62
Polished	OCB	20433	34.11	6457	68.56
Polished	Vase	443	0.74	71	0.75
R/N	Basin	3	0.01	3	0.03
R/N	Bowl	13	0.02	6	0.06
R/N	Crater	15	0.03	3	0.03
R/N	Jar	41	0.07	0	0.00
R/N	OCB	107	0.18	21	0.22
R/N	Vase	29	0.05	2	0.02
Red	Bowl	11	0.02	2	0.02
Red	Crater	1	0.00	0	0.00
Red	Jar	5	0.01	0	0.00
Red	Vase	3	0.01	0	0.00
Total		59898	100	9418	100

Table 5.2. Xolalpan total sherd and rim counts and percents summary.

Ware	Form	Total sherd counts	Total sherd percents	Rim counts	Rim percents
Burnished	Basin	106	0.37	85	1.38
Burnished	Comal	9	0.03	8	0.13
Burnished	Crater	255	0.89	87	1.41
Burnished	Jar	560	1.95	33	0.54
Burnished	Ladle	1	0.00	1	0.02
Burnished	NI	2	0.01	0	0.00
Burnished	Olla	10027	34.95	117	1.90
Copa	Copa	2	0.01	2	0.03
Matte	BurCen	2	0.01	0	0.00
Matte	Censer	12	0.04	6	0.10
Matte	Cover	1	0.00	0	0.00
Matte	Mini	3	0.01	1	0.02
Polished	Bowl	2509	8.75	1127	18.29
Polished	Florero	4	0.01	1	0.02
Polished	Lid	250	0.87	240	3.89
Polished	NI	1	0.00	0	0.00
Polished	OCB	11334	39.51	3425	55.58
Polished	TapaCaja	1	0.00	1	0.02
Polished	Vase	2294	8.00	527	8.55
R/N	Basin	16	0.06	4	0.06
R/N	Bowl	116	0.40	24	0.39
R/N	Crater	56	0.20	5	0.08
R/N	Jar	102	0.36	1	0.02
R/N	NI	1	0.00	0	0.00
R/N	OCB	243	0.85	71	1.15
R/N	Vase	52	0.18	12	0.19
Red	Bowl	105	0.37	14	0.23
Red	Crater	28	0.10	7	0.11
Red	Jar	34	0.12	1	0.02
Red	Olla	1	0.00	1	0.02
Red	Vase	19	0.07	6	0.10
San Jose	Amphora	2	0.01	1	0.02
San Jose	Basin	15	0.05	5	0.08
San Jose	Bowl	302	1.05	214	3.47
San Jose	Crater	16	0.06	4	0.06
San Jose	Jar	7	0.02	2	0.03
San Jose	NI	15	0.05	9	0.15
San Jose	Olla	7	0.02	1	0.02
San Jose	PMP	167	0.58	118	1.91
San Jose	Tecomate	1	0.00	0	0.00
SMO	Amphora	1	0.00	0	0.00
SMO	Crater	6	0.02	1	0.02
Total		28686	100	6162	100

which other kinds of evidence for production are lacking. In other words, high counts or proportions of specific kinds of sherds need to be combined with other kinds of data. In such circumstances, they are highly useful kinds of evidence (Stark and Garraty 2004:126).

High Proportions of Vessel Types at San José 520

Rim percentages from all the different types of vessels represented in the collections indicate that outcurving bowls constitute a category that stands out for its high quantities both in Tlamimilolpa and Xolalpan ceramics (Figure 5.23, Tables 5.1 and 5.2). Outcurving bowls are broad, open vessels characterized by a flat base with outcurving walls and direct or everted rims (Figure 5.24). Outcurving bowls are the most common Polished Ware category within the Miccaotli to the Metepec phases of the Teotihuacan Period. Frequencies of outcurving bowls in the site core and non-producing residences fall between 13 percent in Early Tlamimilolpa, to 53 percent in Late Xolalpan (Rattray 2001:115, 117, 215, 249). At San José 520 outcurving bowls represent close to 70 percent of the Tlamimilolpa rims, and close to 60 percent of the total Xolalpan rims (Figure 5.23). These percentages contrast strongly with those from most of the other vessel categories, which are represented by much smaller proportions (Figure 5.23, Tables 5.1 and 5.2).

Ian Robertson (2001:182-183) suggested that high proportions of outcurving bowls are characteristically associated with high status localities in the ancient city, typically concentrated in and around the city core. Localities occupied by more low-status households, concentrated in the peripheral areas of the site, such as the one represented by San José 520, are characterized usually by low proportions of this type of vessel. Although with the present data it is not possible to estimate reliably the number of individuals or families who lived at this locality during the two chronological phases when occupation was most intense, the inferred size of the locality and the characteristics of the residential structures suggest that this settlement was inhabited by a small number of families of low social and/or wealth status. The proportions of outcurving bowls present at this locality exceed by far the amount of vessels that would be expected for consumption at this locality, regardless of the status of its occupants.

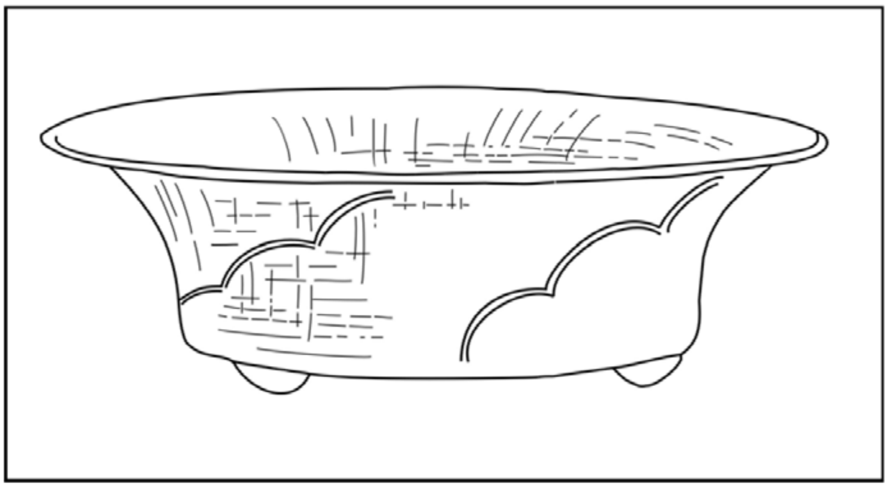


Figure 5.24. Drawing of a Polished outcurving bowl. This example exhibits the decorative element known as the "cloud motif," and nubbin supports (drawn after Sejourné 1966:93, Figure 77).

High Proportions of Defective Sherds at San José 520

High proportions of defective sherds (wasters) that belong to particular wares or types of vessel categories can also be indicative of the specific types of vessels made at a ceramic workshop. Data in Table 5.3 indicate that, within the Tlamimilolpa phase rims, outcurving bowls exhibit the largest counts of overfired sherds (n=1002). The same general statement can be made for Xolalpan (Table 5.4) where rim-based waster counts are higher for outcurving bowls (n=56) than for any other category. Counts of possible wasters have to be treated with caution, however, and are best considered in proportion to total counts of vessel categories. Moreover, in a ceramic workshop, broken sherds can be over-fired accidentally, while large fragments of broken pottery may be recycled as "kiln furniture," converted to apparent wasters as part of firing procedures. A ceramic category exhibiting both high proportions of possible wasters *and* unusually high proportions of sherds overall constitutes a stronger candidate as a product destined for distribution beyond the workshop.

Following this logic, Sullivan (2006) compared possible ceramic workshops within the Tlajinga district of Teotihuacan by plotting proportions of specific San Martín Orange Ware categories within larger Xolalpan/Metepec ceramic assemblages against proportions of wasters within these same categories (Sullivan 2002; 2006:29-30). Her objective was to contrast localities within the district in terms of differing levels of ceramic production and ultimately to determine which localities exhibited the strongest evidence of being sites of such manufacture.

I adopt a similar method here. Instead of contrasting multiple possible workshops in terms of single ceramic types, however, I use a similar kind of plot to contrast differing levels of possible manufacturing intensity or investment among multiple ceramic types recovered from a single locality. The goal in this study is to identify which types of pottery were most likely manufactured at Site San José 520.

Figures 5.25 and 5.26 shows such "production intensity" plots for the Tlamimilolpa and Xolalpan phases, respectively, based on data summarized in Tables 5.3 and 5.4. Note that the x-axis in these plots is based on a logarithmic scale; labeling on the upper x-axis shows counts, while the lower x-axis shows counts as proportions of phase totals—values on the lower scale can be directly compared between phases. Note also that the least-common categories (in this case, represented by less than 40 rim sherds) are entirely excluded from the plots. This is because of the high degree of uncertainty in estimating the proportion of overfired rims relative to total rim counts for such categories. This was assessed by calculating a 95% confidence interval for proportions, shown in these plots as vertical lines for the types that were retained. Types excluded exhibited such wide confidence intervals that they could not be usefully interpreted in terms of such a graph.

An important, general observation that applies to both Figures 5.25 and 5.26 is that there is much more variation along the log-scaled x-axis than on the y-axis. In other words, the relative quantities of different vessel categories range widely, while the proportions of wasters within categories are relatively consistent. This is especially the case for Tlamimilolpa, where all of the 95% confidence intervals for proportions of wasters overlap with one another; for categories with relatively narrow confidence intervals, the proportions of wasters vary between roughly 15 and 25 percent. In the Xolalpan data, all but two categories (which I will return to briefly below) show similar levels of consistency and overlap—but at lower values, well below 10 percent.

To reiterate, and in contrast to what was just said about waster proportions, the variation in relative quantity of rims measured by the y-axis Figures 5.25 and 5.26 supports contrasting interpretations of some of the ceramic categories. I turn to these below.

Polished Outcurving Bowls: Both figures highlight the remarkable quantity of outcurving bowl fragments recovered from San José 520, which in both Tlamimilolpa and Xolalpan constitute more than 50 percent of their respective ceramic assemblages. On this basis, outcurving bowls represent the best and strongest candidate for local production at the San José 520 ceramic workshop. This interpretation is consistent with and reinforced by the fact that fragments of at least three outcurving bowls were found in direct association with the open firing area AF6.

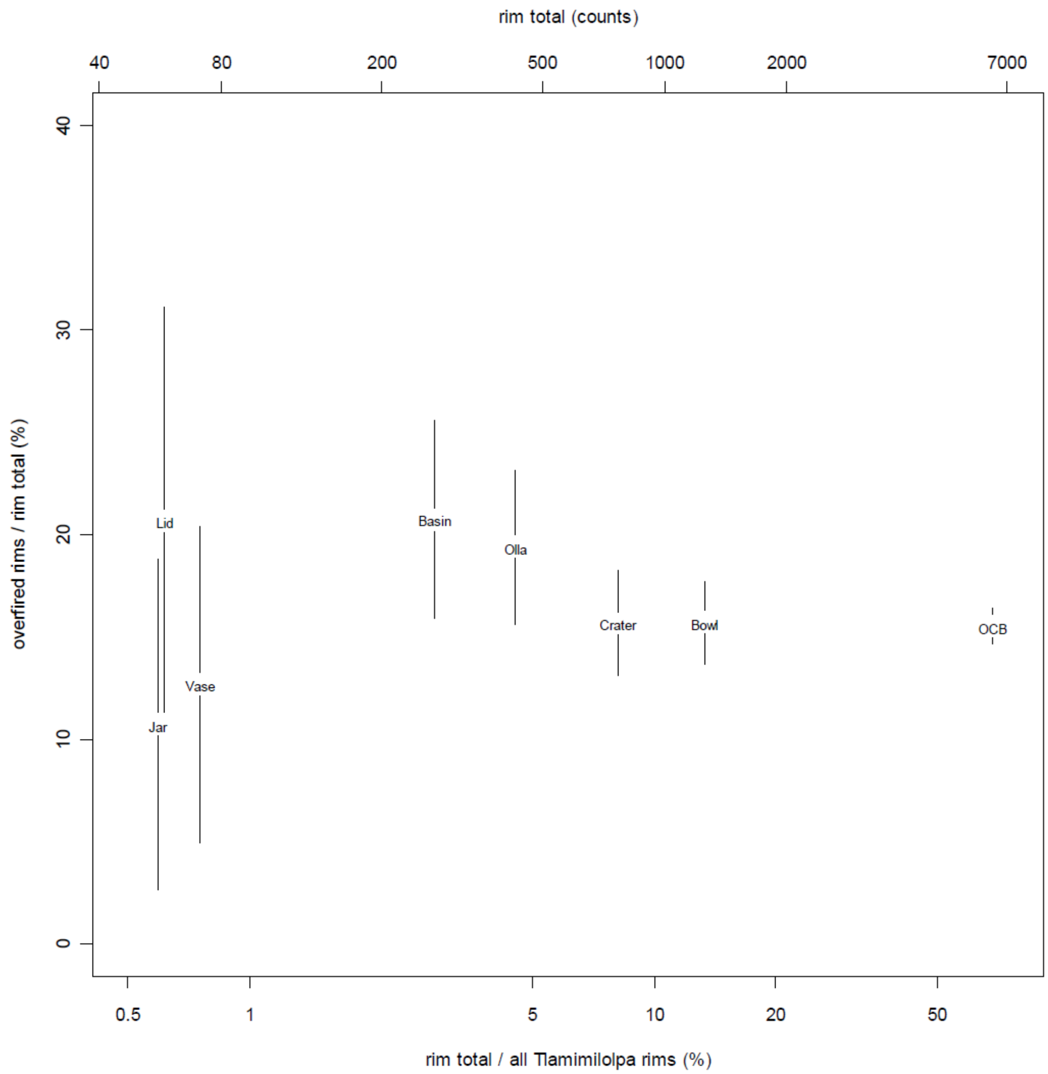


Figure 5.25. “Production intensity” plot for Tlamimilolpa showing (for individual categories) the ratio of overfired to total rims on the y-axis; and the ratio of total rims to all Tlamimilolpa rims on the x-axis. Note that the latter is plotted on a logarithmic scale. Vertical lines around points indicate 95% confidence intervals for the estimation of ratios captured by the y-axis. Only categories having more than 40 rim sherds are included.

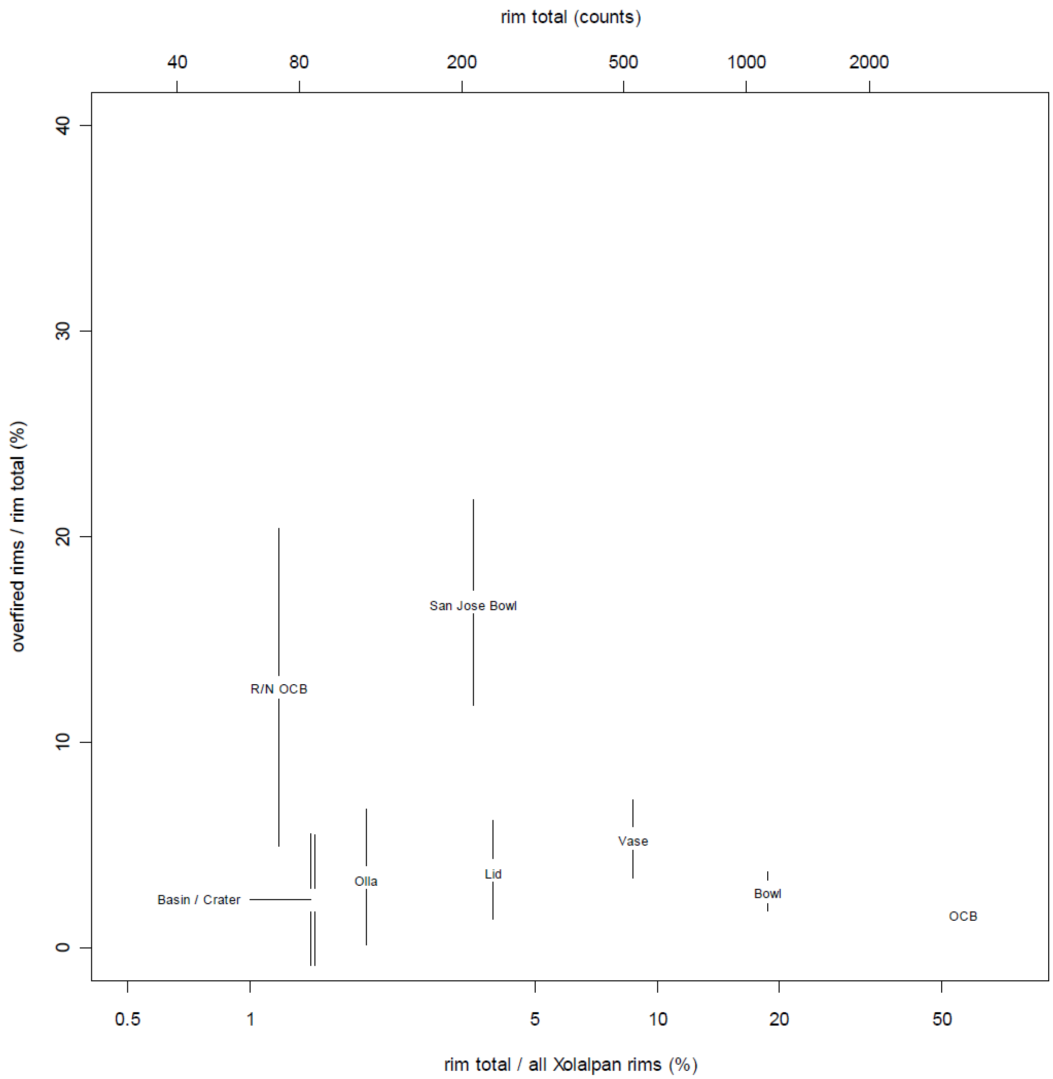


Figure 5.26. “Production intensity” plot for Xolalpan showing (for individual categories) the ratio of overfired to total rims on the y-axis; and the ratio of total rims to all Xolalpan rims on the x-axis. Note that the latter is plotted on a logarithmic scale. Vertical lines around points indicate 95% confidence intervals for the estimation of ratios captured by the y-axis. Only categories having more than 40 rim sherds are included.

Table 5.3. Tlamimilolpa counts, proportions, and standard errors of misfired sherds.

Ware	Form	Total sherd counts	Total overfired counts	Total overfired sherd proportions	Standard error	Total rim counts	Total overfired rim counts	Total overfired rim proportions	standard error
Red	Vase	3	1	0.333	0.272	0	0		
Red	Crater	1	0	0.000	0.000	0	0		
R/N	Basin	3	0	0.000	0.000	3	0	0.000	0.000
Polished	Florero	11	0	0.000	0.000	6	0	0.000	0.000
R/N	Crater	15	3	0.200	0.103	3	1	0.333	0.272
Burnished	Comal	2	1	0.500	0.354	2	1	0.500	0.354
R/N	Vase	29	8	0.276	0.083	2	1	0.500	0.354
Red	Bowl	11	1	0.091	0.087	2	1	0.500	0.354
Matte	Censer	16	0	0.000	0.000	10	0	0.000	0.000
R/N	Bowl	13	2	0.154	0.100	6	2	0.333	0.192
Burnished	Jar	1151	139	0.121	0.010	56	6	0.107	0.041
R/N	OCB	107	20	0.187	0.038	21	4	0.190	0.086
San Jose	Bowl	0	0			0	0		
Polished	Lid	64	13	0.203	0.050	58	12	0.207	0.053
Burnished	Basin	321	78	0.243	0.024	270	56	0.207	0.025
Burnished	Olla	31276	4978	0.159	0.002	428	83	0.194	0.019
Polished	Vase	443	46	0.104	0.014	71	9	0.127	0.039
Burnished	Crater	2852	350	0.123	0.006	765	120	0.157	0.013
Polished	Bowl	3093	452	0.146	0.006	1255	197	0.157	0.010
Polished	OCB	20433	3123	0.153	0.003	6457	1002	0.155	0.005

Table 5.4. Xolalpan counts, proportions and standard errors of misfired sherds.

Ware	Form	Total sherd counts	Total overfired counts	Total overfired sherd proportions	Standard error	Total rims counts	Total overfired rim counts	Total overfired rim proportions	Standard error
Red	Vase	19	2	0.105	0.070	6	1	0.167	0.152
Red	Crater	28	5	0.179	0.072	7	2	0.286	0.171
R/N	Basin	16	0	0.000	0.000	4	0	0.000	0.000
Pol	Florero	4	0	0.000	0.000	1	0	0.000	0.000
R/N	Crater	56	10	0.179	0.051	5	1	0.200	0.179
Burnished	Comal	9	0	0.000	0.000	8	0	0.000	0.000
R/N	Vase	52	2	0.038	0.027	12	0	0.000	0.000
Red	Bowl	105	4	0.038	0.019	14	0	0.000	0.000
Matte	Censer	12	2	0.167	0.108	6	0	0.000	0.000
R/N	Bowl	116	3	0.026	0.015	24	1	0.042	0.041
Burnished	Jar	560	12	0.021	0.006	33	1	0.030	0.030
R/N	OCB	243	24	0.099	0.019	71	9	0.127	0.039
San Jose	Bowl	302	49	0.162	0.021	214	36	0.168	0.026
Polished	Lid	250	9	0.036	0.012	240	9	0.038	0.012
Burnished	Basin	106	3	0.028	0.016	85	2	0.024	0.016
Burnished	Olla	10027	101	0.010	0.001	117	4	0.034	0.017
Polished	Vase	2294	96	0.042	0.004	527	28	0.053	0.010
Burnished	Crater	255	8	0.031	0.011	87	2	0.023	0.016
Polished	Bowl	2509	65	0.026	0.003	1127	31	0.028	0.005
Polished	OCB	11334	181	0.016	0.001	3425	56	0.016	0.002

The ceramic modeling platforms described above would be ideal tools to use in the manufacture of flat-based vessels such as outcurving bowls. Modeling platforms with small, raised ridges around the border might have been particularly useful for helping to form the acute angle that this type of vessel typically exhibits between the base and the lowest portion of the wall. As indicated above, obsidian blade fragments are thought to have been used by San José 520 potters as tools in ceramic production. Some of these blade fragments exhibit a distinctive kind of rounded, 90 degree corner, with heavy use-wear on the two edges that meet there. This kind of wear could have been produced by scraping, aimed at forming and refining the internal angle of outcurving bowls where the base joins the inner wall. Although not recorded systematically, a few examples observed during the analysis exhibited clear marks of scraping consistent with the use of such blades at this location.

The main use of outcurving bowls at Teotihuacan is presumed to have been as vessels for serving food (Sánchez Sánchez 2006:270; Robertson 2001:271). Outcurving bowls were also commonly used as funerary offerings in burials (Rattray 2001:115) and were sometimes used to contain the remains of fetus, neonatal, or infant individuals, as in the case in Burial 3 from San José 520 (see Chapters 4 and 6). These vessels were also used as parts of other ritual deposits, as I describe in Chapters 4 and 6.

As mentioned earlier outcurving bowls are the most common Polished Ware category within the Miccaotli to Metepec phases (see Rattray 2001:115, 117, 215, 249). In TMP surface collections, they constitute about 35 percent of all sherds attributed to the Tlamimilolpa phase and a little more than 10 percent of Xolalpan sherds. Distributional data indicate that, while outcurving bowls were widespread in the city and consumed by a range of status levels, collections showing the highest proportions are characteristic of residences occupied by high status households (Robertson 2001, and personal communication 2011). Specializing in the production of a type of vessel that was consumed at high levels within the city and that could therefore be exchanged for other products, was presumably a strategy attractive to San José 520 potters.

Ethnographic research indicates that even when potters become more specialized in particular wares or forms, they commonly make a broader range of functional vessel classes to fulfill their own needs and/or to diversify their sales (Deal 1998:53). The repertoire of vessels made of SMO for consumption at Tlajinga 33, i.e., in addition to the products (amphorae, craters and scraped basins) destined for broad consumption at the city, is an archaeological example of this (Sheehy 1992). At San José 520, other categories of vessels that, in addition to outcurving bowls, might have been locally manufactured are indicated in part by the magnitude of rim counts and proportions, but above all by waster ratios that are about as high or higher than those exhibited by outcurving bowls (Figures 5.25 and 5.26), as well as considerations regarding their functions. These vessel categories include bowls, vases, vase lids, craters, ollas, scraped basins, and possibly jars. Their scales of production would have been significantly smaller than outcurving bowls, and the aim in producing these vessel types might have been largely to serve domestic needs of potters' households; nevertheless, there is no reason on present evidence to exclude at least some small scale exchange to external consumers. Some categories may also be implicated in diachronic production changes between Tlamimilolpa and Xolalpan, as described below.

Polished Bowls: Polished bowl (see Rattray 2001:115) is a category of vessel that is used in the TMP classificatory system to describe a variety of small to medium-size open and somewhat shallow containers, likely used to serve food (Robertson 2001:271). They are the second most common type of vessel at San José 520 (Figure 5.23), although their proportion is significantly less than outcurving bowls. Bowls constitute ca. 13 percent of all rims in Tlamimilolpa pottery, and ca. 18 percent in Xolalpan, suggesting a slight increase in production during Xolalpan. Approximately 13 percent of Tlamimilolpa Polished bowl rims are overfired (Table 5.3), while only around 3 percent of rims of the same category are overfired in Xolalpan (Table 5.4). This may be indicative of an important improvement in firing techniques over time.

Bowls are also vessels quite broadly used throughout the city, but are much less common than outcurving bowls. They constitute about 2.5 percent of Tlamimilolpa sherds in the TMP surface collections, and a little less than one percent in Xolalpan (Ian G. Robertson, personal communication 2011). It is possible that some of the bowls recovered from San José 520 were used for domestic consumption there, but likely others would have been destined for trade and external use. A few samples of bowls were found among the objects associated with Burial 2, and three small bowls (Figure 4.18) were found within a small pit recorded as AF3 (see Chapter 4), associated with the residential structure (AF2) where the burials were also uncovered.

Vase and Vase Lids: Vases and vase lids make up only a low proportion of rims in the San José 520 ceramic assemblage; vases constitute only one percent of the Tlamimilolpa rims (n= 71), but they reach to ca. 10 percent in Xolalpan (n=527). Lid rims exhibit percents similar to vases in Tlamimilolpa (n=58) and increase to ca. five percent in Xolalpan (n=240). Nonetheless, these are ceramic items that we would not expect to find in abundance in the ceramic inventories of low status residences such as those inferred for this locality. Although the evidence is not nearly as strong as for outcurving bowls, it suggests the possibility that some production of this type of vessel may have taken place at San José 520, particularly in Xolalpan times, with production being largely aimed at consumption somewhere else in the city. Complementary evidence comes from the fragment of a mold used to make the *adorno* decorations often present in some Xolalpan vases was found at this locality, mentioned above.

Thirteen percent of the Tlamimilolpa vase rims (n=9) and 21 percent of the lids (n=12) are possible wasters; comparable values for the Xolalpan phase drop to six percent for vases (n=28) and four percent for lids (n=9). Although the proportion of possible wasters is significantly reduced in Xolalpan relative to Tlamimilolpa, the proportion of both vases and lids overall increases, in the case of vases about ten times (see Figures 5.25 and 5.26). This coincides with a slight reduction in the proportion of outcurving bowls. This suggests that the San José 520 potters may have diversified their production over time, investing more labor in the production of vases in Xolalpan than they had in the Tlamimilolpa phase. It also suggests that they likely had a better control of the technology of manufacture (i.e., firing) which resulted in a reduction of overfired vessels that would have been broken and/or discarded at the site.

In addition to possible vase wasters, and above all large proportions of Xolalpan vase rims, parts of two broken vases (one a miniature) were found among ceramic fragments in direct association with the firing location. Although the fragments did not exhibit evidence of misfiring, they may be vessels broken during manufacture. I note that the fragments of one of these vases (the one that is not a miniature) represent most of the vessel's body (Figure 5.27), but the entire base is missing—perhaps it was recycled. Nine percent (n=17) of the bases of vessels thought to be recycled as ceramic modeling platforms were identified as belonging to vases, and 82 percent of these belong to the Xolalpan phase.

Figure 5.27. Vase with base removed, found in firing area AE6.

Vases are thought to have served roles in social display and ritual activities; they were commonly placed in funerary contexts at apartment compounds in the Teotihuacan city (see Chapter 6 for a more detail description). Occasionally burials were also deposited inside such vessels. Funerary evidence at San José 520 indicates that vases were considered valued objects, suitable for inclusion as mortuary offerings. As more fully described in Chapter 6, individuals from Burial 2 were associated with a small, incomplete vase—possibly broken during one of the multiple times that the funerary pit was reopened, but conceivably incomplete when initially deposited. The upper part of its wall may have been intentionally cut off and removed, although this is not yet certain. Importantly, this vessel contained large amounts of red pigment. In addition to this vase, the same funerary pit contained a recycled, direct-rim cylinder tripod with hollow supports, exhibiting intentionally cut walls (see Figure 6.15). The cylinder tripod, although clearly recycled, does not appear to belong to the category of flat bases reused as ceramic modeling platforms. The walls of this vessel were cut horizontally around its circumference at a height of approximately 4 cm above the base, and the supports were left in place. Other examples of bases interpreted as having been recycled to serve as ceramic modeling platforms (including some found in the same context) have border ridges formed by vertical walls cut to less than 1 cm in height (or removed almost entirely), and do not retain supports. It is possible that part of the upper wall of this vase may have broken during firing and the vase was rescued and reused. It is also possible that the vessel was acquired or scavenged from some other locality—taken, repaired, and reused as a funerary object because of its perceived high value. If the two vases do indeed represent vessels with intentionally cut walls—that is, vases recycled through some considerable effort—this suggests that even if vases were sometimes made at this workshop, they were valuable enough that complete products were normally traded externally, for profit, rather than retained for local use. Data from the TMP surface collection indicates that vases were a ceramic category that increased in use, and presumably in value, across these two phases. Rattray (2001:115) suggests that they exist at a proportion of two to three percent among Early Tlamimilolpa ceramics for the entire city, increasing to ca. six percent in Late Tlamimilolpa, and 22 percent for the Xolalpan phase.

Utilitarian Vessels: Ollas, Craters, Basins: Utilitarian vessels such as Burnished basins, ollas, and craters, thought to be used for food preparation and storage, are represented at San José 520 by low rim proportions in Tlamimilolpa, which become even lower in the Xolalpan phase (Tables 5.1 and 5.2). Ollas constitute five percent of Tlamimilolpa rims; craters represent eight percent; and scraped basins are represented by about three percent.

The proportion of ollas dropped to two percent in the Xolalpan collection, and scraped basins declined to one percent.

Potters may be able to use their labor, specialized skills and access to raw materials to satisfy their own domestic needs for ceramic vessels. It is quite conceivable that the residents of San José 520, while concentrating large-scale production on outcurving bowls (a vessel they might have used only in small numbers themselves), also made a range of pots, such as ollas, craters and basins, to fulfill domestic everyday needs. It is unlikely that potters already facing economic constraints would try to acquire elsewhere vessels that they could make themselves. Approximately 15 to 20 percent of the Tlamimilolpa crater, olla and basin rims were overfired (Table 5.3), while only around two (2) to three (3) percent of rims of the same categories are overfired in Xolalpan (Table 5.4). A number of olla sherds were also found in direct association with the open firing area uncovered by our excavations.

The relatively low emphasis placed on production of these types of cooking and storing vessels (in comparison to outcurving bowls, for example), is consistent with the fact that at least two workshops, specializing in the manufacture of similar domestic ware and only 1 to 2 km away, would have represented strong and probably insurmountable competition. Krotser (1987:421) suggests that a number of the Tlajinga district workshops started to produce a variety of wares during the Tlamimilolpa phase, some specializing in the manufacture of *comales.* Although she does not specify what wares or other vessel forms were being made in the Tlajinga district during Tlamimilolpa, surface data suggest an important concentration of Burnished cazuela/craters and ollas there during this period (Ian G. Robertson, communication 2010). Krotser (1987:422) also argues for a cluster of Tlamimilolpa workshops located in S2E6 and S3E6 (north of San

José 520) specializing in craters and ollas. While the current data for Tlamimilolpa are not conclusive, it is clear that specialized pot-making at Tlajinga intensified during the Xolalpan phase. Production centered on the production of various domestic vessels belonging to San Martín Orange ware. If the San José 520 potters had tried to specialize in making these or functionally similar forms during Xolalpan they probably would have been outcompeted by Tlajinga district potters, who were definitely more numerous and whose work was presumably organized and coordinated at a higher level.

Other factors may have also been important in limiting production by San José 520 potters of cooking and storage vessels. Compared to smaller size vessels such as bowls, large vessels require greater inputs of labor during manufacture, larger amounts of fuel during firing, and impose greater transportation costs on those who put them into the hands of consumers. As already mentioned, despite the clear evidence of ceramic production at this locality, very little evidence for charred wood was noted, even within the feature interpreted as a firing area. It is quite likely that firing of ceramic vessels emphasized relatively low-quality fuels such as maize stalks and dried maguey fronds (see Adriano-Morán et al. 2008 for a review of issues concerning fuel consumption at Teotihuacan). Focusing on the production of relatively small vessels, such as outcurving bowls, would have made the most of scarce fuel and inherent limits to firing temperatures.

As noted above, proportions of these three categories of vessels (ollas, craters and basins) indicate a reduction of both rims and wasters in the Xolalpan assemblage compared to Tlamimilolpa. While San José 520 potters decreased their production of cooking and storing vessels, it is interesting that they did not consume products made by Tlajinga potters. At San José 520 only eight sherds of San Martín Orange (two of which were rims) were identified within all surface and excavated ceramics combined, suggesting that the potters' domestic ceramic needs were largely satisfied by cooking and storing vessels made in their own workshop. This situation contrasts with the generally high levels of consumption of San Martín Orange by most of the city's population, as this ware appears to have been widely distributed throughout the rest of the city during the Xolalpan and Metepec phases, including its "marginal" areas (Rattray 2001:121). The overall proportion of Xolalpan San Martín Orange throughout the urban center and relative to other Xolalpan pottery is ca. 30 percent (Ian G. Robertson, personal communication 2011). Production of cooking and storage vessels at San José 520 appears to have become less intensive during the Xolalpan phase, a time when mass production of cooking and storing vessels became particularly strong in the Tlajinga district. This reduction may mean that some of these vessels had, in fact, been made for distribution beyond San José 520 during the Tlamimilolpa phase, but that competition with Tlajinga made this a less viable option for the San José potters during Xolalpan.

If the types of ceramic artifacts that I described above as San José bowls are, in fact, basal molds for shaping pottery vessels, they would have been particularly useful in the formation of craters and possibly ollas. Initial classification by Zeferino Ortega designated them as "Tlajinga bowls" which he attributed (I think by convention) to the Xolalpan phase. In my opinion, however, they are made of a paste that is distinct from San Martín Orange and should be dated independently. As explained previously, disturbance of the subsoil at San José 520 by modern agriculture precludes dating by stratigraphic level. Unfortunately, San José bowls and other objects made of the same fabric will remain essentially unphased until further information is obtained, possibly by excavations in other parts of this locality, or perhaps by more detailed, comparative examination of ceramic pastes. For the purposes of the current study San José bowls were considered as belonging to the Xolalpan phase. However, if the San José bowls are related to crater and olla production at this locality, and if production of these forms was indeed more intense during Tlamimilolpa, this would favor the idea that some or perhaps even most of the San José bowls were produced during this earlier phase of occupation.

Storm God Vessels: Effigy vessels with modeled and appliqué decorations representing the facial, body, and symbolic elements of the Teotihuacan Storm God (Figure 6.18) are commonly known as "Tlaloc" jars or vessels (see Chapter 6). However, because they actually represent the Teotihuacan Storm God, and not the "Tlaloc" of post-Teotihuacan periods I refer to them in this study as Storm God jars or Storm God vessels. Although not represented by rim counts, a total of 93 Storm God vessel fragments were found during our intensive surface collection (n=32), and excavations (n=61). These were identified by characteristic morphological features which include eyes, fangs, lightning bolts, or crest decorations (see Figure 6.20). Most were recovered as very small fragments, and, importantly, none were found in association with burials or ritual contexts. A small number of Storm God vessel sherds found at this locality exhibit evidence of misfiring (n=16, or 17 percent), which suggests that potters from this workshop made these vessels. As will be more fully described in Chapter 6, Storm God jars are ritual vessels common in the deposits of administrative and elite ritual contexts (Bracamontes Quintana 2002; Cowgill 2002). They are rarely found in apartment compounds, but some have been found in burials of intermediate status (e.g., at 22:N1W6 [Cuartel Militar]; George L. Cowgill, personal communication 2010). Storm god vessels are not typically associated with low-status settlements like San José 520, and much less in large numbers. Examples were likely produced at this workshop for exchange.

San José Bowls, and Incurving Bowls or Tecomates: As described above, excavations at San José 520 recovered a total of 307 fragments of a type of bowl suspected to be a basal mold, made of a paste similar to that used to make other potters' tools such as lunates and ceramic modeling platforms. Seventy percent of the San José bowls identified are rim fragments, and 19 percent exhibit firing defects. Proportions of possible wasters, formal similarity with Tlajinga bowls, and the fact that these are unlike other kinds of bowls used more broadly at Teotihuacan suggest that they were made in this workshop for local use, likely as basal molds for ceramic production,. Their possible use as serving bowls is still a possibility, however, and should not be completely discounted until further analyses are conducted. Fragments of seven San José bowls were also found with other ceramic fragments in direct association with the open firing area AE6, likely as part of kiln furniture.

Made of the same paste as San José bowls, a number of small, crude incurving bowls (or *tecomates*) were also recovered, mainly from funerary contexts (see Figure 6.11). A fragment of one of these objects was also found directly associated with firing area AE6. I refer to these vessels as San José 520 incurving bowls, to differentiate them from the few examples of Dense Ware incurving bowls also found at this locality (see Chapter 6). At least 13 San José 520 incurving bowls were deposited with other vessels and potters' tools in Burial 1; a fragment of one other was found in Burial 2. The San José 520 incurving bowls exhibit sizes ranging in height from 3 to 4 cm, with maximum diameters between 5.0 and 6.5 cm. Rim diameters are between 4 and 5.5 cm.

I believe that these incurving bowls may represent copies made by San José 520 potters of a kind of incurving bowl mostly made of Dense Ware, which are also found in funerary contexts in other localities in the city (see Chapter 6). A number of incurving bowls, slightly larger and made of SMO, were found in Burial 56 at Tlajinga 33 (Cabrera Cortés 2007). The latter also appear to represent copies of the Dense Ware incurving bowls, but they are more carefully made than the examples from San José 520 and some are decorated. Although not made with Dense Ware, incurving bowls are also reported at Axotlan (Clayton 2007:15, Figure 10; García Chávez et al. 2005:505, Foto 6), and Azcapotzalco (Díaz Oyarzabal 1991:25-27, Núm. de Catálogo 9-631, 9-627, and 9-630), hinterland sites under the control of Teotihuacan. In contrast to San José 520, the examples from Axotlan exhibit punctate-decorated bodies, and some have supports and lids.

Rattray (1988:255) illustrates a ceramic object similar to the crude San José incurving bowls among the ceramic tools reported from Tlajinga 33, which she identifies as a possible *kabal*, a rotating tray to support ceramic vessels during manufacture (Foster 1959). The object illustrated by Rattray does not resemble the *kabal* descriptions provided by Ralph and Arnold (1988), but looks almost identical to the incurving bowls found at San José 520. I think that if these small incurving bowls were pottery making tools, they would (like lunates and modeling platforms) have been more abundantly represented among the collections and would have been found in a range of contexts rather than almost exclusively among mortuary remains. If this type of incurving bowl were actually used as a kind of *kabal*, one would expect that at least some would exhibit wear patterns that would result from a rotary motion. None of the San José 520 incurving bowls exhibited any type of use wear.

Other Ceramic Products Made at San José 520

While vessels were the main focus of ceramic production activities at San José 520, potters living there also made specialized tools used in ceramic production. These include lunates, ceramic modeling platforms, and San José Bowls—assuming the latter were actually used as basal molds for pot-making. All of these have been described above.

In addition to vessels and tools, evidence from some of the clay figurines also indicates that, although not on a large scale, some types of figurines may also have been made at this locality. This evidence consists of the presence of some misfired figurines, above all heads of solid anthropomorphic figurines that exhibit deformities, possibly caused during the firing process (Figure 5.28). The limbs of articulated ("puppet") figurines at Teotihuacan have small perforations used to fasten them to the torso by means of a cord. Several examples from San José 520 exhibit perforations that appear to have been sealed during the firing process (Figure 5.28), and were apparently discarded because they could no longer be used. The recovery of a fragment of a mold to make the type of heads associated with articulated figurines was mentioned above.

The lack of other identifiable figurine molds suggests that hand-modeled figurines were mostly made in this workshop. Of particular interest is the fact that only the limbs and the mold of a type of head associated with articulated figurines were recovered from our operations at San José 520, and no torsos of this type of figurine were found. However, our excavations left large portions of the hamlet unsampled, and it is possible that articulated torsos exist there and that we simply failed to detect examples. An alternative possibility, although not very likely due to the small scale of figurine production, is that figurine limbs and heads were destined for consumption outside the locality, where they could have been fastened to torsos made elsewhere.

Figure 5.28. Examples of defective figurines. Left, deformed face (two views); right, limb of a "Puppet" or Articulated figurine with incomplete perforation.

Interpreting Production Activities at San José 520

Scale of Production

According to models of production drawn in part from ethnographic research, ceramic production that is organized as a "workshop industry" (Arnold III 1991:93-94; Sinopoli 1991:99-100; van der Leeuw 1977) is typified by an economy where revenues derived from ceramic production are the main source of maintenance for the potters and their families. Products are made with the intention of supplying a relatively large number of consumers outside the workshop, and potters often specialize in the manufacture of a relatively limited range of categories of wares or vessel forms (Arnold III 1991:93). It is thought that one of the characteristics of this type of workshop is the existence of full-time specialists, where men are the main participants in the production activities, although other members of their families also carry out other simultaneous and related tasks (Sinopoli 1991:100). Key features in this level of production are an increase in output and in the scale and efficiency of production, often involving the adoption of technologies that help to attain more efficiency (van der Leeuw 1977). Pottery production is still made within household areas (patios), and larger amounts of discarded tools can be expected with a larger pool of potters involved in manufacturing activities. Although typologies of modes of production should not be applied inflexibly, since human behavior is dynamic, evidence from San José 520 appears to fit this description of this type of ceramic production relatively well.

It has been argued (Arnold III et al. 1993; Costin 1991:15) that the primary factor in determining the scale of production is efficiency, and that the use of specialized tools is evidence of decisions aimed towards adopting more efficient production methods. It is difficult to characterize in detail the scale at which San José 520 potters were making pottery, due in part to our inability to determine rates of local consumption, length of occupations, and household sizes. Nevertheless, the evidence presented above indicates that the potters from this locality produced and used a range of specialized tools (lunates, ceramic modeling platforms, possible basal molds, ceramic sherd-scrapers, and obsidian blades) for the purpose of making pottery more efficiently. and perhaps at a greater scale of production than would be possible without them.

The evidence presented above indicates that, although San José 520 potters made a variety of vessels, tools, and figurines belonging to various types of ceramic wares, they focused their production on the manufacture of Polished Ware, with a particular specialization in outcurving bowls; other forms such as bowls, vases, vase lids, Storm God vessels, and some jars were also made at smaller production scales.

These data also indicate that, while some products made at this locality were destined for consumption among San José 520 inhabitants, potters from this workshop focused their ceramic production on vessels destined for broader exchange. Above all, outcurving bowls were made at a scale consistent with the intention of supplying a relatively large number of consumers outside the workshop.

Unlike ethnographic studies where direct observations of the time allocated for ceramic production activities can be made, archaeological studies usually can only assess the intensity of production in the most general of terms. While evidence about this is not as clear as other aspects of ceramic production at this locality, it is reasonable to suggest that San José 520 potters were full-time specialists for the parts of the year in which they relied on the exchange of ceramic products to maintain their households. They may have supplemented pot making with other economic activities, perhaps on a seasonal basis (see below). This may fit well with what Ken Hirth (2009:21) has described as "intermittent crafting." Arguably, a more precise term in this particular context would be "seasonal specialization," but the day-to-day combination of crafting with other economic pursuits accommodated by Hirth's concept was probably also important here. As explained in more detail in Chapter 6, San José 520 inhabitants did not appear to have had access to high-quality or well-watered agricultural soils on which to farm. Results from paleobotanical analyses (McClung de Tapia and Martínez Yrizar 2007) carried out on sediment samples from various contexts at San José 520 did not provide evidence of any cultigens (e.g., maize) at this location. This negative evidence may be consistent with analyses of ground-stone tools recovered from surface (n=2) and excavated (n=4) contexts. The small number of *metate* (n=1) and *mano* (n=6) fragments found at this locality, and above all their physical and grinding characteristics imply that very little maize grinding was done at San José 520 (Biskowski and Jones 2009). According to Martin Biskowski (personal communication 2010) the single *metate* fragment was made of very dense stone, not very suitable for maize grinding. Its form suggests that it came from a small *metate*, which is more compatible with food processing at a relatively small scale. Finally, the original *metate* was trough-shaped, a form which generally has significantly less potential for productive output than open faced *metates* (see Adams 1993). Trough-shaped *metates* are a fairly rare form during the Teotihuacan Period (Martin Biskowski, personal communication 2010).

Regarding the *manos*, two of the mid-section fragments suggest a form pertaining to Aztec or later times (Martin Biskowski, personal communication 2010). While the other three midsection fragments plausibly do represent tools used for maize-grinding during the Teotihuacan Period, they were small fragments unlikely to have been broken by accident. They may therefore have been objects brought in from somewhere else to be reworked or recycled (Martin Biskowski, personal communication 2010), perhaps to be used to pound clay.

The overall implication of these observations is that much or even most of the maize consumed by the San José 520 residents may have been purchased elsewhere in an at least partially pre-prepared form. A relatively large number of obsidian projectile points recovered from San José 520 (see Chapter 6 for more detailed description) suggests the possibility that people from this locality may have engaged in hunting activities to supplement their ceramic production endeavors. The paucity of animal bone recovered by excavation, however, indicates that any meat obtained was not retained for local domestic consumption and may have been converted through trade into larger amounts of less valued foods, likely including maize-products. Maize-products (e.g., tamales, tortillas, atole, etc.), of course, may have been regularly obtained by trading ceramic vessels made by the hamlet's potting residents.

Evidence of Gender Association with Pottery Production

Ethnographic research indicates that pottery manufacture at the level of household production or household industry is mainly carried out by women, but when this production constitutes the main source of maintenance of potters' households, males become the main agents of the activity (Arnold III 1991; van der Leeuw 1977). Funerary deposits from San José 520 provide a hint regarding gender roles associated with ceramic production activities, but are not conclusive. Associated objects placed with the human remains in the burials uncovered by our excavations indicate the participation of males in ceramic production, but do not necessarily preclude the role of women in this work. Burial 1 contains an adult male, who in addition to a large number of vessels was buried with a smooth calcite stone that probably had been used as a polishing tool for making pottery. Burial 2 included a number of pottery tools including lunates, recycled bases of vessels presumably used as ceramic modeling platforms, San José bowls thought to have been possible basal molds, and fired clumps of clay. Burial 2, however, represents a multiple interment where both adult males and females were deposited, and, due to the multiple times that the funerary pit was reopened to add and/or rearrange bodies, it is not possible to associate any of these tools with particular individuals. These tools could have been associated with both men and women.

Spatial Organization

Due to the nature of construction materials of the insubstantial structures from San José 520, problems of preservation, and alterations of the subsurface deposits caused by modern agricultural practices, any characterization of the organization of space at this settlement is necessarily limited. Nonetheless, the uncovered remains provide a few clues regarding the possible organization of space in relation to ceramic production activities.

The location of the firing facility AF6 relative to the insubstantial residential structure AF2 indicates that pottery was probably fired in open areas away from residential structures, but not necessarily very far from them. Given the small size of the insubstantial residential structures at this locality (e.g., AF2, see Chapter 4), it is conceivable that activities such as vessel formation and drying may have taken place in open spaces, or in structurally simple *ramadas.* As indicated in Chapter 4, structure AF7 may have not been a residential structure, but possibly a *ramada* where some of the vessel formation activities could have taken place.

The distributional patterns of ceramic production tools (Figures 5.3) and concentrations of the main products made at this locality, such as outcurving bowls (Figures 5.29 and 5.30), suggest high concentration of artifacts in the northeastern part of Lot 83, immediately to the east of AF7. It is possible that such concentrations may reflect dump areas. Our excavation only reached the edge of this concentration, and to verify possible middens in this part of the settlement, more extensive, future excavations will be required.

These maps (and Figure 5.3) integrate surface collection with subsurface excavation data. In order to compare artifact counts recovered from excavation units in different parts of the site, it was necessary to standardize them by the volume of corresponding units and levels. Surface counts, on the other hand, are associated by definition with a volume of ‘zero.’ Regressing surface counts against volume-standardized excavation counts (for parts of the site that were sampled by both methods) however, showed that comparability between the two kinds of data were maximized if surface data were volume-standardized as if they had been recovered from an excavation level 10 cm in thickness. (This suggests that the materials on the surface have been concentrated by a certain amount of soil deflation.) After making this conversion, standardized counts were gridded and mapped as contours in the software package Surfer.

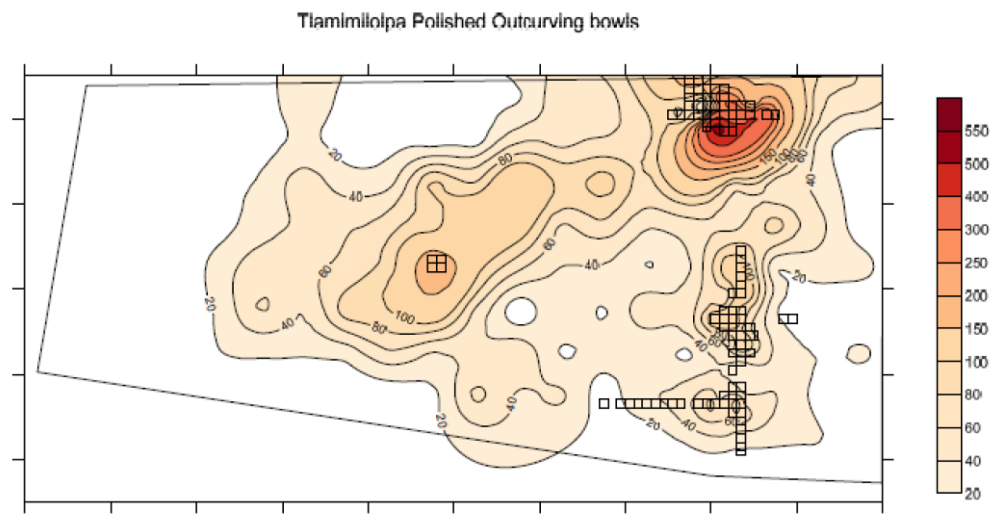


Figure 5.29. Distribution of Tlamimilolpa Phase Polished outcurving bowls in Lot 83.

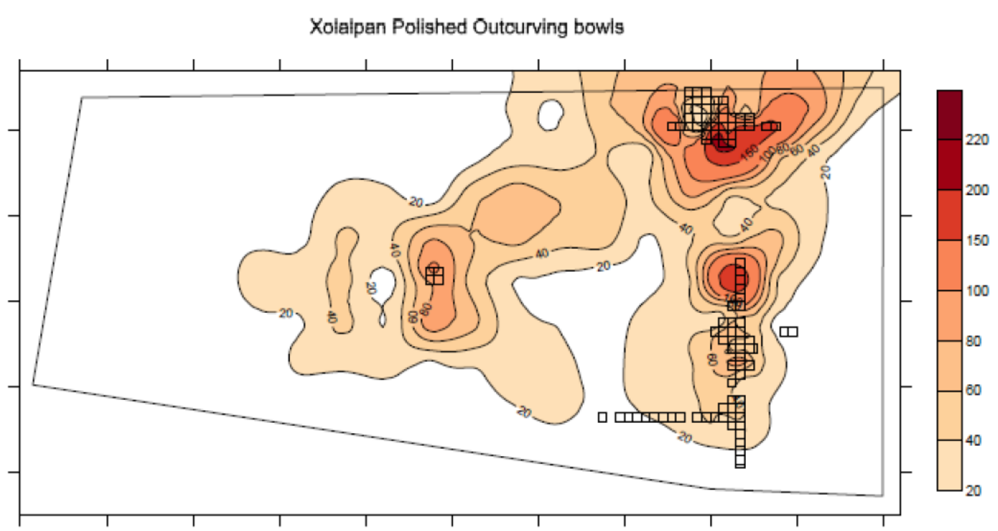


Figure 5.30. Distribution of Xolalpan Phase Polished outcurving bowls in Lot 83.

CHAPTER 6: MATERIAL EVIDENCE ABOUT IDENTITY AND STATUS OF THE SAN JOSE 520 INHABITANTS

This chapter presents various lines of empirical evidence, and addresses issues related to the identity and status of the residents of San José 520. Results from oxygen isotope analysis suggest they may have been immigrants. Dating from ceramic and radiocarbon analyses suggest that they arrived at Teotihuacan, or settled at this locality, midway in the city's history. In this chapter I present data that will help in evaluating the degree to which these people were socially and/or economically integrated into Teotihuacan society. Characteristics of housing, ritual practices, and access to local and imported goods described here establish the background for evaluating, in the following chapter, the degree of social integration of these residents with people and economies based primarily in the core of the urban center. Aspects of Teotihuacan society, such as ethnicity, socio-economic status, and religious and ritual practices provide contexts for comparison using evidence from San José 520.

Late Immigrants

Ceramic and Radiocarbon Chronology

Data from surface and excavated ceramics suggest that the earliest intensive occupation at San José 520 dates to the Tlamimilolpa phase (ca. A.D. 200 to 350), with occupation continuing into the subsequent Xolalpan phase (ca. AD 350 to 500). Ceramics from previous or later phases of the Teotihuacan Period, and from periods post-dating the Teotihuacan Period, were very scarce in the excavated deposits and in surface collections (see Table 6.1), and all together they represent around one percent of the entire collection. The collections also contain some local and foreign ceramics that, while dating to the Teotihuacan Period, cannot be allocated to specific phases. The unphased local ceramics are mainly represented by Matte Ware (see Chapter 5), while the unphased foreign pottery mainly consists of Thin Orange Ware, along with smaller quantities of Granular Ware and a few sherds of Oaxacan and Gulf ceramics. These unphased ceramics from the Teotihuacan Period represent between one and two percent of the entire collection (Table 6.1).

Table 6.1 Total counts and percentages of sherds and rim sherds, broken down by phase and (for unphased specimens) category.

		Category	Rim count	Rim %	All sherds count	All sherds %
Post-Teotihuacan Period						
	Modern/Colonial		2	0.01	4	0.00
	Aztec		146	0.91	1188	1.31
	Mazapan		8	0.05	17	0.02
	Coyotlatelco		19	0.12	55	0.06
Teotihuacan Period						
	Metepec		3	0.02	4	0.00
	Xolalpan		6162	38.34	28686	31.51
	Tlamimilolpa		9418	58.60	59898	65.80
	Miccaotli		66	0.41	130	0.14
	Tzacualli		6	0.04	10	0.01
unphased						
	local		32	0.20	54	0.06
	foreign	Thin Orange	202	1.26	825	0.91
		Granular	6	0.04	150	0.16
		Other	2	0.01	12	0.01
Total			16072	100	91033	100

It is uncertain whether the occupation at San José 520 included the entire Xolalpan phase or only part of it. A very small number of potsherds were recovered during excavations that were identified as belonging to the subsequent Metepec phase (see Table 6.1), suggesting on the face of it that occupation might have extended through the end of Xolalpan. However, the overall Xolalpan ceramic proportion (ca. 32 percent) is about half that of the Tlamimilolpa phase (ca. 66 percent). Since these two phases are conventionally regarded as being about the same length, this suggests several possibilities: 1) the Xolalpan phase occupation was of shorter duration than the Tlamimilolpa phase occupation, with the hamlet being abandoned before the end of the later phase; 2) a smaller number of occupants lived at San José 520 during the Xolalpan phase than earlier; 3) pottery production levels dropped after the Tlamimilolpa phase. Of course, these interpretations are not mutually exclusive, and may well have co-occurred—in fact, it is hard to imagine how the second scenario (smaller number of occupants in Xolalpan) could exist without the third scenario (reduced production) being true as well.

As has already been discussed (see Chapter 5), clear evidence of ceramic production was found at San José 520 during our excavations, including evidence for firing activities. While regular firing of ceramic vessels necessarily requires the use of combustible materials, possibly including wood, charcoal remains were extremely rare in the deposits. Nonetheless, it was possible to recover charcoal samples from more than one location within San José 520 and these were submitted for radiometric analysis in the hope of complementing chronological assessments based on ceramic analysis. The seven samples sent for analysis to the Beta Analytic Radiocarbon Dating Laboratory were small charcoal fragments that came from only two excavated contexts.

The feature identified as a likely area for open firing (see Chapters 4 and 5) was designated AE6. It was relatively undisturbed, and three carbon samples came from the fill (a soil matrix mixed with ceramic fragments and vessels) within it. The overall range of 2-sigma error ranges for the AE6 samples spans Cal A.D. 140 to 400 (see Table 6.2). While two of the three samples yielded 2-sigma date ranges that overlap significantly with the Miccaotli phase (ca. A.D. 150 to 200), ceramics pertaining to this phase were not recovered from this particular context, and as noted above are rare at San José 520 in general. Ceramic artifacts associated with AE6 were identified as Tlamimilolpa (56 percent), and Xolalpan (44 percent). The date ranges are compatible with either phase, but overlap much more with Tlamimilolpa than with Xolalpan (Figure 6.1).

The second context from which charcoal samples were collected corresponds to a multiple burial (see Burial 2 below and in Chapter 4) contained within a 75 cm deep pit cut into the bedrock. This funerary feature (registered as AE8) was associated with a domestic residence (AE2), and had been reopened various times during the occupation of this settlement for the interment of different deceased individuals. The 2-sigma error terms associated with the AE8 samples range from Cal A.D. 40 to 410 (Table 6.2, Figure 6.1). One of the radiocarbon dates from AE8 is much earlier than the rest of the samples and may derive from material representing an early occupation at this locality poorly represented in the ceramic materials. Given that this pit was repeatedly reopened during the main period of occupation at this settlement, it is possible that the sample in question was introduced to this pit as a kind of contamination. The ceramic materials recovered from this context were identified as Tlamimilolpa phase (76 percent) and Xolalpan phase (24 percent).

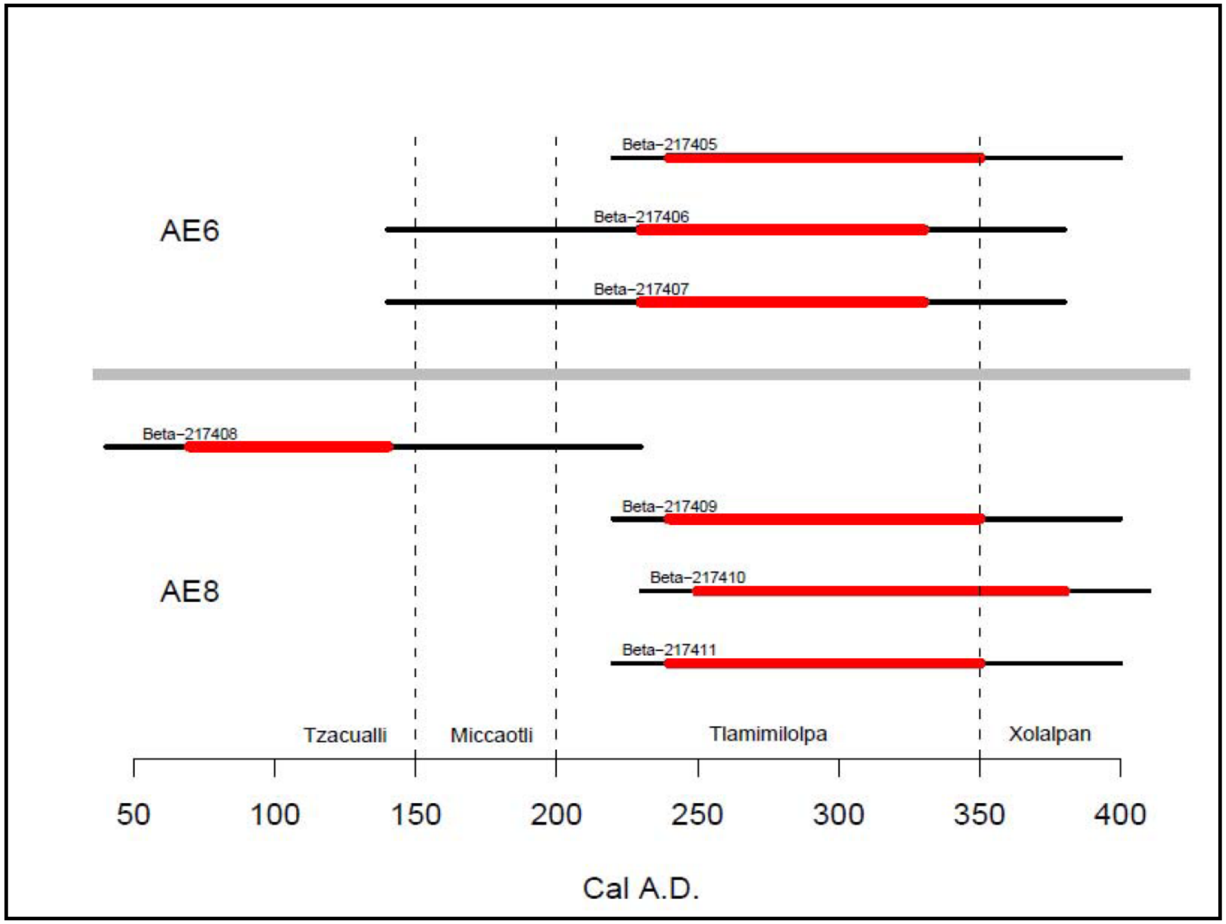


Figure 6.1. Distribution of C14 dates from San José 520. Black lines represent 2-sigma ranges, and red lines 1-sigma ranges. Prepared by Ian G. Robertson.

Table 6.2 Summary of calibrated C14 dates based on charcoal samples analyzed at Beta Analytic Radiocarbon Dating Laboratory (2-sigma range).

Sample	Beta Analytic ID	Provenience	Technique	Dates
1	217405	AE6	AMS	AD 220 – 400
2	217406	AE6	AMS	AD 140 – 380
3	217407	AE6	AMS	AD 140 – 380
4	217408	AE8	AMS	AD 40 – 230
5	217409	AE8	AMS	AD 220 – 400
6	217410	AE8	Radiometric	AD 230 – 410
7	217411	AE8	Radiometric	AD 220 – 400

If the unusually early date from AE8 is eliminated from consideration as a kind of contamination, the remaining six calibrated radiocarbon dates agree reasonably well with the chronology suggested by the ceramic data and a primarily Tlamimilolpa and Xolalpan phase occupation at the site. While it is true that the 1-sigma ranges of five of these six dates are largely confined to the period that we tend to think of (in part by convention and habit, see below), as the Tlamimilolpa phase, it is also the case that the 2-sigma ranges of all six dates extend well across the chronological boundary between Tlamimilolpa and Xolalpan. For a variety of reasons, summarized in the following numbered points, I do not regard these dates as a serious challenge to a significant (if perhaps truncated) Xolalpan phase occupation at this hamlet.

1) The number of radiocarbon dates is small, too few to assume that they would necessarily sample well and thus represent well the range of even the main periods of occupation at the site.
2) The random error inherent in the method of radiocarbon dating means that at least some of these dates may relate to activities carried out after the conventional boundary between Tlamimilolpa and Xolalpan at A.D. 350. In other words, the true dates of at least some samples may lie in the upper tails rather than near than the midpoints of their calibration range.

3) Even if all of the samples submitted for testing actually do relate to activities in the Tlamimilolpa phase, this could simply reflect a bias relating to differential preservation of dateable materials. As has been discussed in the previous chapter, there is a clear reduction in the proportion of ceramic wasters during Xolalpan compared to the Tlamimilolpa phase. If this represents pressure to fire ceramics at lower temperatures because of a reduction in the availability of high quality fuels such as wood, it may well be that preserved wood charcoal at San José 520 really does relate to Tlamimilolpa rather than Xolalpan activities.
4) The chronological division between Tlamimilolpa and Xolalpan is based on largely gradational changes in ceramics that have not been well dated (see Rattray 1991, 2001 for relevant discussion). If later research shows that this division is better represented by a point in time 50 or even 25 years earlier than our present convention, these small numbers of dates will seem more obviously compatible with an occupation that includes a significant part of the Xolalpan phase.
5) Perhaps most tellingly, within the large collections recovered from San José 520, approximately one-third of the sherds were identified by an experienced ceramic analyst (Zeferino Ortega) as belonging to the Xolalpan phase. In broad terms, the criteria used to tabulate this pottery derive from the TMP Ceramic Reanalysis Project and reflect understandings of ceramic change derived from many years of work with surface and excavated materials (see Rattray 2001; Robertson 2001). Phase allocations made within the Reanalysis Project have been tested and found to be generally reliable

(Robertson 2001). While the ceramic chronology at Teotihuacan is clearly in need of further refinement, it is unrealistic to imagine that our current understandings are so flawed as to permit the mistaken attribution of one-third of a large collection of pot sherds to the wrong phase.

Overall, and taken together, radiocarbon dates and chronological tabulations of sherds from San José 520 suggest an occupation largely post-dating the period after which urban residential practices were drastically restructured within Teotihuacan through the adoption of apartment compounds (see discussion below). It is important to note, however, that immigration to the city was almost certainly ongoing at this time, although probably at lower rates than in earlier phases.

Oxygen Isotopic Analysis

Oxygen isotope analyses of human skeletal tissues have been used in the last decade at Teotihuacan (as elsewhere in Mesoamerica) for determining where individuals resided during their life histories[1] (e.g., White, Spence et al. 2004; White et al. 2002; White et al. 1998). In an attempt to determine if the residents at San José 520 had grown up in the Teotihuacan area, or if they were immigrants, bone and dental samples from the adult burials found in our operations were analyzed via oxygen isotope analysis. A total of twenty-nine bone (n=11) and dental (n=18) samples representing all adult individuals from Burials 1 (n=1), and 2 (n=7) were sent for oxygen isotopic analysis at the laboratories in Western Ontario University. These samples were analyzed by Christine D. White and Michael W. Spence.

According to White and Spence (2008) dental materials derived from the San José 520 samples reflecting the region in which the tooth was first developing (i.e. in infancy and childhood) produced $\delta^{18}O$ values which range from 15.0 to 16.8 (mean =

16.2 ± 0.5 $^{0}/_{00}$), with most falling above the 15.9 upper limit thought to characterize development in the Teotihuacan region. This suggests that these individuals may have passed their childhood in a different area, moving to Teotihuacan only after the development of their third molars (White and Spence 2008:2).

Oxygen isotope values that characterize bone growing within the Teotihuacan area are thought to range from 14.0 to 15.9. The San José 520 non-dental bone samples (which should vary as a function of the residence of the individuals in the decade or so before death) mostly show values that fall within that range (mean $\delta^{18}O$ = 14.4 ± 0.5 $^{0}/_{00}$). Given that the observed values cluster in the lower part of the typical Teotihuacan range, White and Spence (2008) consider that these people probably resided in the area for some time before their deaths.

White and Spence noted the possibility that the differences between dental and bone samples may simply represent diagenesis (i.e., contamination of the bone samples, see White et al. 1998:647-648), or that their adjustment factor for weaning is too low. However, if the dental values are valid, they would suggest that, not only may these individuals have been raised somewhere away from Teotihuacan, but all would have been from the same region—possibly the Basin of Mexico outside of the Teotihuacan Valley, or somewhere else in the Mexican Highlands. Given the limited number of samples from other regions, it is currently not possible to suggest where in the Mexican Highlands they may have come from (White and Spence 2008).

Taken at face value, these results, along with chronological evidence, would be consistent with the interpretation that San José 520 dwellers represent immigrants, who, arriving at a time when high levels of residential changes associated with the adoption of apartment compounds were happening in the city, settled in the immediate periphery of the city in a somewhat marginal location.

These results must be treated cautiously, however, since they currently leave no room for burials of individuals who were born in the region around Teotihuacan. The samples analyzed include all the adult and young adult individuals whose burials were recovered by our excavations. Eight were found in a funerary pit with ceramics suggesting that the pit was used as a funerary feature during much of both the Tlamimilolpa and Xolalpan phases. Taken at face value, the results of oxygen isotopic analysis suggest that only burials containing individuals born outside the Teotihuacan Valley were intercepted by our excavations, and that all individuals who were born in the region were either missed by our excavations and/or buried somewhere else. Even granting relatively high levels of immigration, above all in early years, this seems improbable.

Remains of ritual practices, ritual paraphernalia, and household possessions overall used by the San José 520 people, are generally consistent with practices and consumption patterns known from people living in apartment compounds at the city. No traces of cultural affiliations with obviously foreign regions were identified in the material culture of people residing at this locality—although such signatures would not necessarily be easily distinguishable if these people arrived from somewhere relatively close to the Teotihuacan Valley (e.g., the Basin of Mexico or elsewhere in the nearby Central Highlands).

As indicated earlier, some researchers (e.g., Knudson 2009, White et al. 1998, White and Spence 2008) have pointed out that oxygen isotope analysis can be significantly affected by digenesis (i.e., post-burial contamination of bone). Christine

White and Michael Spence, who conducted the analysis of the San José 520 samples, and have carried out most of the oxygen isotopic analysis from Teotihuacan population (White, Spence et al. 2004; White et al. 2002; White, Storey et al. 2004), are upfront about the possibility that their parameters and values in these analyses may need adjustment (White and Spence 2008).

Migration was an important factor in the rapid expansion and growth of Teotihuacan, particularly in the early phases (e.g., Cowgill 1992c; 1997; Millon 1981; R. Millon 1988; Sanders et al. 1979). Nonetheless, it is intriguing (and a little worrisome) that so many of the individuals analyzed at Teotihuacan by oxygen isotopic analysis have been identified as foreigners—although some clearly were (e.g., early populations from the Oaxaca Barrio). Until further analyses are conducted, I consider the migratory status of the San José 520 people as a tentative hypothesis.

Settling in the Margins of the City

Archaeological data indicate that by the beginning of the first millennium the early population of Teotihuacan shifted from a zone of initial concentration in the northwest portion of the Teotihuacan Valley toward the center of the valley, forming a settlement based in part on a preconceived plan (R. Millon 1973). The city grew quickly, expanding to near maximum extent relatively early, by the Tzacualli phase (1 B.C. to A.D. 150). In spite of early rapid growth, however, paleodemographic reconstructions (Cowgill 1974; Storey 1985, 1992) suggest that immigration to Teotihuacan was an ongoing process that continued throughout much of the city's history (see Chapter 2). Results from more recent bone chemical characterization are consistent with this, indicating that levels of immigration were high (Price et. al 2000; White et al. 2002; White, Spence et al. 2004; White, Storey et al. 2004).

The best building sites and the best agricultural lands would presumably have been claimed by the earliest generations of immigrants. Post-Tzacualli phase latecomers could have had only limited access to either and must often have had to make their initial settlements outside of the city, in proximity to and subsisting on agriculturally inferior lands. Spatial marginalization must often have been matched by social marginalization, at least initially. While some of the later immigrants may have had acquaintances, perhaps even relatives, already living within the city (see Croissier 2007), many would not, and it would take time to make the kinds of social contacts needed to fully integrate them into the life of the city. This is a pattern and a challenge commonly observed in modern societies.

In addition, it has been suggested that the internal diversity of neighborhoods at Teotihuacan underwent important changes during the Tlamimilolpa phase, in part due to high levels of residential mobility that may have accompanied the wide-spread adoption of apartment compounds in the city (Robertson 2001). Pervasive changes in the residential system at Teotihuacan resulted in households of high socio-economic status tending to concentrate in the city's core, with people of lower socio-economic levels more often moved towards more peripheral areas of the urban center. This was probably a time of relative turmoil for many households, not all of which would have been very eager to relocate, or successful in finding new building sites within the densely occupied city.

It is possible that some of the settlers living in the margins of Teotihuacan were those that previously lived within the city's margins, but who, with the residential changes described above, were forced to abandon their houses and resettled in more peripheral areas. Those with already limited access to high quality lands would have had to settle in areas less promising for staple agriculture. The evidence provided by the locations of settlers of foreign origins that migrated to Teotihuacan, however, also provides some hints that support the idea that people that migrate to the city were sometimes marginalized.

René Millon (1973:43) has suggested that the city of Teotihuacan might have been conceptually divided in two zones, a central, inner zone formed around the more dense occupation surrounding the ceremonial core, and a more peripheral, outer zone where settlement was more dispersed and closer to the city's outskirts (but still within the urban area). The characteristics of the settlements in the "outer zone" in combination with marked differences in architectural quality made Millon suggest that these were areas where individuals of relatively low status lived.

Excavations at the Oaxaca Barrio, an enclave of people who came from Oaxaca (Rattray 1987; Spence 1989, 1992) indicate that about 1,000 people of Oaxacan identity lived in Teotihuacan starting in the Tlamimilolpa Phase (ca. A.D. 200). The group of apartment compounds that form the Oaxaca Barrio is located towards the western margin of the city (Figure 2.2). Recent excavations adjacent to the Oaxaca Barrio also identified a small group of residents that possibly came from Michoacán, in West Mexico (Gómez Chávez 2002). A similar situation is observed with the Merchants' Barrio, an area thought to have been inhabited by people with cultural connections to the Gulf Lowlands (Rattray 1990a). The three excavated apartment compounds among those that form this barrio are located near the northeastern margins of the ancient urban center (Figure 2.2). The fact that all these barrios are located in the "outer zone" of the city may indicate that foreigners were under pressure to settle in areas away from the city's core.

Additional information is provided by the evidence from Tlajinga 33 and Oztoyahualco 15B:N6W3, both apartment compounds located in the “outer zone” of the city. Tlajinga 33 is located on the south edge of the ancient city (Figure 2.2), and dates from the Early Tlamimilolpa through Early Metepec phases. At Tlajinga 33 a significant portion of the residents were immigrants that are believed to have arrived from at least two different regions in West Mexico (White, Storey et al. 2004:194). Oztoyahualco 15B:N6W3 is located in the northwestern periphery of Teotihuacan (Figure 2.2); apparently, it also housed some non-local dwellers, according to analyses of stable isotope of strontium (Price et al. 2000).

The location of San José 520 is also marginal with respect to the ancient city. As indicated in earlier chapters, San José 520 is located in the southeastern portion of the Teotihuacan Valley, on the lower slopes of the piedmont zone (altitude 2305-2309 masl) of the Patlachique Range (Figures 2.2, 4.1 and 4.5). This hamlet is situated in a semi-rural area in the outer margins of the ancient city, approximately 3 km southeast from the Ciudadela, the closest point in the administrative and ceremonial core of the city.

As indicated earlier in Chapter 4, the Teotihuacan Valley Project (TVP), which conducted an archaeological survey of the non-urban portion of the Teotihuacan Valley in the 1960s under the direction of the late William Sanders (1996), revealed very few settlements in this part of the valley during the Teotihuacan period (Figure 4.1). In the vicinity of San José 520, the TVP identified only a small ceremonial center (TE-CL-118) located on a lower knoll of Cerro Patlachique, ca. one kilometer south of San José 520 (Gorenflo and Sanders 2007:Figs 4.17 and 4.18). In addition, abundant artifacts and architectural remains from the Teotihuacan Period indicate the existence of an apartment compound ca. 300 m northwest of San José 520. These architectural remains were not identified either by the TMP or the TVP, but rather in an informal reconnaissance carried out in 2005 by Ian Robertson and me in the terrain surrounding San José 520. (TMP records indicate that the large collection tract in which these remains are located was recorded as an insubstantial structure [Ian G. Robertson, personal communication 2010]). Other hamlets or sites reported by the TVP are located at larger distances from San José 520 than the closest localities considered part of the urban center by the TMP.

Geographers (e.g., Stunnenberg 1993:112-113), indicate that spatial marginalization is frequently associated with economic marginalization. Marginalized people are often forced to settle in areas that are quantitatively and/or qualitatively insufficient to meet their needs, and/or reside on lands that they do not own and where they are confronted with the threat of displacement. An evaluation of the overall geographical and topographical characteristics of the San José 520 settlement (see below), suggests that these immigrants established their residence in a marginal location not optimal for agricultural purposes. The characteristics of their dwellings indicate that these people were also somewhat economically marginalized.

Economic Marginalization

Subsistence Information

The residents of San José 520 probably did not have access to high quality, deep agricultural soils. The soil deposits at this locality, and in the immediate surrounding areas, are shallow. In some places close to the site, the uneven surface of the natural bedrock or *tepetate* is exposed at the current land surface. At the settlement our excavations reached the bedrock at ca. 20 cm from the current land surface, in the southern part of the site (the higher part of the slope), and at ca. 50 cm in the north (down hill). If we take as reference the depth of possible floor surfaces and architectural features of the prehispanic occupation, it appears that the soil deposits today are deeper than they were in Tlamimilolpa and Xolalpan times. Earth floors and architectural foundations rest on a layer of a dark and very compact clay soil of ca. 5 to 30 cm above *tepetate*.

Although the extent of our excavations was necessarily limited, during the course of our fieldwork at this location we found no traces of terracing or of irrigation channels, features sometimes associated with agricultural activities in other areas of the valley (see Nichols 1987). Water needed for agricultural purposes (and ceramic production) must have been somewhat scarce in the area, as the closest permanent water source was (and still is) the San Lorenzo River, located about 1300 m north of this locality. It is nevertheless possible that the people living at San José 520 engaged in some seasonal agricultural activities, at times when ceramic manufacture would be problematic due to weather constraints (Arnold 1985). Seasonal water must have been available through rain and from seasonal natural drainages that run down from the hill, similar for example, to the current drainage known as "Barranquilla del Aguila," located approximately 300 m west of the site.

While it is possible to grow certain kinds of domestic plants in poor quality soils, including maize (Gibson 1964:307), results from the paleobotanical analyses (McClung de Tapia and Martínez Yrizar 2007) carried out on samples from various contexts at San José 520, did not provide any indication of the presence of any cultigens such as maize at the site. The results from macrobotanical analyses also did not report remains of plants such as *maguey* (*Agave americana*) or *nopal* (O*puntia* spp.), which grow in soils of lower quality, and which were commonly consumed at Teotihuacan (see McClung de Tapia 1987). Nowadays, most of the lands in this part of the Teotihuacan Valley are used to cultivate *maguey* and *nopal* plants.

The absence of these types of botanical remains at San José 520 does not necessarily indicate a lack of agricultural activities at the site, but could simply be a reflection of poor preservation of organic materials in the deposits. Nonetheless, it is significant that macrobotanical remains of some wild edible plants commonly used as foods in Mesoamerica, both in the past and present, were found in the samples collected at San José 520, although also in small quantities. These include *Amaranthus* (amaranth), *Physalis* (small husk tomato), *Portulaca oleracea* (common Purslane), and *Chenopodium* (*quelite, huauhzontli, epazote*), and they may be indicators of edible products grown in household gardens at this location.

At San José 520 one *metate* fragment, one complete hand-held *mano* and fragments of another five *manos* were recovered from surface and excavated contexts. While the presence of these grinding tools could suggest the processing of some grains at this locality (products which may also be acquired in market locations at the city), the analysis of these tools by Martin Biskowski and Jessica Jones from the University of California, Sacramento does not provide strong evidence of this type of activity. Biskowski is an expert in grinding tools from Central Mexico who has conducted systematic analysis of these types of tools since the early 1990s. As described more in detail in Chapter 5, his analyses of these grinding tools indicate that the form and size of the *metate* fragment are consistent with a relatively low output of ground food, such as maize *masa*. Moreover, the form of this fragment suggests that it may have come from a type of *metate* that post-dates the Teotihuacan Period (possibly Aztec), and hence the main occupation at the site (Martin Biskowski, personal communication 2010). The complete *mano* is of a form that would have been appropriate for use with this type of *metate* (they both were recovered from the surface). The size and physical characteristics of the other *mano* fragments are more in accord with fragments that have been reused or recycled, perhaps as construction materials (Martin Biskowski, personal communications 2010), a practice commonly observed in other parts of the city. This evidence suggests that San José 520 may not even have processed grains for food. The small amount of grinding equipment found there may simply have been part of ceramic production activities.

While the previous evidence may downplay the importance of agricultural activities at San José 520, indirect evidence suggests that these people may have been engaged in hunting (or warfare) activities to supplement their income. A total of fifty-six obsidian bifacial tools were identified from surface and subsurface deposits at this site, most of them (n=48) fragmented projectile points (Figure 6.2). The majority of these projectile points were made of gray obsidian (75 percent), and the rest (21 percent) were manufactured from green obsidian. Although reliable comparisons of projectile point consumption patterns from other parts of the city are not yet possible due to the limited data currently available, tentative comparisons suggest that proportions of projectile points at San José 520 are relatively high (Table 6.3).

The large number of projectile points found in localities near the core of the city such as Tetitla, Zacuala and Yayahuala may be more likely connected with warfare activities, although some have been interpreted as evidence of hunting (e.g., Manzanilla 1996). Residents of those apartment compounds of relatively high status may not have needed to hunt themselves for subsistence. Mural paintings found in some of those compounds (e.g., Tetitla) represent symbols of warfare and sacrifice (de la Fuente 1995), which may be connected with the activities of these apartment compounds' residents. In contrast, people of low socio-economic level, living in the edge of the city in more precarious conditions and with limited access to good arable lands, may have engaged in hunting either for consumption themselves or to obtain meat to trade for other products. In the case of San José 520, a location on the flanks of the woody slopes of Cerro Patlachique, would probably have facilitated such activities.

Table 6.3. Obsidian projectile points counts and proportions by area and volume from various localities at Teotihuacan.

Locality	Count	Area	Volume	Density (area)	Density (volume)
San José 520	48	100	45	0.48	1.07
Xolalpan	124	1400	2800	0.09	0.04
San Antonio de las Palmas[1]	2	502		0.00	
Maquixco Bajo (TC8)[2]	92	1781		0.05	
Oztoyahualco 15B:N6W3[3]	10	550	467.5	0.02	0.02
Bidasoa[4]	13	320	672	0.04	0.02
Zacuala[5]	158	3800	5700 - 11400	0.04	
Tetitla[6]	345	4443	8441.7	0.08	0.04
Yayahuala[6]	598	3600	5400	0.17	0.11
Tlamimilolpa[7]	112	3500	9450	0.03	0.01

[1] (Monzón 1989)
[2] (Sanders 1995)
[3] (Hernández 1993)
[4] (Sánchez Alaniz 1989)
[5] (Séjourné 1959:162)
[6] (Séjourné 1966b:222)
[7] (Linné 2003a)

Area estimates reflect the size of excavation areas, rather than the size of the localities themselves.

Figure 6.2. Examples of obsidian projectile points.

Figure. 6.3. Examples of obsidian bladecores. The bottom two are examples of plunging blades.

An apparent inconsistency with the possibility that the San José 520 residents engaged in hunting is the fact that only a few remains (n=4) of animal bones were recovered from the areas excavated. Unfortunately these were small fragments and their poor condition made it impossible to identify the type of animal they represented. Two of them were possible remains of medium-size mammals, and one of them was burned (Nawa Sugiyama, personal communication 2009). It is possible that our excavations simply did not expose the right contexts (i.e., middens) where more animal bone remains consumed at this locality may have been dumped. Alternatively, it is possible that the people from San José 520 may have hunted for animals that were eaten somewhere else, or traded to others for larger quantities of less valuable foods. This is a practice reported in other Mesoamerican societies (e.g., Maya and Aztec) (Emery 2003; Pendergast 2004; Teeter 2004). Future excavations in middens and ongoing chemical analysis on human bones may provide more evidence about meat sources available to San José 520 people.

I think it is improbable that a small group of potters were active warfare participants, although the possibility should not be ruled out entirely until more detailed analysis is concluded. Tenuous, possible evidence in support of military symbols at this hamlet consists of a chipped obsidian eccentric in the form of a canid, and a head of a "portrait" figurine (discussed below).

In addition to projectile points, the obsidian assemblage from San José 520 includes tools (blades, scrapers, and other unidentified bifaces), a ritual object (canid eccentric), blade and flake cores, and flakes (Table 6.4). A detailed analysis and discussion of the obsidian production and consumption patterns at this locality is a task that goes beyond the scope of this dissertation; nonetheless there are some general results and observations from my analysis of these artifacts that are worth mentioning. For example, the relatively small amount of obsidian *debitage* found at the site (543 flakes both from surface and excavated contexts) indicates that people residing at this location were involved in some lithic-manufacture activities, but not in a very intensive way.

It is difficult to assess the scale of obsidian work, as no equivalent excavated contexts at the city can be used for direct comparison. However, it is worth mentioning that at 6:N5W1, a precinct-level (Spence 1981:772) obsidian workshop located to the west of the Moon Pyramid that specialized in the manufacture of projectile points and eccentrics during the Xolalpan phase, David Carballo (2005:84, 91) reports a debitage density of 2.72 kg/m³ from an excavated deposit of 8.1 m³. Debitage density at San José 520 is ca 0.07 kg/m³, about 40 times less than 6:N5W1. This suggests that obsidian production at San José 520 was small scale, and likely aimed only at domestic consumption. Cutting, hunting, and scraping tools would have been needed for various domestic and subsistence activities, as well as for pottery work as described in Chapter 5.

Additional evidence of obsidian knapping at San José 520 comes from the fragments of 11 bladecores, 10 of which were made of green obsidian (Table 6.4). All were small fragments of exhausted cores (Figure 6.3), and some had signs of intentional destruction through percussion. Seven of these blade cores were re-worked as scrapers. Three of the core fragments happen to be "plunging blades" (Figure 6.3) distal fragments of bladecores detached by error during blade removal (Hirth 2006:209). This indicates that at least some prismatic blades could have been produced at San José 520. While it has been argued that both percussion and pressure-made prismatic blades can potentially be made by the same individuals who make use of them in other craft activities, I regard blades that have been published as examples of this kind of production (from Kaminaljuyú, see Anderson and Hirth 2009) as being relatively irregular, and showing only modest skill levels. Overall, the prismatic blades from San José 520 exhibit high levels of skill—on the vast majority of examples, both lateral edges and arrises are straight and parallel and they tend to be regular in thickness. While a detailed study of these blades has not yet been carried out, I think it is most likely that they were made by specialist workers in obsidian who removed blades from blade cores on a very regular basis. It seems unlikely that specialist potters would also have possessed the skill to engage in this type of activity. If so, this suggests that the exhausted blade cores recovered during excavation may often have been “scavenged” from somewhere else, or purchased, as a raw material for reuse in other tools. As already indicated above, seven of them, including one of the plunging blades, exhibit traces of reuse.

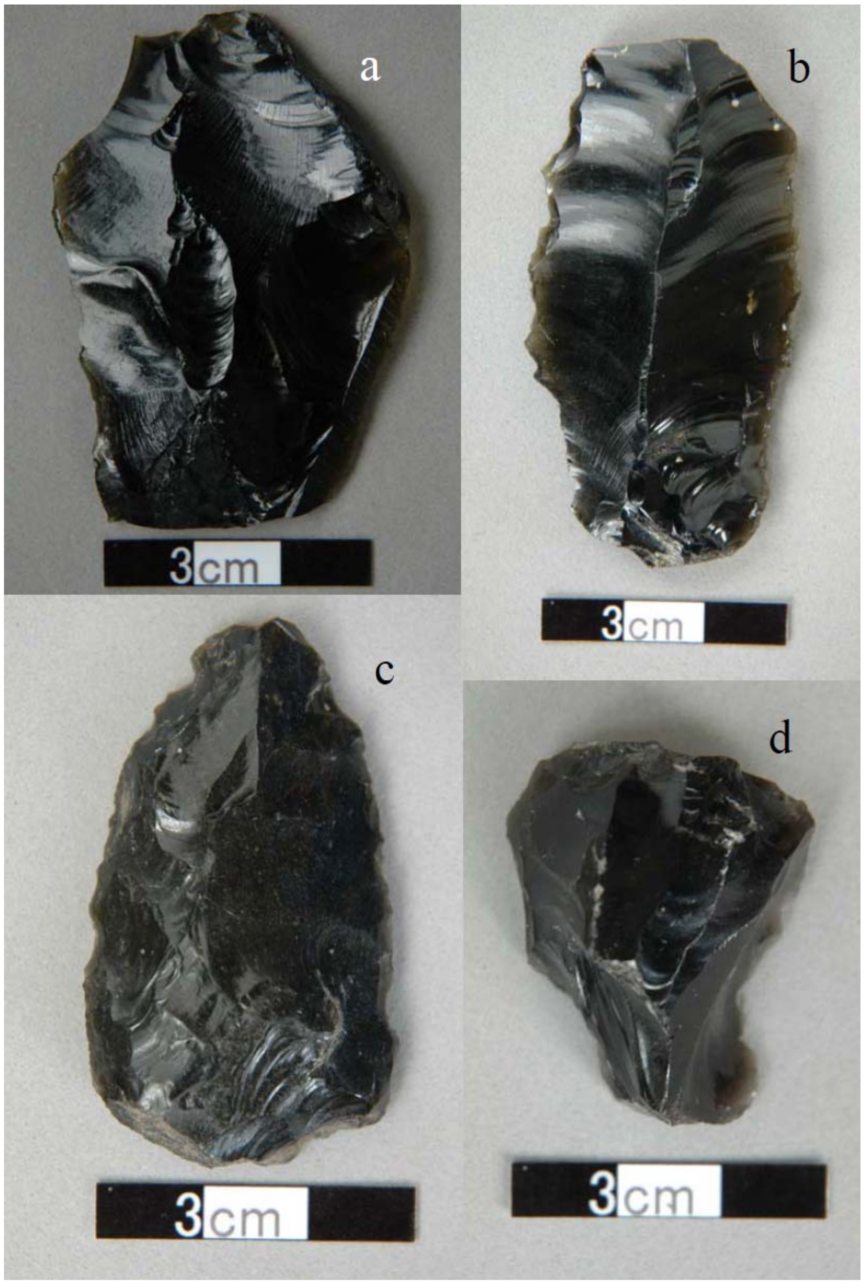


Figure 6.4. Examples of obsidian scrapers. a) and b) are informal or expedient tools, c) and d) exhibit more formal knapping patterns.

Other obsidian tools consumed at this locality exhibit more limited skills in flaking technology. For example, most scrapers (90 percent) were informal or expedient tools made from macroblades or flakes of irregular and variable shapes and sizes (Figure 6.4a and b), or from recycled tools. The other 10 percent correspond mostly to small fragments of scrapers with more formal knapping patterns (Figure 6.4c and d) (some possibly used for *aguamiel* or *pulque* [maguey sap] production).

Table 6.4. Obsidian artifacts from San José 520.

	Green Obsidian		Gray Obsidian		Meca Obsidian		Total
Object	Count	%	Count	%	Count	%	Count
Blade	2783	95	155	5	1	0	2939
Blade core	10	87	1	13	0	0	11
Flake core	1	50	1	50	0	0	2
Eccentric	0	0	0	0	1	100	1
Flake	174	32	369	68	0	0	543
Point	10	21	38	79	0	0	48
Other biface	2	15	6	75	0	0	8
Scraper	80	50	80	50	0	0	160

Housing Characteristics

As stated in Chapter 2, settlement within Teotihuacan after the Tlamimilolpa Phase was largely characterized by apartment compounds—distinctive residential architectural structures composed of large numbers of rooms, patios, and passage-ways organized into apartments and mostly packed into a tight square or rectangular group enclosed by a thick outer wall (Figure 2.4). Apartment compounds were mostly constructed with stone or adobe windowless walls, whose floors and walls were often surfaced with concrete and plaster. Plastered walls of some apartment compounds located close to the core of the city were also decorated with multicolored murals representing mostly ritual, militaristic or religious scenes.

Apartment compounds were inhabited by a number of different households, which most probably formed corporate groups related by kinship, occupation, or both (Millon 1976). The archaeological evidence from some of these apartment compounds suggests that within the compound each household had a zone for food preparation and consumption, sleeping quarters, storage areas, sectors for refuse, patios for cult activities, and funerary areas (Manzanilla 1993c:93).

In addition to this dominant form of housing structure, other kinds of residences were also used in the city; although they are much less understood archaeologically. A smaller and presumably less elaborate residential type known as the 'insubstantial structure' may conceivably have housed as much as 15 percent of the Teotihuacan population at certain times (Robertson 2008:25). Insubstantial structures were likely small, simple dwellings, thought to have been made of stone, adobe, and perhaps perishable materials (Cowgill et al. 1984). Insubstantial structures have been mostly recognized archaeologically by surface artifact concentrations with little or none of the building materials (including stone and plaster) that are typically used in the construction of apartment compounds. Only one probable example of an insubstantial structure has been partially excavated within the city (Robertson 2008).

At San José 520, no remains of the apartment compounds found in such large numbers within Teotihuacan were exposed through our excavations. Instead, remains of what are probably examples of "insubstantial structures" were found in two different areas of the settlement. These consist of vestiges of 5 to 20 cm irregularly shaped stone and clay blocks (not adobe) foundations of small and poorly preserved structures (Figures

4.8, 4.9, 4.12 and 4.13). No well defined mud floors were identified, but the lack of concrete indicates that these structures had likely mud compacted floors. Upper parts of these structures were likely made largely of perishable materials such as wattle and daub.

Our intensive and systematic surface collection in Lot 83 did not reveal any fragments of concrete or plaster that could suggest that more substantial structures existed at this location. Although we had no permission to carry out a systematic survey and excavations in the adjacent northern lot, where San José 520 also continues (see Chapter 4), a walk-through inspection of this area did not indicate the presence of concrete or plaster in that portion of the site either.

Stones, volcanic slabs (*lajas*), and volcanic tuff scoria (*tezontle*) fragments, possible remains of architectural materials were mapped during our surface operations throughout Lot 83. The largest concentrations of these materials in the surface coincided (together with the denser concentrations of ceramic, lithic and ceramic making tools), with the two structures found during our excavations. Other lower concentrations of stones and artifacts may be the reflection of similar structures like AE2 and AE7 in other parts of the settlement.

The two structures identified in our excavations appeared to have been independent, single rooms. However, it is important to note that excavations did not extend very far away from the limits of these structures in most cases, and I can not exclude the possibility of their being part of patio-groups. If they are isolated rooms, they contrast with the contiguous arrangements of rooms that are seen in apartment compounds at the city.

Evidence from apartment compounds suggests that they underwent significant modifications and repairs throughout their occupational history. Similar modifications were likely carried out during the significant span of time represented by the occupation at San José 520, even if the people were settled there for only parts of the Tlamimilolpa and Xolalpan phases. Nevertheless, the insubstantial structures from San José 520 were found in very poor condition, and no evidence for architectural modifications were detected.

Structures at San José 520 appear to have been used as living quarters, sacred spaces, and perhaps even craft production areas. Architectural Structure 7 (AE7) was located in the northeastern portion of Lot 83 (see Chapter 4). Evidence for domestic activities includes *comal* fragments (not very abundant in general at San José 520) which were equally common in this structure as in AE2. No burials were found under the presumed floor of AE7, but two 'ritual deposits of vessels' of a type often associated with residential areas in apartment compounds within the city (e.g., at La Ventilla 92-94, and the Oaxaca Barrio), were located in the vicinity of AE7. More complete descriptions of these ritual deposits are presented later in this chapter.

A slate anthropomorphic figurine and a plaque of the same material possibly used as ritual paraphernalia (Cabrera Cortés 1995) were also associated with AE7 (Figures 6.5a and 6.5c). *Candeleros* are considered as ritual paraphernalia used in domestic contexts elsewhere in the city (e.g., Clayton 2009; Cowgill 2002; see further discussion below). The single *candelero* fragment (Figure 6.6) recovered in this project was also associated with this structure.

This structure may be more closely associated with more intensive craft-production activities. The largest concentrations of tools associated with ceramic manufacture (ceramic polishers, platforms used to support pots during manufacture), and small residues of fired clay found throughout the settlement, are associated with AE7.

Architectural Structure 2 (AE2), located mostly in sector N4E7 (see Chapter 4), appears to also represent a clear domestic structure. Burials are often associated with domestic spaces in apartment compounds within the city, and the three burials revealed by these excavations were associated with this structure as well. Associated with AE2 were also three 'ritual deposits of vessels', and a slate pendant (Figure 6.5b). Botanical remains from all wild plants identified in paleobotanical studies were also present within this structure.

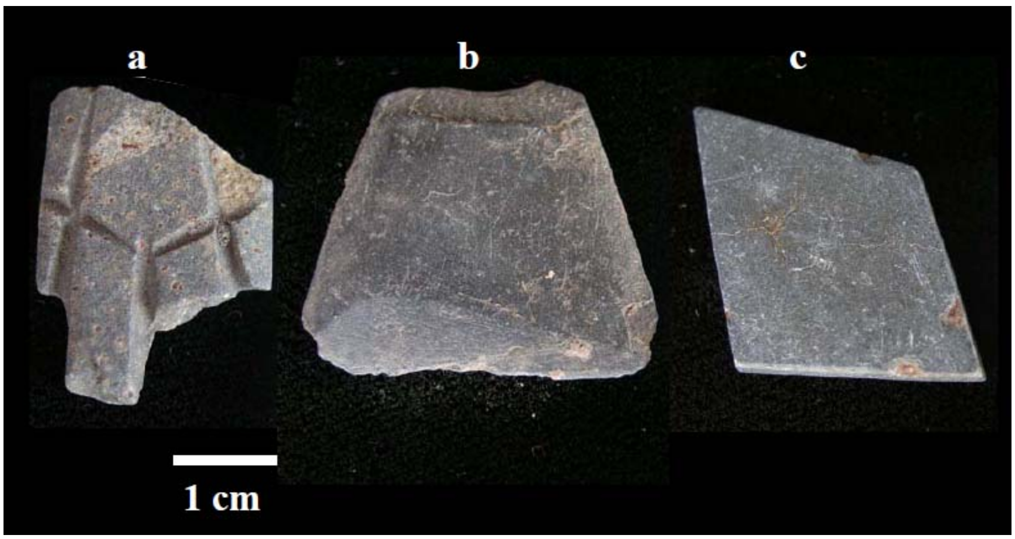


Figure 6.5. Figure 6.5 Objects made of slate: a) fragment of anthropomorphic figurine, b) fragment of trapezoidal pendant, and c) plaque.

The insubstantial structures from San José 520 show a lower degree of investment, both in term of elaboration, and in construction materials, compared to the large, and substantial apartment compounds known for other parts of the Teotihuacan city. They contrast even with the architecture found at Tlajinga 33, an unusual apartment compound located in the southern part of the city that has been classified as representing low status people. Tlajinga 33 has architecture represented by rooms with earth floors, and walls made of adobe blocks with stone foundations. However, these rooms form an irregular rather than quadrangular shaped compound, and include a courtyard paved with cobblestones and a temple area with lime-plastered masonry walls and concrete floors (Widmer 1987:330).

Figure 6.6. Fragment of *candelero* with punctated decoration found at San José 520, and examples of similar *candeleros* from other localities redrawn from Séjourné 1966a:Figure 20.

The architecture at San José 520 also contrasts with that found in rural settlements situated in the Teotihuacan Valley, in locations even more distant from the city than San José 520. For example, at Maquixco Bajo, a village located a few km to the west of Teotihuacan, smaller versions of apartment compounds were excavated, but which otherwise exhibit few differences from many found within the city (Sanders 1994; Sanders et al. 1979:334-355). Other sites in the eastern Teotihuacán Valley and in the area north of Cerro Gordo (e.g., TC-84) have apartment compounds that used construction techniques and materials similar to (but not identical to) those used in apartment compounds found at the urban center (Charlton et al. 2000), but possibly lacking the thick external walls (Charlton et al. 2005) that characterize most of the apartment compounds excavated at the city.

Household Possessions and Wealth

Previous work has demonstrated that household possessions can be good indicators of wealth (e.g., González Licón 2003; Shenk et al. 2010; M. E. Smith 1987). They can also be useful to assess the extent to which households were tied into wider networks of commerce and stylistic interaction (Hirth 1998; Smith 1994).

Burial grave goods represent the evidence that has probably been most used to examine aspects of wealth and social differentiation in ancient societies. At Teotihuacan, it has been suggested, based on funerary contexts from Early Tlamimilolpa through Late Xolalpan, that a broad cross-section of the city's population had at least some access to imported exotic goods (Sempowski 1987, 1992). Quantities, and sometimes the quality, of imported goods from ordinary apartment compounds contrast significantly with those associated with ritual contexts carried out by the state in public buildings. Access to long-lasting exotic materials, however, was not equal in all households, and even within apartment compounds associations of these goods in funerary deposits marked distinctions in status depending on age and gender (Cabrera Cortés 2001; Clayton 2002; 2009; Sempowski 1987, 1992).

Apart from obsidian (discussed below), various objects made with imported materials were recovered by surface and excavation operations at San José 520, including some that were found in association with burials. These include four greenstone beads, a small fragment of a pyrite object, part of a small bowl made of a grayish metamorphic rock, eighteen slate pieces, five stone polishers made of possible quartz, cinnabar contained within a small Teotihuacan vase (in Burial 2), and a small percentage of foreign ceramics, including Regular Thin Orange (see Table 6.1).

Three of the four greenstone beads (Figure 6.7) were found in association with the burial contexts containing adult individuals (Burials 1 and 2). While a petrographic analysis of these objects has not been carried out, macroscopic observations suggest that three of the greenstone beads may have been made of fuchsite, a metamorphic rock that could have come from southern Puebla (see Cabrera Cortés 1995; 2002b). Another bead—associated with Burial 1—may be jadeite. While the apparent quality of fuchsite contrasts with the high quality of jadeite from Guatemala, objects made with fuchsite have been found in other parts of the city, including in contexts related to state-sponsored ceremonies such as those that took place at the Feathered Serpent Pyramid (Cabrera Cortés 1995; 2002b).

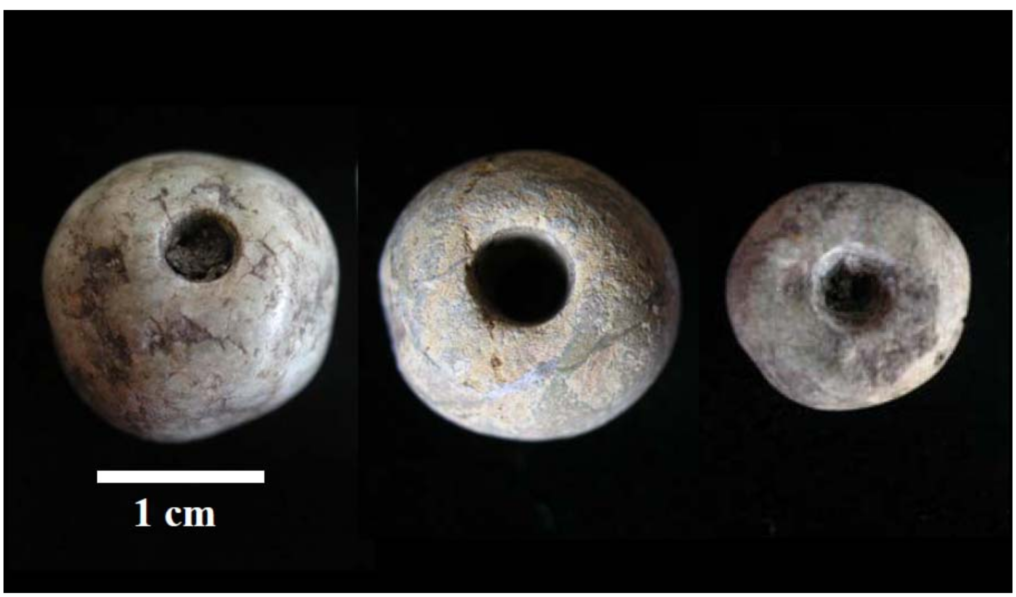


Figure 6.7. Examples of *greenstone* beads from Burials 1 and 2.

The eighteen slate pieces include a fragmented anthropomorphic figurine (Figure 6.5a), a fragment of a trapezoidal pendant (Figure 6.5b), a sheet of slate with traces of red pigment, and two small plaques or tablets with beveled edges (one of these exhibited in Figure 6.5c). The remaining fragments consist of slate with traces of cut marks (López Juárez 2008). The slate figurine, found in the vicinity of AE7, is similar in shape to some of the figurines found in some ritual contexts associated with public monuments at the core of the city (e.g., the Feathered Serpent Pyramid) (Cabrera Cortés 1995:Figures 27 to 31). A trapezoidal pendant similar to the one found in the area of AE2 at San José 520, but made of serpentine, was found also in the Feathered Serpent Pyramid offerings (Cabrera Cortés 1995:Figure 38). Painted slate is often found in burials, either in the shape of elongated leaf-shaped objects (Gamio 1979), or as anthropomorphic figurines (Cabrera Cortés 2003). The piece found in San José 520 is very fragmented, and its design is not possible to identify. However, it comes from the fill within the pit of Burial 2. Burial 2 represents a multiple burial, reopened in various episodes throughout the occupational history of the site, and it is possible that the painted slate fragment was part of an object associated with an individual interred there.

A small lump of a yellow material was found in the fill of the multiple Burial 2 pit. This material is very similar to residue found on the front of multiple slate disks at the Feathered Serpent Pyramid offerings, and which is thought to be created by the corrosion of pyrite mirrors affixed to the slate disks (Cabrera Cortés 1995; Taube 1992a:170). A fragment of a pyrite object (Figure 6.8), possibly a plaque, was also found in a layer above Burial 2, but low enough to be almost in contact with the fill inside the pit. It is likely that both materials were part of a single object that was initially placed with some of the individuals buried in AE8.

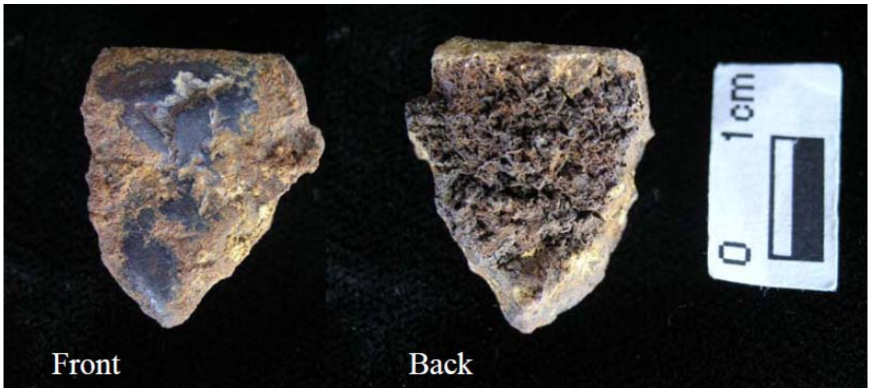


Figure 6.8. Fragment of pyrite object associated with Burial 2.

Five polishers made of a lithic material that is probably quartz, were also recovered from excavations (Figure 5.6). All are probably tools associated with ceramic production. Three of them were placed within burial contexts, and a fourth one, found in a layer above the pit of Burial 2, is also likely to have been placed with one of the burials. They likely were placed in the graves because of the occupation of the adult individuals buried there.

Most of the lapidary objects made with the imported rocks and minerals described above were found in funerary contexts. It is important to remember that people sometimes invest very valuable objects in funeral contexts for symbolic and social reasons, but which these people would otherwise not have used in everyday life.

The people living at San José 520 also had access to some imported ceramics, but not in high proportions. Only six fragments of ceramics from the Gulf Lowlands (less than 0.01 percent), including four sherds identified as possible Lustrous Ware—thought to be made somewhere in lowland Veracruz (Cowgill 2000b:275-276)—were present in the entire ceramic collection. In addition, there were four sherds identified as Oaxacan ceramics, also less than 0.01 percent. Neither the Oaxacan nor the Lustrous sherds were found in the fills associated with burial contexts, and it is interesting that these materials are largely concentrated in layers directly associated with the residential structures.

Ollas or amphorae made of Granular ware, thought to be made in the southern state of Guerrero (Kolb 1988b), comprise 0.16 percent of the total ceramic collection from our operations (Table 6.1). Thin Orange, made in the Tepeji de Rodríguez region (Figure 1.1) in southern Puebla (Rattray 1990b), was mostly represented by hemispherical bowls, but also included a smaller quantity of everted-rim bowls, jars, vases, and one fragment of an effigy vessel. In total, the Thin Orange Ware ceramics represent 0.91 percent of the entire surface and excavated collection (Table 6.1). Access to Granular Ware, and above all to Thin Orange, is common in other parts of the city (see Cowgill et al. 1984). However, people at San José 520 appear to have had less access to Thin Orange ceramics than did others within the city. Rattray (2001:323) suggests that by Tlamimilolpa, Thin Orange ceramics reach up to three to four percent of the collections in some places in Teotihuacan. Apparently about 90 percent of the localities within the city report higher proportions of this ware than that observed at San José 520 (Ian G. Robertson, personal communication 2009). Proportions of this ware increased in Xolalpan reaching 12 percent in some parts of the city, and even 15 percent in the Merchants' Barrio deposits (Rattray 2001:325-327).

As indicated above, like other residents at the city, San José 520 people had also access to obsidian, a volcanic glass used in Precolumbian Mesoamerica to make utilitarian tools and some ritual objects. The large quantities of obsidian consumed at the city came primarily from two sources (see Spence 1967, 1981; Spence et al. 1984), although obsidian from other sources has also been identified (Gazzola et al. 2010). Green obsidian, one of the imported materials most ubiquitously consumed at the city, and used largely for the manufacture of prismatic blades, was imported from Sierra de las Navajas in Hidalgo (Figure 1.1), an area ca. 50 km to the north of Teotihuacan. Sources of gray obsidian, largely used to make knives, projectile points, and scrapers, have been found in the Otumba region, located ca. 17 km to the east of the urban center. The San José 520 obsidian collection (n=3,712) is dominated by green obsidian objects (82 percent, see Table 6.5), followed by gray obsidian (17.5 percent). A couple of examples of brown-black mottled obsidian (0.5 percent), also known as *meca*, may be from the Apan region (see Gazzola et al. 2010) ca. 25 km to the east of Teotihuacan. However, no formal sourcing analysis has been conducted on any of these artifacts beyond noting their color. One of the *meca* obsidian objects is a zoomorphic eccentric (described below).

Table 6.5 Obsidian color counts and percentages.

Obsidian type	Count	%
Green	3060	82
Gray	650	17.5
Meca	2	0.5
Total	3712	100

The presence of imported goods suggests that the inhabitants of San José 520 were able to produce sufficient goods beyond their domestic needs to acquire valuable items. The small amounts of these imported goods, however, suggest that access to such materials was meager, and the context where these materials concentrate suggest that they were mostly acquired to be used in ritual contexts associated with funerals. Other foreign materials often found in apartment compounds within Teotihuacan (e.g., shell and mica) were not found at this locality.

Evidence of Social Integration

Houses constitute more than just shelters, as they are the places where collective economic and ritual actions occur. In these places, members of households express their identity as a group, establish the relationships and roles within that group, and may also distinguish themselves from other such groups (Hendon 1999:98). Household membership is based not only on ties derived from biological kinship, but also on practices that validate and ensure a joint investment to supply shared food and on ritual practices that bound its members (Grove and Gillespie 2002:11).

Ritual practices structure important aspects of social life (McAnany 2002; Rappaport 1979, 1999), through which groups define themselves and their traditions (Bell 1997:197; Plunket 2002:4). Among other things, ritual practices help ensure genealogical continuity and renewal of the household (see Grove and Gillespie 2002; Manzanilla 2002b; McAnany 1995; Uruñuela and Plunket 2002), form ties with broader members of society (see Spence 2002; Uruñuela and Plunket 2007), and negotiate their positions within social and political hierarchy (e.g., Clayton 2009; Joyce and Weller 2007).

Ritual practices are significant in societies in part because they give individuals a sense of security and loyalty to a group. Since rituals are performed to demonstrate shared values and beliefs, ritual evidence can be useful for identifying degrees of social integration within sectors of society. Ritual practices in domestic context have many forms or modes of ritual action (e.g., individual ritual, life passage rituals, mortuary practices, dedicatory rituals, healing, divination, etc.), not all which leave recognizable traces in the archeological record. Reconstructing ritual activities in ancient domestic units is difficult, and sometimes speculative; yet we can and should attempt to do at least partial reconstructions based on evidence from funerary practices and ritual architecture and paraphernalia.

Millon (1967, 1981) states that Teotihuacan was a sacred place of enormous prestige, where religion played a critical role in the integration of society. It also has been argued that cults associated with deities such as the Feathered Serpent, the Storm God, and the "Great Goddess" were integrative because rituals connected with them were not only celebrated in the public buildings at the core of the city, but also in numerous, wide-spread apartment compounds (Manzanilla 2002b; Millon 1993:41; Pasztory 1993). Millon (1993:31) has suggested that at the level of household the performance of ritual dictated by the state was enhanced also by the sacred orientation of the compound walls, which confined where such rituals took place. While some aspects of the "state religion" are evident in apartment compounds, the practice of religion and rituals at households also shows significant differences with respect to the evidence found in public buildings because people at residences also dealt with more domestic and familial aspects (see Cowgill 1997, 2002).

At Teotihuacan, domestic ritual practices have been most evident in the remains of funerary practices (e.g. Clayton 2009; authors in Manzanilla and Serrano Sánchez 1999), sometimes involving animal sacrifice (Spence 2002:59). Other ritual evidence pertains to human bones used as possible relics (Aguilera Muñoz 2008), dedicatory, termination, and closure rituals (connected with architectural construction, remodeling, destruction or abandonment (connected with architectural construction, remodeling, destruction or abandonment, see Manzanilla 2002b; Spence 2002). Other ritual deposits may be connected with life passage rituals (see Spence 2002:58-59) and communal ritual spaces (e.g., courtyards) where these rituals were performed (e.g., Barba et al. 2006;

Manzanilla 2002a, b), and paraphernalia (e.g., figurines, portable censers, etc.) associated with these and other ritual practices (e.g., Cowgill 2002).

Evidence from San José 520 indicates that if its inhabitants were immigrants to the city, they participated in and adopted some of the ritual practices that were common in other parts of the city. The following descriptions center on funerary practices, dedicatory offerings involving ritual deposits of vessels[2], and ritual paraphernalia present at San José 520. Comparisons are made with examples found in other parts of the city.

The Teotihuacan Funerary System

Mortuary practices represent an invaluable tool in understanding issues regarding social identity in antiquity, because they combine biological and social aspects of individuals in connection with the structure of the broader society. At Teotihuacan mortuary analysis have been useful in inferring, for example, some aspects of kin affiliations (Spence 1974), socio-economic structure (Sempowski 1987, 1992), and ritual diversity (Clayton 2009), among other things.

Although in many modern western societies mortuary rituals are not thought of as part of the domestic ritual, the practice of burying members of a household beneath the floors of their houses, or in areas immediately outside of them (such as in patios), was relatively common in Precolumbian Mesoamerica, including Teotihuacan. If we consider the number of individuals that have been recovered from burials in apartment compounds at Teotihuacan, it is clear that they do not account for the size of the population living within the city throughout its history (see Sempowski 1999; Uruñuela and Plunket 2002:30). Taking this into account it is evident that inhumation must not have been the most common way to dispose of dead people at Teotihuacan. Nonetheless, and while specially designated areas may have existed at the city for use as cemeteries (Spence

1994:338-339) or cremation sites, the contexts from which we have best information about mortuary behavior are the apartment compounds themselves[3].

Within apartment compounds, burials are frequently found below the floors of rooms, *pórticos* (porches), stairways; corridors and patios. They are also found within room walls, below altars (compound temples) and platforms, and occasionally right outside the delimiting walls of compounds (e.g., some burials at Tlajinga 33 in the southern part of the city). Tombs and shaft tombs are uncommon at Teotihuacan, but they exist in small numbers, although they appear to be associated with foreigners (Cabrera Cortés 2001; Gómez Chávez 2002; Spence 1992; White, Storey et al. 2004). The presence of burials under the floors of apartment compounds has been associated with rituals connected with the veneration of ancestors (Headrick 2007; Manzanilla 2002b), a common tradition also known in other parts of Mesoamerica (e.g., Marcus 1998, 1999; McAnany 1995; Uruñuela and Plunket 2002).

The most common burial practice at Teotihuacan was by cutting through the concrete floors of a room or other habitation area, and digging a pit (*fosa*) into which the body and accompanying grave goods (most commonly ceramic vessels) were deposited. The pit was then filled and in most cases the floor above repaired. Bodies were usually placed in a flexed position, either seated, or laid down on their backs or sides. Extended burials are atypical in Teotihuacan (Cabrera Castro 1999:507), and most of those known are associated with foreign traditions, particularly the Zapotec (Gamboa Cabezas 1999b:420; Spence 1992). Individuals in Teotihuacan may have preferred the flexed mode of interment in order to minimize the space taken up by the burial, but more ideational reasons may have been involved as well.

Rare remains of cordage and textiles found in association with some of these burials (Cabrera Cortés 1999; Sempowski 1994) indicate that some of the bodies were wrapped up at the time of their deposition, in bundles similar to those depicted in the later Postclassic codices (e.g., Nuttall 1975:20; Seler 1988:26). Excavated evidence also suggests that some burials were cremated, or partially cremated, once they had been placed in the pit. Most of the burials in pits represent individual interments, but multiple burials have also been found. Multiple burials are almost never the result of a single deposition of more than one individual in a pit, but the result of multiple events of deposition (Sempowski 1994:138-139). Burials in pits can be primary or secondary interments. On some occasions, secondary burials consist of the bones of an individual whose skin and flesh had been completely removed, and whose bones had been covered with cinnabar (Gazzola 2000).

Grave goods often accompany the skeletons of individuals buried at apartment compounds; the materials associated vary from one burial to another, but ceramic vessels (full size and miniature) are usually the most numerous. Objects made with imported materials such as greenstone, mica, shell and slate are also found among the grave goods, but usually in smaller quantities than vessels. On occasion, tools (e.g., bone needles and awls, plaster polishers, plumb-bobs, obsidian scrapers, etc.) were also deposited with burials, presumably representing the life-activities of the interred individuals. Ritual objects (including modeled objects made of diatomaceous earth, ceramic figurines, *candeleros*, and small solid ceramic cylinders called “*ataditos de barro*”) are also present in some apartment compound burials, but in very small proportions. Animal skeletons, in particular canids, are sometimes found associated with human burials, and these have been interpreted, based on Postclassic analogies, as companions that help to carry the soul of the newly deceased across a body of water in the afterlife (Séjourné 1959).

Particular kinds of ceramic vessels, or even large sherds, were sometimes used as mortuary containers for the human remains of fetuses and perinatal individuals. The most common vessels used to contain such burials were a combination of plates and handled cover-plates or *tapaplatos*. However, outcurving bowls, and more rarely, cylindrical tripod vases, hemispherical bowls, and censers were also used to contain the remains of very young individuals (see Cabrera Castro 1999; Gómez Chávez 2003; Jarquín Pacheco and Martínez Vargas 1991; Linné 2003a; Serrano Sánchez and Lagunas 1999). In the majority of the cases these burials represent only a single interment. However, in some cases the remains of more than one individual have been placed within a single container (e.g., at Oztoyahualco 15B:N6W3, see Manzanilla 1993b:135; Ortiz Díaz 1992:54). Hardly any perinatal individuals have small ceramic or miniature vessels accompanying their remains within their containers, but a few have been reported (e.g., Linné 2003a:72-73).

The San José 520 Funerary Pattern

The three burials located during the excavations at Site 520 reflect patterns similar overall to funerary behaviors documented within Teotihuacan. Burial 1, located to the south of AF2 within Square N3E7.14, consisted of a single adult individual (30-35 years) of indeterminate sex (Nado and Cruz 2006), but possibly a male (Driscoll 2005), deposited directly on the surface of the bedrock or *tepetate* (Figures 4.16 and 6.9). The bones of this individual (a secondary burial) were very poorly preserved. Only parts of the long bones and cranium remained, but the bones were arranged on top of one another as if the individual had been placed flexed lying on one side. The cranium was located at the south, with the face looking towards the east. A greenstone bead was found in the general area of the fragmented mandible. This individual was accompanied by a group of 29 ceramic vessels dating to the Tlamimilolpa phase[4], and a polished stone thought to be a tool used during the manufacture of ceramics (see Figure 5.6). Also associated were four reddish stones and a basalt flake, which might have also been tools.

Figure 6.9. Burial 1 lying on *tepetate*. Stone polisher located to the east, and middle part of the funerary deposit.

The ceramic vessels associated with Burial 1 were placed mostly to the southeast of the individual, with the exception of two small bowls that were located to the west of the cranium (Figure 4.16). Among the vessels were 2 small jars with nubbin supports, 2 bowls, 8 outcurving bowls, 16 small bowls with incurving walls (a kind of *tecomate)*, and

1 painted bowl. Six of the outcurving bowls had nubbin supports. Supports of several of the vessels placed with Burial 1, including the painted bowl, presented traces of wear, indicating that the vessels had been used prior to their interment. Three of the outcurving bowls were decorated with the incised "cloud" motif, commonly found among some Teotihuacan outcurving bowls (Figure 5.24).

Figure 6.10. Red-on-natural outcurving bowl from Burial 1, possibly "killed."

The single painted vessel in the burial was a Red-on-natural Ware outcurving bowl with low walls showing only a small degree of flare (Figure 6.10). It is decorated with incised lines forming step-like geometric motifs, alternating with horizontal lines defining fields which were either left in the natural color of the vessel, or painted with red paint (possibly hematite). White pigment was added to the incised lines, which was preserved only in some places. The vessel was found broken in two parts, but otherwise complete. Of particular interest was clear evidence that the vessel had a perforation in its base, almost certainly caused by intentional percussion (Figure 6.10) and thus likely "killed" prior to its deposition. The ritual practice of intentionally "killing" vessels has been documented for other places within Teotihuacan (e.g., La Ventilla 92-94, Tlamimilolpa, Tlajinga 33, Oztoyahualco, see Clayton 2007:22; 2009:157; Gómez Chávez 2000; Linné 2003b; Manzanilla 2002a). Most of the small incurving bowls or *tecomates* (Figure 6.11) are smaller and cruder examples of similar vessels found in other locations at the city (see small vessels below), and as described in Chapter 5, they are a local version made by San José 520 potters.

Burial 2 (Figure 4.14) was located underneath the residential structure AE2, and consisted of a multiple burial of at least nine individuals deposited in several different episodes into a pit (AE8) cut into the *tepetate*. At least eight individuals were identified as adults or young adults, and at least one immature individual (less than 1 year old) was identified. Of the four individuals for which sex could be determined, two were female and two male (Driscoll 2005; Nado and Cruz 2006). Most individuals were found either partially disturbed or re-deposited as secondary burials. One individual, with pelvic bones and legs in anatomical position, had likely been interred as a bundle in a seated position, and oriented towards the east. Only one individual (a female who died in her late twenties or early thirties) was found in complete anatomic position (Figure 6.12). She had been placed in a seated position with her legs flexed, and also facing toward the east. It may be significant that a complete jar with its neck decorated by pattern-polished vertical lines and graffiti (Figure 6.13) was found between the legs and thorax of this individual. Vessels with graffiti have been reported in funerary contexts in apartment compounds in Teotihuacan and in related hinterland sites (see Clayton 2009). This kind of vessel decoration was not necessarily exclusively associated with funerary rituals, but it is important to note that it was practiced by people living in this hamlet.

Figure 6.11. Examples of incurving bowls or *tecomates* from Burial 1.

Figure 6.12. Individual from Burial 2 found in anatomical position.

It is interesting to note that the number of total bones found within AE8 do not match the number of individuals identified in Burial 2, as represented by crania. While preservation issues and constant re-opening of this pit may have played a factor in the incompleteness of these skeletons (particularly affecting small bones), it is clear that some parts of the skeletons were either taken away intentionally, or never interred there in the first place. Without counting the cranium associated with the individual found in anatomic position, only four other crania were identified within this context.

A number of artifacts were found in association with the individuals of Burial 2, including complete and broken parts of 25 ceramic vessels, a fragment of a clay figurine representing a dressed female, two 'greenstone' beads, a conglomerate of yellow material that looked like decomposed pyrite (Cabrera Cortés 1995; Taube 1992a:170), a fragment of an obsidian prismatic blade, a chert flake, an obsidian macroblade used as informal scraper, and a number of objects associated with ceramic manufacture.

Figure 6.13. Jar decorated with pattern-polished technique and graffiti associated with individual in Burial 2.

Of particular interest are offerings of two complete lunates with clear wear marks, and a quartz polisher stone, all tools used in ceramic manufacture. Among the ceramic grave goods were also two outcurving bowl bases (one incomplete), and one San José bowl base, all with intentionally cut walls, and all of which may also have been used in ceramic manufacture (see Chapter 5). The complete outcurving bowl base may have been recycled from a “killed” vessel (Figure 5.9), but its fragmentary condition does not allow confirmation. This outcurving bowl base has a design on its base (Figure 6.14), which was created when the vessel was still wet. Two fired clumps of clay debris fragments (described in Chapter 5) were also found within the fill of AE8. The fact that this context was probably re-opened on various occasions makes it difficult to know if these were fragments placed in the pit intentionally, or accidentally. Manufacturing debris from craft production activities have been placed intentionally in other burials at Teotihuacan, for example at Frente 3, of La Ventilla 92-94, an apartment compound inhabited by craftspeople of lower socio-economic status than the adjacent compounds (Gómez Chávez 1996, 2000); so it is conceivable that the ceramic manufacturing debris found in AE8 could have been placed intentionally.

Figure 6.14. Motif drawn on the base of an outcurving bowl, possibly used as a modeling platform and deposited in Burial 2

The majority of the vessels found complete or less fragmented were concentrated in the northeastern quadrant of the *tepetate* pit. These include 2 Thin Orange hemispherical bowls, 6 small incurving bowls, 6 bowls, 2 dishes, 5 outcurving bowls, and 2 vases. The outcurving bowls tend to be smaller than the normal sizes found at

Teotihuacan, some almost reaching miniature size. One outcurving bowl, decorated with vertical lines produced through the pattern-polished decorative technique prior to firing, had part of its rim significantly warped (Figure 5.14). This looks like a somewhat defective pot placed in this context as an offering.

One of the two vases was tall with straight, slightly sloping walls and no supports. Although fragmented, it contained a red powder or pigment that may have been cinnabar. The second vase, found fragmented in several large pieces, deserves special attention. This was a direct-rim cylindrical tripod with hollow rectangular supports (Figure 6.15). The walls of this vase had been intentionally cut at about 4 cm above its base. At San José 520 many flat-based vessels (mostly outcurving bowls) had been cut in a similar manner, probably to create platforms to be used as vessel supports during ceramic manufacture (see Chapter 5). It is possible that this vase was cut with that intention. However, in all other such cases of modified finished vessels, walls were cut either very close to the base, or removed entirely, along with supports (Figures 5.8 and 5.9). I think that the cylindrical tripod described here was a recycled vessel, something that was considered important and valued; perhaps a symbolic object that played an important value in this funerary context. It is possible that part of the upper wall of this vase was broken (either before or after it was acquired) and its walls then cut to revitalize it. It may have been used as a functioning vessel, but was eventually deposited as a funerary good. The practice of depositing broken direct-rim cylindrical tripods, or parts of them, has been reported for other localities within the city, and in hinterland sites under the influence of Teotihuacan (Clayton 2009:197-198) confirming that these vessels were considered valuable objects that played ritual functions in funerary contexts.

Due to the fact that this is a multiple burial involving various deposition events it is impossible to know if vessels within AE8 were associated with particular individuals. In addition, vessels from both the Tlamimilolpa and Xolalpan phases were identified among this group, suggesting that different vessels might have been deposited during temporally distinct funerary events. The fragmentary condition of some of the vessels may have been caused by later events of deposition. Nonetheless, Individual 5, the young female found in anatomical position, had a complete ceramic jar dating to the Late Tlamimilolpa-Early Xolalpan phases, which had been placed on top of her pelvic area, between the chest and legs.

Figure 6.15. Cylindrical tripod vase from Burial 2 with walls intentionally cut. Photo shows only half of the object, but the entire base was complete.

Burial 3 (Figure 4.15) was a fetus deposited within an outcurving bowl. This bowl was deposited in contact with *tepetate* in the eastern part of AE2 (Figure 4.12).

Preservation of this individual is extremely poor. No offerings or other objects were included with this individual.

Funerary Rites: Greenstone Beads Placed in the Mouths of the Dead

Greenstone objects, mainly beads, have been found in funerary contexts in apartment compounds of varied socio-economic levels (Sempowski 1987). As mentioned above, the offerings associated with the majority of burials at Teotihuacan are largely of ceramics, and the greenstone objects represent only a small percentage of burial goods (see Rattray 1992; Sempowski 1994). Although this evidence indicates that the use of greenstones was not exclusive to the Teotihuacan elite, the quantity of greenstone objects found in burials throughout the city is insignificant compared to the rich personal greenstone ornaments and symbolic objects recovered from ritual caches and sacrifices at important public buildings such as the Feathered Serpent and Moon Pyramids.

Ethnohistoric data suggest that, in Mexica funerary rituals, a precious greenstone or *chalchihuitl* was placed in the mouth of a dead person in order to replace or revitalize the heart. Friar Bartolomé de las Casas states that Mexica people "…arranged the body of the deceased in fifteen or twenty cloaks embellished with very beautiful woven designs… and placed a stone in the mouth, valuable emerald, that the Indians called *Chalchihuitl*. They said that the stone was placed there as a heart" (Las Casas 1967:462-463, vol.II).

In a slightly different account, López Austin (1984:373) suggests that this bead was a valuable object that could be used by the *teyolia* (a Nahuatl word that means soul) to pay for some (unspecified) service on its way to his or her final destination. This object also served to receive and contain a portion of one of the body's live entities, the heart.

While using the symbolic meaning prevalent in later societies to interpret material culture among earlier societies such as Teotihuacan must be done with caution

(Cowgill 1992b), cross-temporal parallels demonstrate that some portions of some of these mythological beliefs had great time depth. The ritual of placing a greenstone bead in the mouth of a dead person is reported from the Formative Period in other parts of Mesoamerica, particularly the Maya zone, and Oaxaca (e.g., Blomster 2004; Drennan 1976; Marcus 1999; Robin and Hammond 1991; Whalen 1981). This practice does not appear to be common or widespread in Central Mexico prior to the Teotihuacan Period, although it is reported in burials at Chalcatzingo dating to the Formative period (Merry de Morales 1987:96).

At Teotihuacan, some burials and sacrificial interments in various parts of the city and in structures ranging from public buildings (e.g., at the Feathered Serpent Pyramid[5]) to apartment compounds (e.g., Tlajinga 33, Zacuala) had a greenstone bead inside the cavity of the mouth or very close to it. On rare occasions, instead of a greenstone, a shell bead was placed inside the mouth of a deceased individual (e.g., at Zacuala, see Séjourné 1959:60). This practice has been documented even in secondary burials. For example, Laurette Séjourné (1959:61-62) describes a secondary burial with bones covered with red pigment at Zacuala with a "jade" bead in the "area of the mouth." Quite likely, the use of green stone beads in this manner was associated with the concepts of death and revitalization described for later times.

The people of San José 520 appear to have shared similar beliefs regarding the placement of a greenstone bead inside the mouth when a person died. Individual 5 from multiple Burial 2 had a greenstone bead in the mouth that was found *in situ* (Figure 6.16). Another greenstone bead was also found in the pit of Burial 2, and could have come from the mouth of another individual; disturbance caused by reburial events may have caused it to fall out. The only individual from Burial 1 had a greenstone bead next to the mandible, and although this was a secondary burial, the placement of the bead in that position was probably intentional. These two individuals were different sexes, indicating that this funerary ritual was practiced with both adult males and females.

Figure 6.16. Greenstone bead inside the mouth cavity of Individual 5, Burial 2.

Dedicatory Offerings: Ritual Deposits of Vessels

At San José 520 no evidence was found of altars or other kinds of ritual architecture commonly observed in the courtyards of Teotihuacan's apartment compounds. It is possible that the lack of specific ritual architecture at this locality may be due to the distribution of our excavation units. However, as mentioned above (see also Chapter 4), these buildings do not conform to the arrangement, orientation, and construction materials seen in apartment compounds at the city, which may have affected the placement of ritual spaces at San José 520. Whether the residential structures at San José 520 were parts of patio groups or not, patios (as opposed to enclosed courtyards) must have been loci for some household or even communal ritual activities at this locality. Individual rites may have occurred within the residential structures. Portable altars made of volcanic rocks are also found in some apartment compounds in the city (e.g., Manzanilla and Ortíz 1991), but no evidence of such facilities was found at San José 520.

What look like isolated and intentional deposits of complete, or nearly complete, vessels buried intentionally were found in association with the domestic structures at San José 520. Four of these deposits, which I call ritual deposits, were located in areas adjacent to the architectural structures at this site, and one was placed underneath the earth floor of AE2 (see Chapter 4 for descriptions, and Figures 4.10, 4.11, 4.17, and 4.18).

These types of ritual deposits involving ceramic vessels have also been reported in other places within the city. For example, nineteen of these features were reported at Tlailotlacan (Oaxaca Barrio), associated with relatively easy-access spaces such as courtyards or passageways. Those ritual deposits were formed by vessels with no apparent content (although some contained obsidian blades); some were covered by other vessels serving as lids, and others with lids formed of large fragments of different vessels, or a flat stone slab (Spence 2002:58-59). At Frente 3 of La Ventilla 92-94 at least eighteen contexts were reported where apparently isolated vessels (outcurving bowls, hemispherical bowls, and cover-plates) were clearly deposited within pit*s*, many cut through the surface of concrete floors (Gómez Chávez 2000). I believe that these can also be interpreted as ritual deposits of vessels[6]. Most of them involved complete vessels with no apparent contents, although a few of them contained painted slate fragments (Gómez Chávez 2000:116, 335, 466-467). Some of these vessels did not have a lid, and others were covered by cover-plates or hemispherical bowls.

Michael Spence (2002:58) indicates that these types of features are common at Tlailotlacan, but claims that they are not common in other parts of the city. However, I believe it is possible that they are simply underreported, perhaps in part because researchers have not recognized them as intentional ritual deposits when they involve vessels that do not contain burials or special objects. The large number of this type of deposit at La Ventilla suggests that this was a more common practice than we have previously recognized. The fact that these ritual deposits involve Teotihuacan vessels, and that they are found at apartment compounds where local Teotihuacanos resided, suggest that this may have been a Teotihuacan ritual practice, not exclusively associated with foreigners at the city. If that is the case, the presence of this type of ritual deposits at San José 520 would indicate that San José 520 residents were aware of this custom and practiced it themselves.

Spence (2002:59) indicates the possibility, based on ethnographic analogy from modern Zapotec communities, that some of these ritual deposits of vessels at Tlailotlacan may represent the placement of the 'afterbirth,' with the obsidian blade found inside of the vessels perhaps having been used during the surgical procedure to cut the umbilical cord. It is interesting to note that two of the dedicatory offerings at San José 520 consisted of outcurving bowls that contained an obsidian blade inside them. However, not all the vessels involved in dedicatory offerings at San José 520 or La Ventilla 92-94 had obsidian blades inside them, indicating variability in the offerings and purposes of such ritual events. Residue analysis from the vessels may conceivably provide some evidence of their content.

Other dedicatory offerings occur in apartment compounds involving the intentional interment of ritual paraphernalia such as complete or dismantled composite censers (e.g., La Ventilla 92-94) and Storm God vessels. No evidence of dedicatory offerings involving composite censers or Storm God jars was recovered from the contexts excavated at San José 520.

Ritual Paraphernalia

Paraphernalia connected with rituals at apartment compounds include objects such as *candeleros*, simple and composite censers, some figurines, and some specific forms of vessels such as cylindrical tripod vases, and Storm God or "Tlaloc" jars. Sculpted stone braziers called "Huehueteotl" braziers, also have been identified in apartment compounds, as well as other portable stone sculptures representing animals (e.g., jaguars, rabbits), and small models of altars.

Censers: Ceramic censers are containers for burning incense during ritual activities. The simplest censers at Teotihuacan are Matte Ware vessels in the shape of a truncated cone, with flat base, and straight out-flaring walls. Other more complex censers are formed by stacking two simple censers, the lower one inverted and the two joined together at the base. This produces an hour-glass shape, two-part vessel with the upper pot providing the chamber for burning incense. The most complex censers also have an elaborate lid with a chimney in the back concealed by a series of clay panels and decorative appliqué motifs or "*adornos*," often including a human mask in the center. These elaborate composite censers (Figure 6.17) are also known as "theater censers" due to the fact that they appear to create a kind of stylized scene, perhaps a temple's porticos. It has also been suggested that composite censers may have symbolized small, less-costly representations of funerary bundles used to venerate ancestors in Teotihuacan apartment compounds (Cowgill 2002; Headrick 1999).

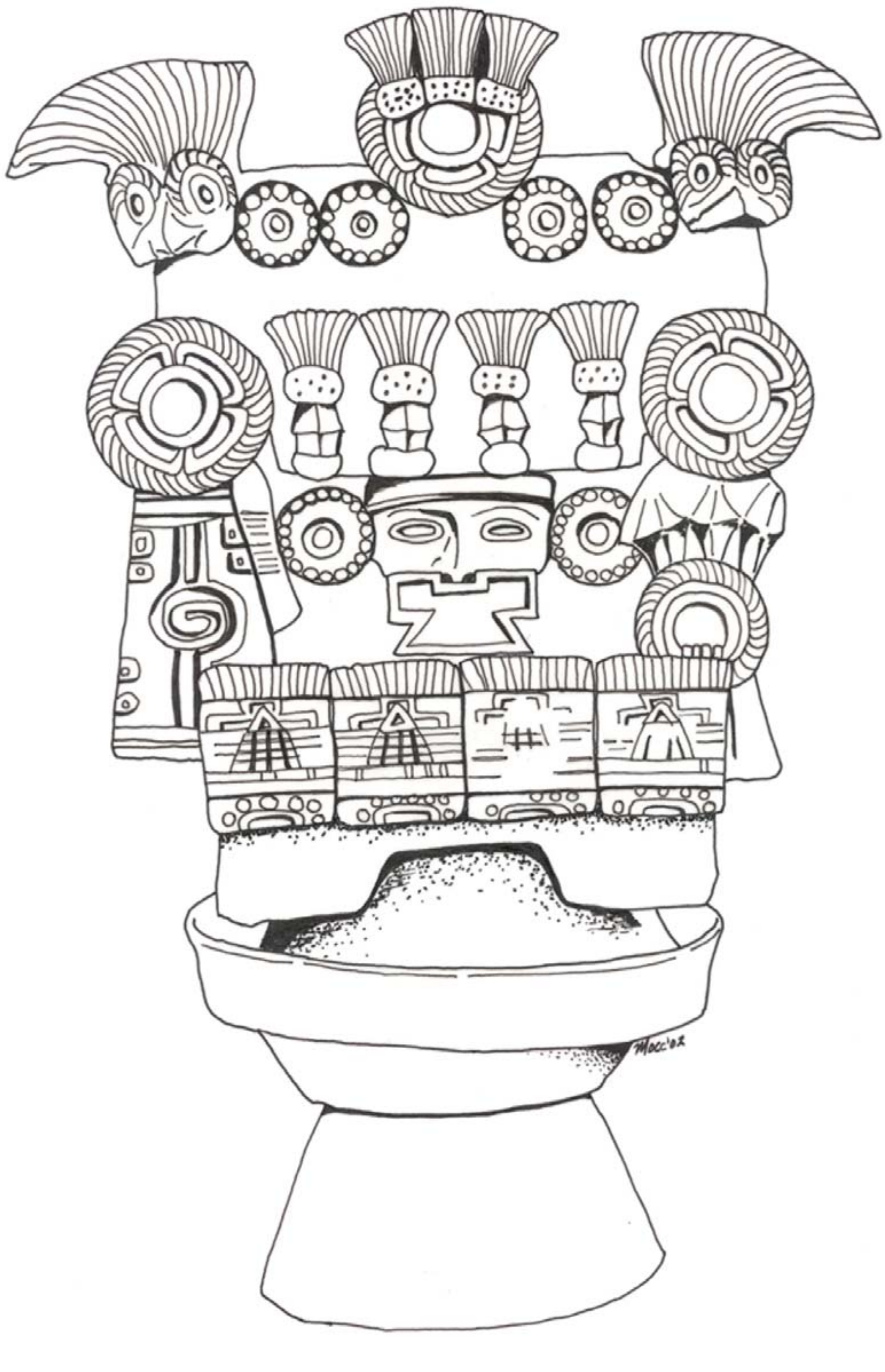


Figure 6.17. Drawing of a Matte Ware composite censer (theatre type) with *adornos*. (Drawn from Séjourné 1966a:Lam. 9).

Differences in the shape of censer flanges and the shape of the bowls have been found to correspond to chronological changes within the Teotihuacan ceramic sequence (Rattray 2001). Censer bowls were used at Teotihuacan from the Tzacualli to Metepec phases, but composite censers don't appear to have been made until Late Tlamimilolpa (Rattray 2001:179, 377). The distribution of *adornos* from the TMP surface collections suggests that they were available, to some extent, to all residents throughout the city (Sullivan 2007:197). If the surface distribution of *adornos* correlates with the presence of other parts of composite censers, this would indicate that this type of censer was available to households of a range of socioeconomic statuses. Data from excavated contexts indicates that they were more common in some apartment compounds than others.

Composite censers are likely associated with relatively public (i.e., compound-level) rituals, rather than private ones held at the level of individual families. They have been found associated with courtyard altars, or in the corners of patios. They are often deposited within pit*s* cut below concrete floors, sometimes associated with other ritual objects (e.g., at La Ventilla, containing slate and shells fragments), or human bones (e.g., Tlailotlacan); and more rarely deposited directly in burials (e.g., Oztoyahualco 15B:N6W3). Many have been found "intact" with adornos and other parts in place, while others were intentionally dismantled and their *adornos* arranged or scattered nearby.

At least some of these elaborate artifacts were made in a specialized precinct workshop located in the North Quadrangle just outside the Ciudadela dating to the Late Xolalpan and Metepec phases. The discovery of this workshop has led to the suggestion that the state controlled the production of composite censers, and also the symbols that they represented (Cabrera Castro 1991, 2004; Múnera Bermúdez 1985; Rattray 2001:391). More recent information suggests that certain kinds of censer *adornos* were also made in a less specialized and independent production community in the northwestern part of the city, where certain kinds of clay figurines were also produced (Sullivan 2005, 2007).

At San José 520 a small number of ceramic bowl censer fragments (n=27) were found both in surface and excavated contexts. Seventeen of these sherds were rims, and were identified as belonging to the Tlamimilolpa (n=12), and Xolalpan (n=5) phases. During the analysis of ceramics from San José 520 a small number of sherds (n=10) were registered as burner-censers. This category includes body sherds of vessels that, due to a lack of diagnostic features (rim, prong, etc.), cannot be positively identified as belonging to the censer vs. 3-prong burner categories. Three-prong burners are a type of Coarse Matte Ware brazier that starts to be used at Teotihuacan during the Tlamimilolpa phase. Three-prong burners consist of a flat bottom vessel with straight out-flaring walls that have three prongs evenly spaced around the inner rim of the vessel and inclined towards the center of the vessel. Their prongs are hollow, and the later specimens are often decorated with mold-made faces representing deities, humans, or animals (Rattray 2001; Robertson 2001:160). It has been argued that 3-prong burners may have been used as portable stoves and space heaters (Robertson 2001:160). Three-prong burners are best identified by the presence of prong remains, none of which were found in the collections from San José 520. It is probable that the ten sherds identified as burner-censers are actually fragments of censers.

The presence of bowl censers in the contexts of San José 520 is indicative of their use in some ritual activities similar to those occurring in apartment compounds. The low numbers of actual fragments, however, appear to indicate relatively few such activities, particularly during the Xolalpan phase. Censer bowl fragments from excavated contexts (n=9) are slightly more abundant in the areas connected to the residential structure AE2. This scenario changes if we also take into account the excavated burner-censer category, formed entirely by sherds (n=4) recovered from adjacent areas of AE7. From excavated contexts, censer and burner-censer fragments are associated almost exclusively with the two domestic structures (AE2 and AE7) found at San José 520, and their immediate surroundings. One censer rim was found in the context of the ceramic open firing location (AE6), but it was not a ceramic waster. I don't think it represents evidence for censer manufacture at this location. As indicated in Chapter 5, evidence does not suggest the manufacture of censers in the San José 520 ceramic workshop.

Eighty-two fragments of possible censer *adornos* or *appliqués* were recovered at this locality, many of them (n=52) from excavated contexts. The *appliqués* are very fragmentary and eroded and it was not possible to identify, at least during preliminary analysis, any of the common categories of *adornos* known from reported ceramic composite censers at Teotihuacan. In spite of plans for more in-depth analysis of these artifacts in the future (which might permit such identifications), and taking into account that these artifacts were identified on the basis of their paste and remaining features by Don Zeferino Ortega, a ceramic technician with 40 years of experience in the analysis of Teotihuacan ceramics, I will consider for this study that they do represent fragments of censer *adornos*. However, I think they belonged to *adornos* from simple types of censers, and not from the most elaborated examples or "theatre" censers. No remains of chimneys, masks, or mica, common in the most elaborate examples were found. Like censer and burner-censer fragments, these *adornos* were concentrated with the two domestic structures (AE2 and AE7).

The presence of censer bowls and some type of *adornos* at this hamlet is an indication that even people in the lowest socio-economic level, and with possible foreign affiliations, had access to this type of object and participated in some rituals similar to what people living closer to the core of the city practiced. Nonetheless, these people probably had no access to the elaborate composite censers that have been interpreted as representing mortuary bundles (Taube 2000:309), which are thought to be associated with a cult of ancestor veneration (Headrick 2007:138). Perhaps the occupants of San José 520 could not afford the theater-type censers. Alternatively they may have not subscribed to the particular religious meanings that the theater-type was associated with in other parts of the city. Speculatively, this may have been because of their status as possible foreigners, and/or as a resistance to central authority. While the widespread distribution of composite censers throughout the city has been interpreted as being connected with domestic ritual (Cowgill 1997:142), the production of some of the censers parts (chimneys, bowls, and *adornos*) in a controlled workshop north of the Ciudadela has placed them as objects sponsored by state religion.

Candeleros: Other objects associated with domestic rituals in apartment compounds are *candeleros*. Ceramic *candeleros* are small portable censers, thought to be used for personal ritual practices involving the burning of incense, wax, blood or bark paper (Kolb 1988a; Robertson 2001:161). *Candeleros* were very scarce or absent in Teotihuacan prior to Late Tlamimilolpa, but are extremely abundant in households throughout the city during the Xolalpan and Metepec phases (Rattray 2001). They are not commonly associated with elite contexts at the core of the city (Cowgill 2002). They are also rarely found in burials (Rattray 2001:113), although a few have been found as grave goods (e.g., Clayton 2009:164, 202; Manzanilla 1993b:157; Rattray and Civera Cerecedo 1999:152,

Figure 3). Earlier *candeleros* have only one chamber (Cowgill 2000b:282), but the most common forms are characterized by two chambers. Three chamber *candeleros* are rare, but do exist (see Séjourné 1959:162, Figure V.118; 1966a:Fig 19). The most common forms of *candeleros* have a crude exterior surface decorated with a series of indentations created by pinching the clay prior to firing. Less common are *candeleros* with incised motifs, polished surfaces, and effigy forms (Rattray 2001). *Candeleros* don't appear to have antecedents in earlier Mesoamerican societies, and did not survive after the collapse of the Teotihuacan state (Cowgill 2000:290).

At San José 520 only one *candelero* fragment was found, recovered in the vicinity of AE7 (Figure 6.6). It does not correspond to the most common type of *candelero* (i.e., with pinch-decorated surfaces). It has a body decorated with multiple small incised circles, made with a hollow circular tool. Even though part of its rim is present, due to the fact that it is only one small fragment, it is not possible to know how many chambers were originally present. Similar decorations appear in other one and two chamber Teotihuacan *candeleros* (see Figure 14.7 in Pasztory 1997; Séjourné 1959:161-162, Figures V.117, and V.118).

Ceramic Miniatures: Miniatures are small vessels that mimic some vessels of normal size, particularly domestic forms (Rattray 2001). They are made mostly of Fine Matte Ware, but Thin Orange and Granular miniatures have also been found in excavated contexts at Teotihuacan. Miniatures are found frequently associated with adult burials, which suggests that they represented ritual objects rather than toys (Cabrera Cortés 2001; Robertson 2001:162). Ceramic miniatures are found from Tzacualli to Metepec phases, and early vessels (Tzacualli to Early Tlamimilolpa) have some features that allow chronological placement. No reliable system has been developed to date miniatures from Late Tlamimilolpa phase and later (Rattray 2001:113).

No regular Fine Matte Ware miniatures were associated with the burials found at San José 520, but a small number of them (n=23) were found in various parts of the locality, both in the surface (n=7), and excavation (n=16) collections. Miniatures at San José 520 are represented by small bowls, outcurving bowls, jars, and other non identified forms. While surface miniatures are relatively evenly distributed, miniatures from excavated contexts are mostly associated with the areas surrounding domestic unit AE7, in the northern part of Lot 83.

Six miniature fragments from different vessels were associated with the ceramic open firing feature (AE6), but they did not present evidence of misfiring. These fragments include an almost complete jar with no supports, a polished bowl with everted rim, and parts of two outcurving bowls decorated with the "cloud" motif on their exterior surfaces. One of them had nubbin supports that appear to represent the head of an animal, possibly an amphibian.

Small Tecomates or Incurving Bowls: There is a separate group of small bowls with incurving walls that are apparently mostly made of Dense Ware (Rattray 2001), and that I will refer to here as small *tecomates*[7]. Dense Ware is a Teotihuacan ware made from Tzacualli through Tlamimilolpa phases that is no longer present in Xolalpan and is characterized by a dense untempered paste and texture, with a pale brown color (Rattray 2001:119). In Late Tlamimilolpa these small *tecomates* or incurving bowls are apparently also made in low polished ware (Rattray 2001:195).

Small *tecomates* are not commonly treated as miniatures, although they are usually quite small vessels; they probably had ritual functions as they are mostly found in association with burials at Teotihuacan—for example at La Ventilla B (Rattray 2001:487, Figure 51; Sempowski 1994:111), Tlatelco 6SW:N1W3, Tlajinga 33, (Cabrera Cortés 2003, 2007), Tlailotlacan, and Structure 19:N1W5 (Gómez Chávez 2002). They are even found in hinterland sites under the control of Teotihuacan such as Axotlan, a settlement located 35 km to the west of the city (Clayton 2007:15, Figure 10; García Chávez et al. 2005:505, Foto 6). While there is variation in the decoration of these vessels in different locations (e.g., punctate, incised, undecorated), the sizes and forms are similar overall.

Inhabitants of San José 520 also placed these types of vessels in burials (Figure 6.11). The single individual from Burial 1 had sixteen small *tecomates* associated with it, four of which appear to be made of Dense Ware. The other twelve have thicker, cruder walls, more poorly finished surfaces and smaller sizes. As discussed in Chapter 5, I considered them to be a product made in the San José 520 ceramic workshop and describe them as San José 520 incurving bowls. Associated with Burial 2 were six small *tecomates*, four of which were regular Dense Ware pieces, and the other two were San José incurving bowls. In a layer just above AE8, an additional Dense Ware small *tecomate* was found, which likely belonged to the group of vessels initially deposited with the individuals in Burial 2.

Clayton (2007:13) notes that the type of *tecomate* with punctate surface treatment that she observed in mortuary materials from Axotlan, is uncommon in the burials from urban Teotihuacan that she analyzed, but is present at Tlailotlacan. Based on a thorough study of Teotihuacan burials reported in the literature, I found that small incurving bowls or *tecomates* are actually rather uncommon *in general* in Teotihuacan burials, and they are not frequently reported in any other context. Rattray (2001) also provides little information about them when describing the classification of ceramics from Teotihuacan.

All of the places where miniature *tecomates* appear to have been found in burials (La Ventilla B, Tlajinga 33, Tlatelco 6SW:N1W3, Tlailotlacan, Axotlan, 19:N1W5, and San José 520) have a connection with foreign populations.

The foreign connections from these different localities vary. Tlailotlacan represents one of the best defined enclaves of foreigners within the city, settled by people with Oaxacan affiliations (Rattray 1987; Spence 1992). Shaft tombs, a mortuary facility associated with West Mexico, have been reported at Tlajinga 33, 19:N1W5, and Tlatelco 6SW:N1W3 (Cabrera Cortés 2003; Gómez Chávez 2002; Storey 1994:442). Gómez (2002:605) suggests the possibility that the incurving bowls or *tecomates* he found in one of the burials at 19:N1W5 were imported, based on a visual examination carried out by Grégory Pereira, who indicated similar forms occur in Michoacán sites. A connection with the Gulf Lowlands has been suggested for some burials from La Ventilla B (Rattray 1977). As indicated earlier, isotopic analyses from the human remains from San José 520 suggest their arrival from abroad, but likely from a place within the Mexican Highlands.

Storm God Vessels: These are effigy vessels with modeled and appliqué decorations representing the facial, body, and symbolic elements of the Teotihuacan Storm God (Figure 6.18). Main elements include bulbous eyes and nose, and protruding fangs, usually from the corners of a curled upper lip. As mentioned in Chapter 5 these are commonly known as “Tlaloc” jars or vessels, but given the fact that they represent the Teotihuacan Storm God, and not the “Tlaloc” of post-Teotihuacan periods I refer to them in this manuscript as Storm God jars or vessels. Some of the Storm God jars have arms, short legs, and ears attached to the body (ears often have earspools). The eyes commonly have curved eyebrows and/or goggles. Often Storm God jars have a trilobed element that extends above the rim, which has been equated with hills or mountains, and has been interpreted in connection to the symbol of the ‘triple mountain’ (Cowgill 2002), and the ‘sacred mountain’ represented by Cerro Gordo, a mountain located immediately north of the city (Robertson 2001:164). Some of the jars also have a serpentine staff or “lightning” held by the right hand.

Figure 6.18. Example of Storm God vessel (drawn from Berrin and Pasztory 1993:241, Object 116).

Most of the excavated Storm God jars have been found in high-status contexts (Bracamontes Quintana 2002:59-60; Cowgill 1997:141), associated with offerings at the main public buildings in the city (e.g., Feathered Serpent Pyramid, and Moon Pyramid) where ritual activities were carried out by the state. Although overall counts are low (n=77), the distribution of Storm God jars sherds from the Teotihuacan Mapping

Project's surface survey also shows a tendency for concentration in the areas surrounding the administrative core (see Figure 6.19), although some sherds are also found in more peripheral locations.

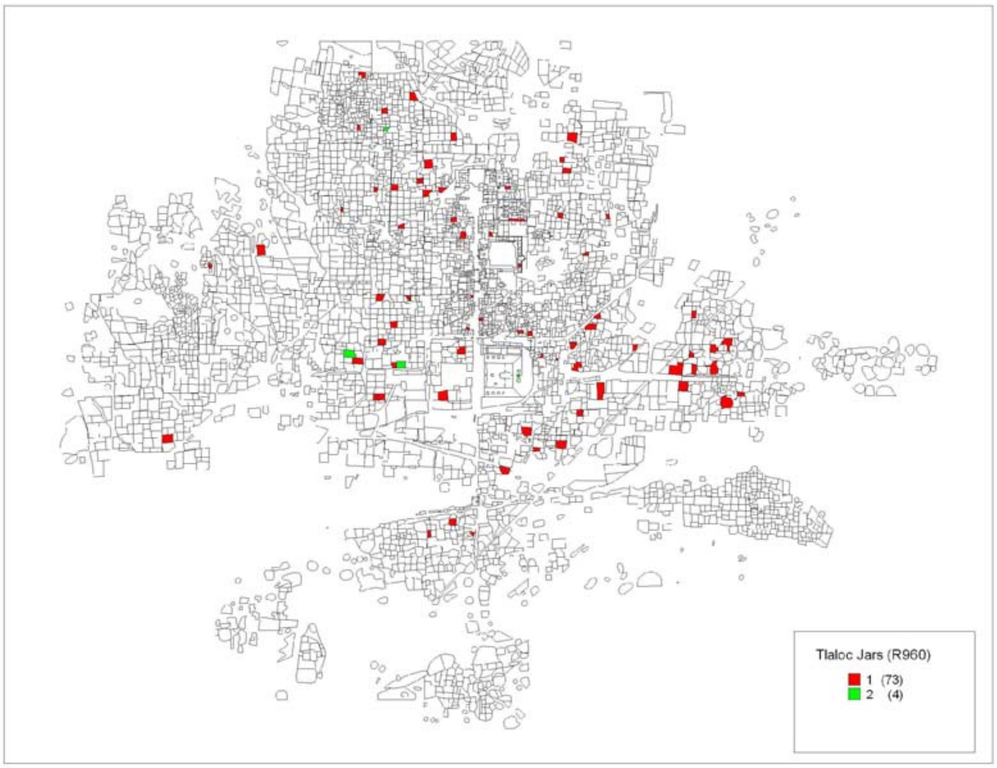


Figure 6.19. Map showing the distribution of Storm God jar sherds from TMP surface collections (figure prepared by Ian G. Robertson).

In small proportions, also appear in some excavated contexts at apartment compounds (e.g., Oztoyahualco 15B:N6W3, Villas Arqueológicas, Tetitla, Xolalpan) particularly during the later phases (Xolalpan and Metepec) of the Teotihuacan period (Bracamontes Quintana 2002:59-60). At apartment compounds these jars are found in burials, and in offerings in rooms, altars, and patios (Bracamontes Quintana 2002:81; Ortíz Díaz 1992:63; Rattray 2001:115), suggesting their connection with ritual activities.

While the presence of Storm God jars in apartment compounds has been interpreted as part of a "popular creed" (Pasztory 1992), others have suggest that these vessels may have been more connected with state religion (see Cowgill 1997, 2002).

At San José 520, a total of 93 Storm God jar fragments were found during our intensive surface collection (n=32), and excavations (n=61). None are complete or even nearly complete vessels, and none were found in association with burials or ritual contexts. As indicated in Chapter 5, some of the Tlaloc jar sherds found at this locality exhibit evidence of misfiring (n=16, corresponding to 17 percent), which suggests that potters from San José 520 were making some of these vessels. Interestingly, since no complete vessels (or fragments) were found associated with the burials or other ritual contexts at this site, it appears that San José 520 potters were familiar with the symbolism of Storm God jars, but did not use these vessels in their own domestic rituals. Perhaps the values of such jars prevented them from keeping the vessels they made. Alternatively, if as suggested by George Cowgill (2002), their existence in domestic units might indicate people who died under special circumstances (e.g., drowning), the lack of Storm God jars in the burials so far found at this location may be due to specific causes of death.

The great majority of Storm God jar fragments recovered by excavation come from the squares associated with structure AE7. Fewer fragments were found associated with domestic unit AE2, and with AE6. A higher concentration of Storm God jar sherds from surface collections occurs in sectors surrounding AE7 (N9E7, N9E8). The rest of the Storm God jar sherds were more evenly distributed throughout Lot 83, and none were from sectors near AE2 and AE6.

The ninety three fragments found at San José 520 exceed the entire collection of Storm God jar fragments (n=77) identified by the Teotihuacan Mapping Project (TMP) in its surface collection of the entire city (Ian G. Robertson, personal communication 2008). Even if we take into account only the surface materials collected by the San José 520 Project, the number of sherds identified there (n=32) significantly surpasses the numbers of sherds from individual tracts in other parts of the city. Most of the TMP individual collections containing at least one Storm God jar (n=73) have only one fragment, and only four cases include two sherds maximum. No Storm God jar fragments were collected or reported during the TMP work at San José 520 in the 1960s. The low counts of Storm God jar sherds in the overall TMP collections may be due to the fact that Storm God vessels are difficult to identify unless fragments with iconographic information pertaining to the Storm God can be found. However, this is also the case at San José 520, where only fragments identified as part of the Triple Mountain, fangs, lightning, and eyes were considered to represent Storm God jars (Figure 6.20). There are differences in the surface collection methods used by the TMP crews, and the intensive survey procedures that were carried out by the San José 520 Project. Nonetheless, I still think the amount of Storm God jar sherds at San José 520 is surprisingly high. At Oztoyahualco 15B:N6W3 a total of 35 Storm God jar sherds were reported (Ortíz Díaz 1992:63) from an excavation reaching a volume of ca. 467.5 m^3. The volume excavated at San José 520 is ca. 45 m^3.

Beyond the aspects of manufacture (see Chapter 5), it is difficult to compare Storm God jar data with excavated information from other parts of the city as Storm God jars are mostly unreported unless they are found complete. A relatively common practice found in various Teotihuacan contexts involves "killing" the vessel, by cutting their bases or symbols intentionally; although sometimes these parts are deposited together with the jar (Bracamontes Quintana 2002:62-66), in cases where the vessels were ritually scattered, identification may be even more difficult, particularly in excavations done without screening.

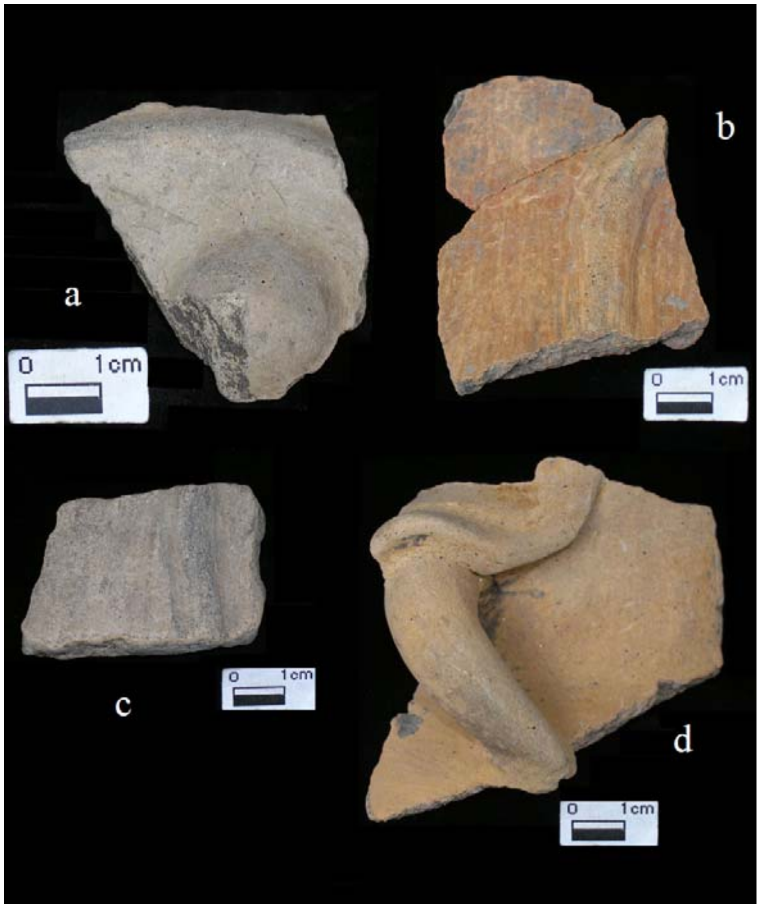


Figure 6.20. Examples of Storm God vessel fragments representing (a) an eye, (b and c) possible eyebrows or eye frames, and (d) fang; b is a sherd with evidence of missfiring.

Vases and Direct-rim Cylindrical Tripods: Rattray (2001:105) describes the vase as "a cylindrical, flared or curved wall unrestricted vessel with height greater than diameter." Vase is a category of vessel among the Teotihuacan ceramic complex that encompasses a great deal of variation in terms of elaboration and quality. At the lower end of the scale are Polished Everted-lip vases with nubbin supports characteristic of the Miccaotli and Early Tlamimilolpa interval (Cowgill 2000b:277), although simple vases are found throughout the entire Teotihuacan Period sequence (Rattray 2001). At the higher end are the "direct-rim cylindrical tripods," that begin to be made by Early Tlamimilolpa (Rattray 2001:115, 117), and cease to be made after the decline of Teotihuacan (Cowgill 2000b:290). Cowgill (personal communication, 2009) believes that the direct-rim vases are extremely rare before Late Tlamimilolpa. They came to be regarded as one of the hallmarks of Teotihuacan culture.

Cylindrical tripod vases are often fine quality vessels decorated by paint, incisions, plano-relief motifs, or even polychrome scenes painted over a stuccoed surface, the last made after the Tlamimilolpa phase (Rattray 2001:117). Some of the cylindrical tripods also have lids with knobs at the top. The lids are sometimes decorated by incisions, appliqué, and less often with plano-relief motifs. When attached to vases hollow supports (round, cylindrical or rectangular) are only associated with direct-rim cylindrical tripods. Molded and slab supports are also only associated with direct-rim cylindrical tripods.

A significant problem with this vessel category is the fact that no distinction is made between direct-rim cylindrical tripods and more ordinary vases in our current system of ceramic analysis, and both types of vessels are simply registered as polished vases. A second significant problem is that no distinction is made between high and low quality versions of these vessels. Adopting a more refined classification in the future will probably provide evidence about different contexts and uses of these vessels. It is worth pointing out, however, that vases and cylindrical tripods may overlap significantly in this regard: both have been found at Teotihuacan in apartment compounds of varied socio-economic status; both are sometimes found as burial offerings (and thus are ritual vessels, at least situationally), often associated with individuals of higher status within the compound (Sempowski 1987, 1992); and both are sometimes used in utilitarian or domestic contexts (Rattray 2001). Probably both were important in serving food at various kinds of social events (Robertson 2001).

In more rare occasions, as described above, cylindrical tripods are used as funerary containers of infant or un-born individuals. In other contexts they have been also used to contain other rituals objects, as in the case of some funerary contexts at Xolalpan where cylindrical tripods associated with burials contained groups of *candeleros*, other small cylindrical vessels, or mica, and they were covered with other vessels (Linné 2003a:68).

While often found associated with burials, the mending of pieces, salvage techniques (e.g., matching different lids and vases), wear patterns (e.g., at the bottom of supports), and performance attributes of direct-rim cylindrical tripods (e.g., rattling supports, decorative scenes, etc.) indicate that they were used in other contexts than burials (Conides 2000:111-123). For instance, decorative motifs often include elements connected with sacrifice, deities, headdresses and symbols of power, or ritual activities, among others.

The importance of cylindrical tripods in contexts of public ritual performance at Teotihuacan has been indicated by their representation in scenes depicted in mural paintings. For example, in the scenes of ritual dancing, ball-game playing, and other activities portrayed at the mural known as the “Tlalocan” in Tepantitla, a lidded cylindrical vase (Figure 6.21) is represented in connection with an hemispherical bowl containing a blue substance (possibly froth?), in front of a standing individual, who gestures as if interacting or speaking with two other figures seated above, the latter incomplete due to the fragmentary nature of the mural. In the immediate vicinity of this scene there is another vessel depicted as being stirred by a stick and a hand, which evokes the action of frothing a liquid. Beverages such as chocolate, *pozol*, or *pulque* are often stirred to produce froth, and these represent beverages that were consumed often during ritual practices in Mesoamerica (McNeil 2006; Powis et al. 2002; Smith et al. 2003). Cynthia Conides (2000:122) suggests the possibility that cylindrical tripods were containers for cacao or chocolate in some cases and draws attention to the frequent representation of cacao beans on the walls of some tripods. The appliqué adornments that often decorate the bases or lids of cylindrical tripods, and that archaeologists have named "coffee bean" motifs, also bear some resemblance to cacao beans (Ian G. Robertson personal communication, 2009) and may be intended to represent them. Another example of the presence of a cylindrical tripod in the context of public ritual and feasting comes from a scene from a mural found in the SE section of Atetelco (Cabrera Castro 2007). In this scene a lidded cylindrical tripod is represented in association with individuals drinking from hemispherical bowls, and dancing around a rectangular temple (Figure 6.21). Cylindrical tripods and hemispherical bowls appear in both murals. Cynthia Conides (2000:122) also reports a cylindrical tripod from a private collection, which was reported to have been found containing a small hemispherical bowl and a bone inside.

Cylindrical tripods also have been described as prestige items that were given as expensive gifts to other peoples of similar status in other parts of Mesoamerica (Conides 2000:118). A Teotihuacan-style cylindrical vase found in Problematical Deposit 50 at Tikal (Coggins 1979; Schele and Freidel 1990) depicts a number of individuals wearing Teotihuacan style headdresses and carrying cylindrical vases. This scene has been interpreted as depicting Teotihuacan emissaries arriving at a Maya settlement.

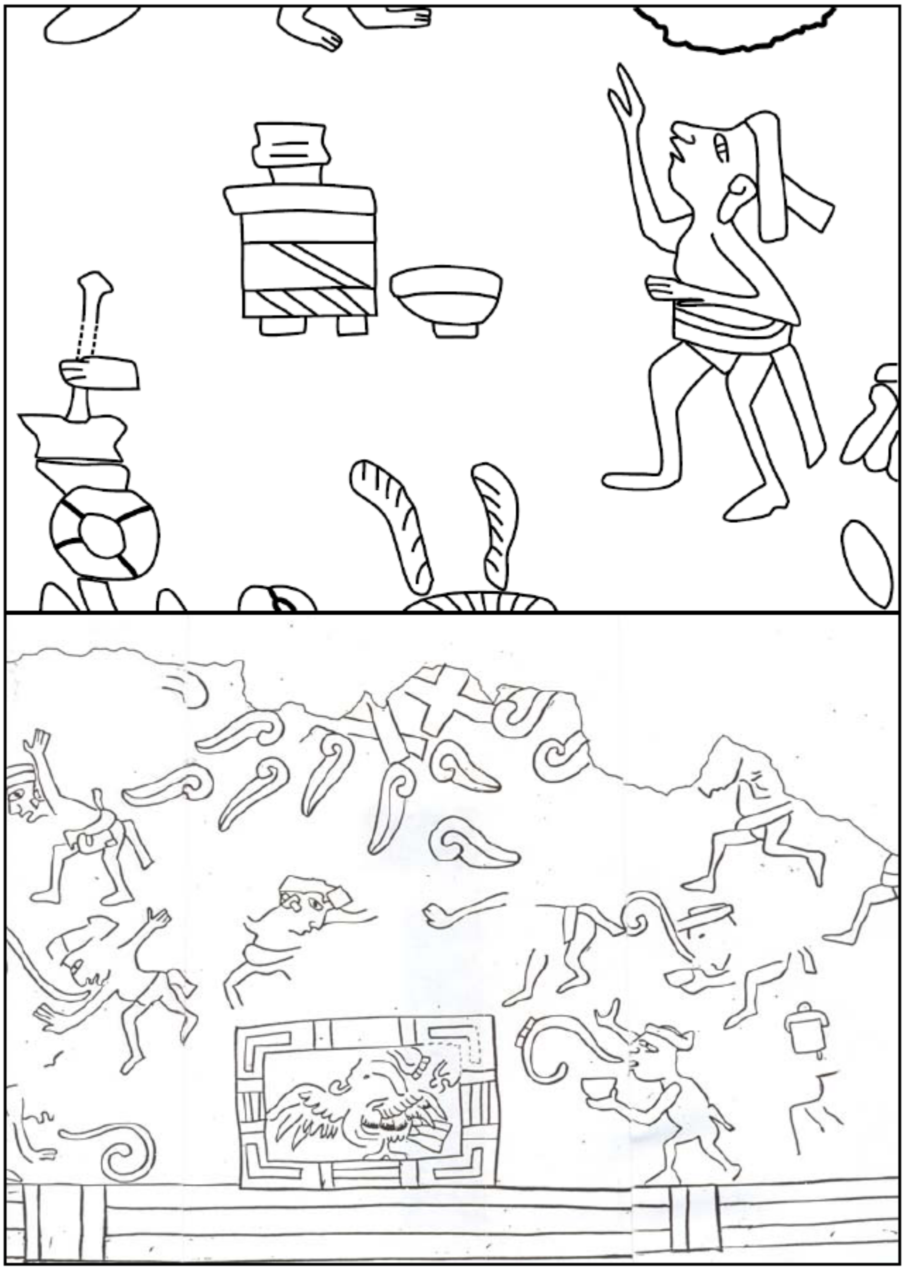


Figure 6.21. Detail of painted murals from Tepantitla (upper) and Atetelco (lower) where cylindrical vases are depicted. Drawing from Atetelco courtesy of Rubén Cabrera Castro.

At San José 520, as mentioned in the description of funerary contexts at this locality, a vase and a cylindrical tripod with cut walls were found as part of the Burial 2 grave goods. In addition, and as described in Chapter 5, a total of 821 Tlamimilolpa sherds, and 2364 Xolalpan sherds recovered from both the surface collection and excavations were identified as Polished vase fragments. These include 126 rims from Tlamimilolpa, and 550 rims from Xolalpan. In addition there were a total of 302 sherds identified as vase lids. The substantial proportion of vase and lid sherds found at this site (ca. 4 percent of the entire collection), along with some evidence of defective pieces, and the fragment of a ceramic mold to produce cylindrical tripod applications, suggests the production of vases and cylindrical tripods at San José 520. This is more fully addressed in Chapter 5.

"Ataditos de Barro" (Small Clay Bundles): These are small, solid, somewhat irregular cylinders of clay a few centimeters long, often found joined or glued together in small groups or bundles, and included among funerary objects in some Teotihuacan burials (see for example Séjourné 1966a:Fig. 211). They are commonly known as "*ataditos"* or *"atados de barro*" (Cabrera Cortés 2003; Rubio Chacón 2003:48), but are also sometimes refered to as "*ataditos de huesos*" (perhaps because they look somewhat like phalanges) (Cabrera Cortés 1985); clay cylinders (Sempowski and Spence 1994:449), *hacesillos* (Séjourné 1966a:229) or bundles (Clayton 2009:154). Clayton suggests they might represent bundles of food or wood (Clayton 2009:154). These types of objects have been reported at La Ventilla B (Rattray 1992), Tetitla (Séjourné 1966a), La Ventilla 92-94, and Tlatelco 6SW:N1W3 (Cabrera Cortés 1985), in contexts representing single and multiple burials.

At San José 520, four cylinders from *ataditos de barro* were recovered, two of which were found in the fill above the pit of Burial 2. The fact that Burial 2 was reopened several times, causing disturbance in the human remains and associated objects within it means that these *atadito* cylinders may have originally been interred with other objects as funerary items. Their presence at this locality suggests that San José 520 people were aware of their use and meaning and used them in their funerary deposits.

Ceramic Figurines

Clay figurines are abundant artifacts in archaeological contexts at Teotihuacan, and it has been suggested that no other Mesoamerican culture produced as many figurines as Teotihuacan (Conides and Barbour 2002). The earliest Teotihuacan figurines were all handmade, but by the beginning of Late Tlamimilolpa molds were adopted to make part or the entire figurine (Barbour 1976; Goldsmith 2000). The mold-made figurine period (Late Tlamimilolpa, Xolalpan and Metepec) is referred here as the TMM period following the work of Kim Goldsmith (2000).

Despite their prolific presence, the study of figurine functions presents a particular challenge because they are usually found fragmented, and in most cases in secondary contexts. Figurine fragments are often found in fill, rubble of abandoned structures, secondary deposits, and on the surface. Previous work on Teotihuacan figurines suggests that they are found more commonly in residential middens and fills of a wide variety of social status and are less associated with public buildings such as temples (Barbour 1993a:222; Goldsmith 2000; Scott 2001). This has led to the suggestion that they may have played an important role in daily household rituals and activities at apartment compounds (Barbour 1976:13; 1993a:222). Figurines are not commonly found associated with burials but some have been found as grave goods in various apartment compounds (e.g., Oztoyahualco 15B:N6W3, La Ventilla B, Xolalpan, Zacuala and Tetitla), and these examples confirm their use in some domestic funerary rituals. Recent excavations at Teopancazco (e.g., Manzanilla 2001b), report some types of figurines (see

Riego Ruiz 2005) in contexts interpreted as representing termination or abandonment rituals, which further support their use in domestic rituals at apartment compounds.

The particular features of figurines also provide hints of their use in other contexts. A great number of the Teotihuacan figurines likely represent common people, while others are disguised or have features associated with identifiable deities. A number of them are seated on a throne or scaffolding and their repetitive mold-made images bear a resemblance to mortuary bundles—perhaps representing venerated ancestors (Headrick 1999:76 and Figure 13; 2007:56-57). Others portray a combination of anthropomorphic and zoomorphic features resulting in fantastic figures that possibly symbolize the concept of *nahualli*—a human being who has the power to magically turn into an animal form. These examples tell us that figurines were used in a variety of contexts and for different purposes.

Previous studies have suggested that figurines played an integrative role in Teotihuacan society, and that some examples ("host figurines") even reflect metaphorically the internal organization of the city (Conides and Barbour 2002:422-423; Pasztory 1997:173). An evaluation of figurines from San José 520 indicates that people settling in this locality shared similar types of figurines with other households within the city, and likely participated in similar practices that involved some of these figurines.

A total of 345 fragments of figurines was found at San José 520. Many of them (n=227) are very fragmentary, eroded, and difficult to identify. However, 33 percent exhibit features that allowed clear identification, and the identified fragments include distinctive Teotihuacan figurine types. A detailed description of the entire corpus of ceramic figurines recovered from San José 520 goes beyond the scope of this dissertation. However, the most representative groups are described below to exemplify the use of common Teotihuacan figurine types by the inhabitants of San José 520. A summary of the figurines froms San José 520 is presented in Table 6.6. As indicated in Chapter 6, evidence of misfiring problems and defects observed in a small group of these objects suggests that some figurines were also made at this location.

Table 6.6 Types of anthropomorphic figurines.

Figurine type	Sub-type	Excavation	Surface	Total	Total %
Articulated		9	5	14	4.1
Flat	Wide-band headdress	9	7	16	4.6
	Dressed female	7	3	10	2.9
	Swaddled infant	1	0	1	0.3
Portrait		0	1	1	0.3
Cylindrical	Cotton turban	2	0	2	0.6
	Dressed male	0	2	2	0.6
	Perforated torso	1	1	2	0.6
	Pointed head	2	0	2	0.6
	Monkey helmet	1	1	2	0.6
	Pregnant female	1	0	1	0.3
	Ribcage	0	1	1	0.3
	Tatooed face	1	0	1	0.3
	Masked face	1	0	1	0.3
Zoomorphic	Cylindrical	13	8	21	6.1
	Wheeled	1	0	1	0.3
Not identified		83	184	268	77.7
TOTAL		132	213	345	100

The initial identification of the San José 520 figurines was carried out with the aid of Kim Goldsmith. I identified other figurines based on information reported in the literature (Barbour 1976; Berrin and Pasztory 1993; Goldsmith 2000; Montoya 2001; Riego Ruiz 2005; Scott 2001; Séjourné 1959, 1966b; Sullivan 2005, 2007).

Wide-Band Headdress Figurines: One of the most distinctive and long-lasting types of figurine headdresses at Teotihuacan is the one known as the “Wide-band headdress” (Conides and Barbour 2002:422). Figurines with the wide-band headdress appear to be found in contexts from Tzacualli to Metepec Phases (Riego Ruiz 2005), and one dating possibly to the Cuanalan phase was found at Group 5′ (Goldsmith 2000:86). The headdress is a wide, somewhat flattened, elongated horizontal bow, drawn in somewhat at the center by a vertical tie (Figure 6.22). Wide-band headdresses are found mostly on female figurines (in figurine types such as Flat, Articulated, and Guest), and infants (Barbour 1976; Goldsmith 2000:87).

Figure 6.22. Examples of Wide-band headdresses, and a Tlamimilolpa Wide-band headdress female figurine (drawn from Berrin and Pasztory 1993:227, catalog num. 88. The Saint Louis Art Museum collection).

An excavation toward the eastern edge of the city exposed an *in situ* arrangement of four buried layers of female figurines (including some with wide-band headdresses) arranged in circles. The central subjects of figurines in these arrangements were either an infant inside a cradle, or women holding a child within a cradle (Rodríguez Sánchez and Delgado Rubio 1997). This discovery has led to the suggestion that the types of female figurines found are associated with concepts of fertility and motherhood (Fernández Mendiola and Jiménez Hernández 1997:23).

Wide-band figurines have also been interpreted in connection with domestic rituals associated with birth (Conides and Barbour 2002:423). An example from Xalla of an almost complete Wide-band headdress pregnant figurine (Riego Ruiz 2005:29-30) may also suggest their connection with pregnancy. Later molded versions of wide-band headdress figurines are portrayed carrying an infant on either side of the shoulder or hip. The overall themes of these examples appear to be connected, with domestic rituals associated with concepts of fertility, motherhood, and pregnancy.

At San José 520, this is one of the most common types of recognizable figurines as well. Ten Wide-band headdresses were recovered from excavated contexts, and eight were found in the surface collections. Some fragments exhibit evidence of manufacture-related defects, suggesting that at least some were made at this locality. Clothed females wearing a cape (either a *quechquemitl* or short *huipil*), and a skirt or *enrredo*, are often associated with individuals wearing Wide-band headdresses, or with "split" heads (see Goldsmith 2000:89-90). No "split head" figurines were identified at San José 520, and the thirteen female clothed figurines from excavated and surface contexts might be associated with Wide-band headdresses, although they were not tabulated as such in the analysis. A fragment of a figurine that possibly represents the feet of a swaddled infant, which are often connected with wide-band headdreses as well, was also found at San José 520. This figurine fragment was also tabulated as a separate type. Because wide-band headdress heads are sometimes connected with articulated bodies, some of these figurines may have complemented some of the Articulated limbs found at this locality, but due to fragmentary conditions this association is not conclusive.

Articulated or "Puppet" Figurines: Articulated figurines appear in Teotihuacan contexts from Tzacualli to Metepec phases, and even continue into later times after the Teotihuacan Period, but are most common during the TMM period (Goldsmith 2000). They typically have somewhat triangular torsos with transverse perforations at the level of shoulders and hips, where arms and legs are attached with the help of a string (Goldsmith 2000:93). The arms of Tzacualli Articulated figurines are not movable, just the legs (Barbour 1993b:232). A few Articulated heads have been found for figurines dating as early as Late Tlamimilolpa, but this is a feature more common in Coyotlatelco figurines (Goldsmith 2000:139). They can be hand or mold made, but frequently the torsos and heads are made with molds, and limbs are handmade. Torsos always represent naked bodies, with body features delineated (e.g., breasts and sometimes transverse abdominal wrinkles), and most have body ornaments represented by several strings of beaded necklaces (Goldsmith 2000:93).

Articulated figurines are one of the few figurine categories associated with Teotihuacan burials. They have been found in burials at Oztoyahualco 15B:N6W3 (Manzanilla 1993b:157; Ortíz Díaz 1992:52), Xolalpan (Linné 2003a:139, Figure 22), Zacuala (Séjourné 1959:58, Lámina IV.2; Sempowski 1994:65), La Ventilla B (Sempowski 1994:86), and Tetitla (Sempowski 1994:68). Due to their movable limbs it has been suggested that they may have played an important role in birth or healing ceremonies (Barbour 1976:26; 1993b:232) or as toys (Goldsmith 2000:94). Their exclusive association with adult male and female burials is not consistent with the interpretation of them as toys. This type of figurine is also one of the most common types found in contexts interpreted as representing termination or abandonment rituals, offerings, and in altars in Teopancazco (Riego Ruiz 2005:387-394), which suggest their use as ritual paraphernalia, at least in some apartment compounds.

At San José 520 fourteen limbs of articulated figurines were found (Figure 6.23), but interestingly no torsos or heads of this type of figurine were identified, although a fragmented mold to produce heads associated with this figurine type was recovered

(Figure 5.12). None were found associated with burials, but they are equally present in the two architectural structures found in this locality.

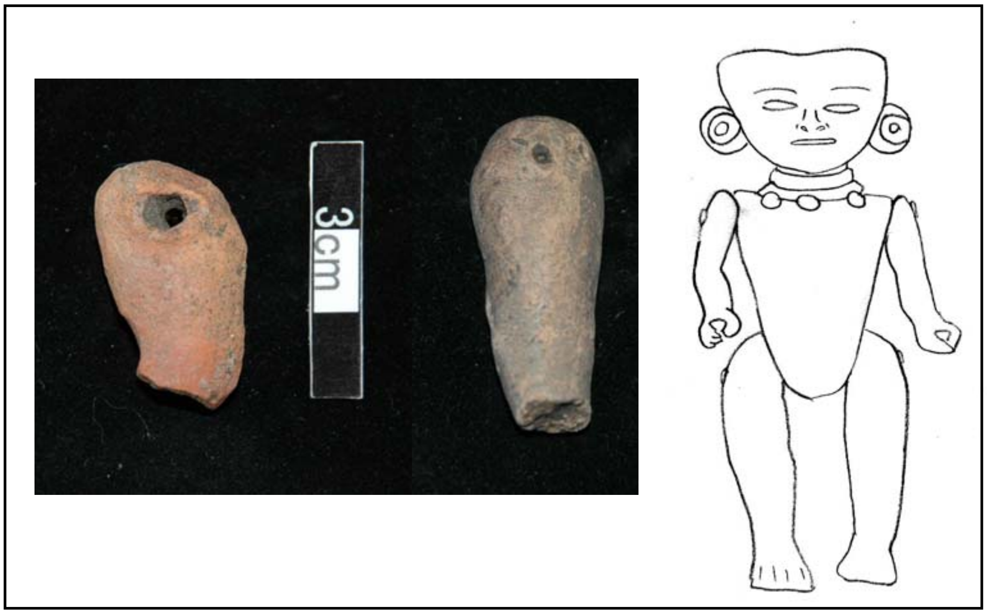


Figure 6.23. Examples of Articulated or Puppet figurine limbs, and an assembled Xolalpan Articulated figurine (drawn from Berrin and Pasztory 1993:234, catalog num. 103. The Los Angeles County Museum of Art collection).

Based on the spatial distribution of figurines collected on the surface by the TMP, Sullivan (2007:159-160) suggests that articulated figurines are slightly more abundant in low and intermediate status apartment compounds than those of high status. Excavation data may suggest a different pattern. Figurine analyses from Oztoyahualco 15B:N6W3, Teopancazco and Xalla (see Riego Ruiz 2005) indicates that they are more common at the intermediate and high status localities of Teopancazco (n=298), and Xalla (n=91); than at the lower status apartment compound of Oztoyahualco 15B:N6W3 (n=29). No evidence of figurine manufacture is reported from any of these localities. At San José 520 they represent 4 percent of the entire figurine collection (Table 6.6) and 12 percent of the identifiable figurines. The lack of other parts of this type of figurine at this location is intriguing. The high proportion of defective limbs at San José 520 (50 percent within this category) and the head mold suggests manufacture at this location, while the apparently small scale of production may imply local consumption, even though no torsos or heads were found (see Chapter 5).

Portrait Figurines: Portrait figurines have been considered one of the most standardized categories of Teotihuacan figurines. The name by which they are known is due to their realistic and well defined facial features; because they are mold-made they don't actually represent individual portraits (Goldsmith 2000:52). Most correspond to the TMM period. Although their bodies are always handmade, the standing version (the most common type) mostly represents the same position. These figurines never display ornaments or clothing (Barbour 1976:16), and their heads also suggest shaved individuals (Sergio Gómez personal communication in Goldsmith 2000:52). It has been proposed that they may have been clothed with dresses and headdresses made of paper or fabrics (Barbour 1976:23, 29-30). Due to the position of their arms, they possibly represent warriors holding weapons, or seated in council (Goldsmith 2000:53-54; Sugiyama 2002:192-194). Although infrequent, Portrait figurines have been found in burials. For example, twelve of them were associated with Burial 181, a cremated male individual found at La Ventilla B (see Sempowski 1994:86); and one is reported at Oztoyahualco 15B:N6W3 associated with a male burial (Manzanilla 1993b:157). The association of this type of figurine with male individuals in funerary contexts would be consistent with a connection to male warriors.

Surface data suggest that Portrait figurines are equally associated with residences of varied economic status during the Miccaotli and Tlamimilolpa phases, but a stronger association with residences of higher status is observed during the Xolapan and Metepec phases (Sullivan 2007:161-163). Molds to make the faces of Portrait figurines were uncovered at the precinct workshop in the Cuadrángulo Norte de la Ciudadela (Múnera Bermúdez 1985). At San José 520 only one head of a Portrait figurine was recovered from the surface. The body of another possible figurine of this type was found in the vicinity of residential structure AE7, although the identification in uncertain. Within excavation collections associated with this structure, Portrait figurines represent 0.6 percent of the entire collection, and 1.7 percent of the identifiable figurines. They don't exhibit evidence of local manufacture.

Masked Face Figurines: Ballplayers or Ritual Boxers: These figurines have been called "Xipe Totec" ("our lord the flayed one") in reference to the Postclassic Mexica god that is represented wearing a flayed human skin (Barbour 1976:80; see also von Winning 1987:147-150). While some scholars (Goldsmith 2000; Riego Ruiz 2005) still prefer the name *Xipe Totec* and consider that these figurines represent a deity, others (Montoya 2001; Scott 1993; 2001:41; Taube 1988:118) suggest that they may represent ball-game players, and prefer to call them "human torsos with masked face" or "ball players" (Scott 2001:41). Hasso von Winning also disagreed with the representation of a masked god, and called them "*ícono con mascara*" (von Winning 1987:149). Handmade figurines of this group may date as early as the Tzacualli phase (von Winning 1987:147), and molded faces are made in later times (Goldsmith 2000:57-58).

This type of figurine typically shows a masked face; 'cut-out' eye, nose and mouth holes expose these same features on the individual wearing the mask, which are often represented by incisions. A horizontal band on the forehead and encircling the head and another band encircling the face makes the mask look like some form of helmet. More complete mold-made examples (see Scott 2001:Plates 100 to 105) show that the ‘helmet’ may be associated with a large, rectangular, tablet-like headdress decorated with what look like flowers. I suggest that the bands encircling the heads of this type of figurine may represent fixtures of some kind, holding such a large headdress in place. I note that similar types of bands are used to secure the large feathered headdresses worn by modern Oaxacan dancers performing the “Dance of the Feather,” which are decorated with mirrors or flowers connected by a ribbon. It is interesting to note that such decorations resemble the flowers interconnected by bands observed in the tablet-like headdresses of Teotihuacan masked faced figurines (see Scott 2001:103).

More recently, based on similarities with the form of other figurines and iconographic representantions from the Maya area and Oaxaca, this type of figurine has been convincingly interpreted as representing ritual boxers, connected with rain symbolism (Taube and Zender 2009:172-173). Helmeted boxer figurines from Hacienda Aguna, for example, have fairly similar headdresses as those portrayed in some of the Teotihuacan masked figurines (see Taube and Zender 2009:Figure 7.6b).

When the torsos of these Teotihuacan figurines are present, they always show garments represented by a padded *maxtlatl*, or loincloth, and a band that crosses the body running diagonally from one shoulder (left or right) to under the armpit on the other side. This type of garment is not present in other types of figurines (Goldsmith 2000; Riego Ruiz 2005). At San José 520 one figurine was recovered that may belong to this group. It consists of a torso with traces of once having had a diagonal band of the type described above. This figurine was found within the domestic structure AE2.

Cylindrical Figurines: Cylindrical figurines are the most abundant type at Teotihuacan. They are characterized by solid, cylindrical handmade torsos, and limbs, with heads that can be handmade or mold-made (see Goldsmith 2000:42-43). This type encompasses various discrete identifiable groups that have been considered as separate sub-types, as well as other groups that are less well understood (see Goldsmith 2000; Riego Ruiz 2005). The Cylindrical figurines identified in the collection of San José 520 include two “Torsos with a chest perforation”, three “Heads with cotton turban” (Figure 6.24a and b), one “Tattoed face” (Figure 6.24d), one “Ribcage torso”, one “Monkey helmet” (Figure 6.24c), one possible “Pregnant torso”, and five curved arms on the stomach that could also correspond to “Pregnant torsos” figurines. Barbour (1976:235) has suggested that pregnant figurines in general could be associated with ceremonies practiced to induce good pregnancy and birth.

At San José 520 Cylindrical figurines correspond to 15 percent of the entire collection, and 45 percent of the identifiable types. As discussed in Chapter 5 this is the largest group among the identifiable types with evidence of manufacture.

Half Conical and Enthroned Figurines: Two of the most abundant figurine types found in apartment compounds thoughout the city are the types known as “Half Conical” and “Enthroned” figurines (see Goldsmith 2000:104-110). Half Conical figurines have precursors that date as early as the Tzacualli or Miccaotli phases, and although both types of figurines are most common in Tlamimilolpa and later phases of the Teotihuacan period, some examples of Enthroned figurines have been recovered from the Miccaotli phase. Both types appear to represent dressed individuals (adults, males and females), with varied headdresses and necklaces, and who either were kneeling or seated, but in most cases their feet or knees are only inferred. Enthroned figurines differ from the Half Conical form in that they are also represented as part of the same piece, as kneeling or sitting on a type of furniture—Half Conical figurines lack this feature. This furniture or scaffolding was initially thought to represent a throne (Barbour 1976), but others have suggested that it may represent a pedestal (Goldsmith 2000:110), or a crematory base (Headrick 2007). I think also that it could have represented a bier—a frame on which a person or most commonly an image is carried. Examples of hand modeled figurines of the two types have been recovered, but molded examples are more common. Their features or decorations are only present in the front of the figurines (Goldsmith 2000:104), suggesting that they are meant to be exhibited so that they can be seen from the front.

Figure 6.24. Cylindrical figurines: (a, b) with cotton-headdress; (c) “Monkey helmet,”(d) fragment of a face with circular “tattoos” on the cheeks.

Half Conical and Enthroned figurines have been interpreted as possibly representing funerary bundles (Headrick 2007), and, if so, they would have been associated with domestic rituals in connection to veneration of ancestors. No Half Conical or Enthroned figurines were recovered from San José 520, and their absence at this locality may indicate that this aspect of household ritual common at urban Teotihuacan was not part of the domestic rituals practiced at this locality.

Zoomorphic Figurines: In addition to anthropomorphic figurines, at San José 520 I recovered 22 fragments of zoomorphic figurines (Figure 6.25), most of them cylindrical (82 percent, n=18). The most common zoomorphic figurine form corresponds to birds (n=9). They are followed by canids (n=4), monkeys (n=2), quadrupeds (n=2), and one feline (Table 6.7). A fragment of a possible wheeled animal figurine was also recovered. All of these categories fit well with the zoomorphic figurines used by individuals residing in apartment compounds throughout the city, and also present in elite compounds in the core of the city (e.g., Xalla).

Table 6.7. Types of zoomorphic figurines.

Type	Category	Excavation	Surface	Total	Total %
Cylindrical					
	bird	4	5	9	41
	canid	3	1	4	18
	feline	1	0	1	5
	monkey	2	0	2	9
	quadruped	1	1	2	9
Wheeled		1	0	1	5
Not identified		2	1	3	14
TOTAL		14	8	22	

Figure 6.25. Examples of zoomorphic figurines.

The corpus of figurine types described above indicates that people at San José 520 were aware of the activities and rituals in which these types of artifacts were used in other parts at Teotihuacan, and also likely used them in similar ways. The evidence of production presented in Chapter 5 indicates that some types of figurines were also made at this locality, although the scale of production appears to be directed to domestic consumption.

Canid-shaped Obsidian Eccentric

Obsidian eccentrics are flaked objects of non-utilitarian shape that are often found in offerings and caches in Mesoamerica. At Teotihuacan they are found associated with sacrificial victims placed in consecratory offerings in the main public buildings at the city and more rarely with burials in apartment compounds. Obsidian eccentrics in general are found at Teotihuacan during the Tzacualli to Metepec phases (Cabrera Castro et al. 1991; Millon and Drewitt 1961:375; Ruiz Aguilar 1981:78; Stocker and Spence 1974; Sugiyama and Cabrera Castro 2007). They are most abundant in contexts associated with public buildings and plazas (e.g., at the Sun Pyramid, Moon Pyramid, Feathered Serpent Pyramid, the Ciudadela, and Plaza One Complex at Oztoyahualco 15B:N6W3), but they are also found, although rarely, in apartment compounds such as Xolalpan, Zacuala, and Bidasoa, sometimes in association with burials (Carballo 2005; Linné 2003a; Sánchez Alaniz 1989; Séjourné 1959; Stocker and Spence 1974).

A flaked eccentric representing a probable canid, made of brown or 'meca' obsidian was found during our surface operations at San José 520 (Figure 6.26). The fact that this object was found on the surface makes it difficult to date, since ceramics dating to later periods were also found in this locality. However, this piece is similar to obsidian eccentrics dating to the Late Xolalpan phase found in Deposits 1 and 2 excavated to the west of the Pyramid of the Moon, and which were interpreted as possibly representing coyotes (see Carballo 2005:98, and 177-178).

Apart from anthropomorphic and serpent eccentrics found in the offerings at the main pyramids of the city, canid-shaped eccentrics are among the most common forms of eccentrics at Teotihuacan. Canid-shaped eccentrics are found at Teotihuacan from Tlamimilolpa to Metepec phases (Carballo 2005; Stocker and Spence 1974). Ten canid-shape eccentrics were found by the TMP during the 1960s survey, including five that were associated with residential areas (Stocker and Spence 1974:88). A few examples of canid-shape eccentrics were found in settlements outside the city, but within the Teotihuacan sphere of influence (e.g., La Herradura and Zultepec, Tlaxcala) associated with burials dating to the Xolalpan phase (Martínez Vargas and Jarquín Pacheco 1998:80,105).

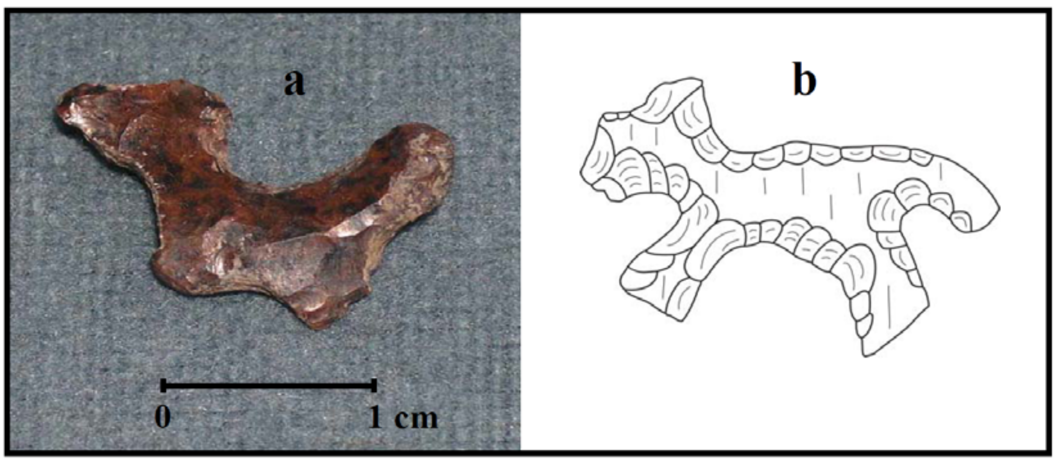


Figure 6.26. Examples of canid eccentrics: (a) canid eccentric from San José 520 made with *meca* obsidian, (b) coyote eccentric from the Moon Pyramid, ca. 3 cm long by 2 cm high (redrawn from Carballo 2005:Figure 6.29).

The meaning of Teotihuacan canid-shape eccentrics has been connected to the use of dogs in the afterlife journey if the eccentric was found in funerary contexts (Stocker and Spence 1974), and with the symbolic association of coyotes in warfare (Carballo 2005, 2007). If the eccentric found at San José 520 dates to the Teotihuacan period occupation, its presence at this locality indicates that people from this settlement were aware of whatever meaning it may have held, and possibly used it in similar ways as people living in other domestic residences at Teotihuacan.

Overview

The implications for the data presented in this chapter will be more fully discussed in the next chapter, where inferences regarding the economic activities (in particular ceramic production) of the San José 520 dwellers will also be incorporated. The evidence just presented suggests San José 520 people may have been fairly recent immigrants who settled in the margins of the city during the Tlamimilolpa and Xolalpan phases of the Teotihuacan period, or individuals who were forced to settled in a location farther away from the city core. Despite the proximity of San José 520 to the city, its inhabitants did not live in the type of architectural unit—the apartment compound—that was most commonly used in the city of Teotihuacan. However, the semi-rural residents of San José 520 followed the same general mortuary behaviors used by residents within the city, and also had access to and utilized other kinds of material culture common among urban dwellers (e.g., figurines, ceramics, ritual paraphernalia), including some imported goods (e.g., Thin Orange pottery, greenstones), although in smaller proportions than residents from other parts of the city. Ritual paraphernalia recovered from this locality indicates that San José 520 dwellers were aware of some of the ritual practices also known for individuals in other parts of the city and followed them to some extent. Importantly, paraphernalia such as *candeleros*, commonly used in apartment compounds, were only minimally used in domestic rituals at this locality. Composite censers and Half Conical and Enthroned figurines were also commonly available to residents of apartment compounds but not used by the people of this hamlet. It is possible that they did not subscribe to the specific religious ideas that these ritual paraphernalia represented, or perhaps that they could not afford these objects. I discuss further this issue in the following chapter.

Chapter 6 Notes

[1] Strontium isotope analysis have also been used to determine human mobility in ancient Mesoamerica (e.g., Price et al. 2008; Price et al. 2007; Wright 2005; Wright et al. 2010), including Teotihuacan (Lailson Tinoco 2009; Price et al. 2000).

[2] Following the term used by Spence (2002:58-59) for features involving vessels intentionally deposited under floors, I call these ritual deposits.

[3] I am excluding from these descriptions the sacrificial burial-offerings found at the main civic buildings located in the core of the city (e.g., Feathered Serpent Pyramid, Moon Pyramid, etc.) because these represent human offerings themselves, and not burials per se.

[4] It was not possible to identify the chronological placement of all the vessels associated with Burial 1, but all the ones identified correspond to the Tlamimilolpa phase.

[5] At the Feathered Serpent Pyramid eleven of the twenty individuals deposited in the central offering-burial (Burial 14) had a greenstone bead near or inside the mouth cavity (Cabrera Cortés 1995).

[6] Other isolated vessels are described as having been found in association with walls or stairs, but those are not included in the examples mentioned here because they may have closer connection with building dedication rites.

[6] *Tecomate* is a Spanish derivation from the Nahuatl word *tecomatl*, which refers to clay vessels that are neckless and have incurved walls and hence an at least slightly restricted mouth. Rattray (2001) calls the same form ‘incurving bowls’, ‘bowls with incurving walls’, or ‘tan shouldered bowls.’

CHAPTER 7: RECONSTRUCTING ECONOMIC STRATEGIES AND SOCIAL INTEGRATION AT SAN JOSE 520

San José 520

Evidence presented in the previous chapters indicates that San José 520 was a small, ca. 1 ha hamlet on the edges of Teotihuacan, inhabited by people of low socio-economic status. The southern two thirds or so of this hamlet was subject to intensive surface collection, and within this area, a sample of 100 m^2 was excavated. Based on the distribution of surface artifacts, and its correlation with subsurface features, it is unlikely that the entire hamlet was ever inhabited by more than a few families at any given time during the larger occupation.

The main periods of occupation at San José 520, based on ceramic chronological allocations, and a small number of radiocarbon dates, were the Tlamimilolpa and Xolalpan phases (ca. A.D. 200-500), although it is uncertain how far into the Xolalpan phase the occupation persisted (see discussion in Chapter 6). Despite the presence of a very small proportion of Metepec ceramics, it is most likely that the San José 520 people abandoned this locality well before the end of the Xolalpan phase.

Results from oxygen isotope analysis suggest that the inhabitants of this hamlet might have been immigrants, presumably like many other people residing at Teotihuacan. This idea needs to be tested further, however, by other kinds of analyses (e.g., stable strontium isotopes), as there are some issues that make these results somewhat problematic (see Chapter 6). Until confirmed or rejected by further analyses, I consider the migratory status of the San José 520 people as an interesting but tentative hypothesis.

Whether or not the San José 520 people were (or began as) immigrants, they may have been related to families living elsewhere in the Teotihuacan Valley or Teotihuacan itself, but lacked the personal, economic and/or political ties that would have allowed them to claim residence within more densely occupied and more central parts of the urban settlement. Whatever the details, these people elected to settle on the margins of the urban center.

San José 520 is located in the southeastern portion of the Teotihuacan Valley, in the piedmont zone of the Patlachique Range, and approximately 3 km southeast from the Ciudadela. This is a sparsely settled area situated well away from the urban core. Crucially, however, it also offered limited potential for farming and it is clear that the residents of San José 520 adopted ceramic production as their primary strategy for economic survival on the edges of a complex urban system. For the entire time they occupied this hamlet, these people fell near the bottom of the socio-economic scale in Teotihuacan society. While the decision to settle where they did undoubtedly reflects both hard circumstances and limited options, it also reflects a desire to have access both to large urban markets, as well as to resources most available on rural lands outside of the city. The latter may have included certain kinds of wild food resources (not all of which they would have consumed themselves) and almost certainly included fuels for firing pots.

Economic Urban Marginality

Land Issues:

Land plays a key role determining wealth and socio-economic status levels in both ancient and modern preindustrial agricultural societies (Shenk et al. 2010). This is in part because productive arable land is finite and is needed for subsistence. Population growth (as well as other factors) can be a source of societal stress, leading to situations in which almost all of the arable land in an area is owned and under cultivation (Boserup

1965; Johnson and Earle 1987). This may make it particularly difficult for new-comers to gain access to land, except, perhaps, as tenants of the more wealthy people who already control it.

Previous research (e.g., Carmean 1991; Houston et al. 2003; McAnany 1995) has demonstrated that, in most complex agrarian societies, large and productive areas of prime agricultural land are commonly owned or controlled by sectors of the society holding high socio-economic status, and who can claim ownership and retain control by virtue of early, primary settlement. For example, it has been argued that Maya lineages created symbolic linkages to their ancestors using funerary and other ritual practices to legitimize their connection and entitlement to land (McAnany 1995:95-99). Controlling land was important to elites in order to maintain wealth and power. For example, in the Postclassic Aztec Empire, land was generally held by local or state-level elites, and often dedicated to supporting rulers' households and palaces, temple, local government officials, and in provincial areas, to pay tribute. Some private land tenure coexisted with communal land, but ownership was largely in the hands of a noble, ruling class (Brumfiel 1991; Harvey 1991; Hodge 1991; Smith 1986).

It is unclear how land ownership was organized at Teotihuacan but it is likely, as discussed in Chapter 6, that the most productive arable land in the Teotihuacan Valley had been claimed by or allocated to early settlers. Importantly, although a great proportion of the farming population was concentrated within the city and its immediate periphery in the Teotihuacan Valley, resources needed to sustain the city, including agricultural products, also came from more distant places in the Basin of Mexico (Diehl 1989; Sanders 1974). Agricultural intensification in other parts of the Basin of both irrigable and temporal cultivation zones was apparently necessary for the subsistence of the city, and controlled by Teotihuacan (McClung de Tapia 1979:79).

Within the Teotihuacan Valley the best lands were probably held by local elites and people connected to them by strong kinship ties. Substantial quantities of food would have been needed to sustain the large number of people involved in the construction and maintenance of monumental architecture, as well as the craft producers and bureaucratic personnel who were not directly involved in subsistence production. Many commoners and particularly those migrating to the city in later times may have been forced to settle in less productive parts of the valley that may have provided little potential for farming.

San José 520 was located in the lower slope of the Patlachique Mountain, away from important permanent sources of water, on land with very shallow soil deposits. No traces of agricultural features such as channels or terracing were detected by our work, although such features were apparently not commonly used in the Teotihuacan Valley during the Teotihuacan Period (McClung de Tapia 1979:54). While it is possible to grow some domesticated plants in poor quality soils, including maize (Gibson 1964:307), results from paleobotanical analysis revealed no evidence for domestic cultigens such as maize or beans at this locality (McClung and Martínez Irizar 2007).

The absence in excavated deposits of botanical remains that would suggest the consumption of domestic cultigens at San José 520 might well be the result of poor conditions for organic preservation. However, both the nature and paucity of stone grinding tools found in surface and excavated contexts at this location is consistent with the idea that maize preparation was rarely carried out at this hamlet (see Chapters 5 and 6). Together these data suggest that the San José 520 people were unlikely to have relied on intensive farming for subsistence, and adopted ceramic production as their fundamental economic activity. If so, profits would have been used to buy most of their food, possibly in the form of pre-ground and even pre-cooked maize products. Non-domesticated plant foods such as *quelites* and amaranth might have supplemented their diet, and the remains of such plants were identified in paleobotanical samples.

Insubstantial Structures:

As the basic social and economic organizational unit in most societies (Wilk and Rathje 1982), the household constitutes one of the most informative ways to characterize and to understand social inequality (Hirth 1993a; Smith 1987). This is because households represent the primary unit of production and consumption, both of which can be identified relatively successfully in the archaeological record (Hirth 1993a; Sanders 1993). The house, or physical dwelling of the household, is the most visible of all the material remains resulted from household consumption.

Residential architecture is one of the key expressions of wealth in agrarian societies (Smith 1987), and one that has been successfully used to address variation in socio-economic status and wealth (Carmean 1991; Netting 1982; Sanders 2008). The relative size and elaboration of residential architecture have been considered to be the two most important features affecting household status in Mesoamerica (Carballo 2011), although locations within the settlement also play important roles (e.g., González Licón 2003). Above all in construction, the use of particular materials and techniques and the levels of labor invested in construction play a central role in status differentiation (Blanton 1994; Lohse and Valdez 2004; Murakami 2010).

Previous research (Millon 1976; Murakami 2010) has demonstrated that variation exhibited by the excavated apartment compounds in terms of room size, the use and organization of internal space, presence or absence of decorative elements such as mural painting, and construction techniques and materials reflects differences in the socio-economic condition of their inhabitants. Lower levels of socio-economic status are represented by apartments with less costly and more austere construction (see Chapter 3).

Occupying even lower levels in the socio-economic continuum are those who lived in "insubstantial structures" (Cowgill et al. 1984), individuals constituting a minority proportion of the Teotihuacan population. The San José 520 data confirms the existence of this type of structure and insubstantial nature of its construction. Architectural and other kinds of data confirm that its inhabitants were people belonging to a notably low level of socio-economic status.

To elaborate, the people of this hamlet lived in rudimentary domestic residences characterized by a lower degree of investment in labor and construction materials exhibited by the multi-family architectural compounds located in more densely occupied, central parts of the city, as well as by other examples thought to be inhabited by relatively poor people in more peripheral parts of the city. These differences are observed in the size and arrangement of the structures, in the nature of construction materials, and even in their orientation.

Insubstantial structures at San José 520 probably consisted of small, single-room houses, of which only poorly defined foundations (composed of irregular stones, small blocks of *tepetate*, and clay) remain. Floors likely consisted of simple packed-earth (*apisonados*), while the walls and roof were likely built of perishable materials that simply did not preserve. This type of dwelling indicates clearly that inhabitants did not have access to costly construction materials such as lime, wood, or even stone, and that they could not afford the time or labor inherent in the construction of apartment compounds (see Murakami 2010).

While their state of preservation makes it difficult to be very sure, the geographical orientation of the San José 520 buildings appears to contrast with that of almost all other monuments and buildings at Teotihuacan, especially apartment compounds (see Chapter 4). Throughout the city, and even outside of it, apartment compounds are typically carefully aligned with "Teotihuacan North," an orientation identified as about 15.5 degrees east of astronomic north (Cowgill 2000a). As well as can be reconstructed, the architectural features at San José 520 do not conform to Teotihuacan North. Their alignment may be essentially random, conceivably reflecting a less-structured approach to residential construction that predated the adoption of apartment compounds and may have been preserved in insubstantial structures. It is also possible that the non-conformity to Teotihuacan North signals a lack of participation in some of the cosmological ideas that drive the orientation of apartment compounds, which themselves follow the orientation of the Avenue of the Dead. The latter may be closely connected to state religion (Cowgill 2002). This would be a particularly significant factor if these people were, in fact, immigrants, since it may suggest a certain lack of either control, indoctrination, or both.

Insubstantial structures, however, existed in varying densities in many parts of the city (Cowgill et al. 1984; Robertson 2008). Their survival after the massive restructuring of society that occurred with the adoption of apartment compounds also indicates that, in addition to the possibility that not everyone could afford to live in apartment compounds, not everybody was forced to live in them either. This suggests at least some of autonomy from central authorities, at least with regard to basic residential choice, and it may also speak to varying degrees of societal incorporation at Teotihuacan.

Apartment compounds are most strikingly defined by their heavy outer walls. These walls enclose living space for multiple families, who may be engaged in similar occupations, collaborate in architectural repair, upkeep and modifications, and engage in collective rituals. Living in corporate groups would have enhanced cooperation at this level, and might have provided kinds of support, enhancing social, economic and political survival in a competitive urban center. Smaller and less structured residential households living in insubstantial structures may have been poor in part because they lacked comparably broad support networks.

It has been argued that the adoption of apartment compounds, including their cosmic orientations, may reflect the imposition of central authority, and at least state sponsorship in the acquisition of raw materials required for the construction of these massive types of structures (Cowgill 1997; Robertson 2001). Sponsorship for construction materials has also been tied to negotiations with intermediate elites, particularly in the latter parts of the Teotihuacan Period (Murakami 2010). Direct and independent acquisition of imported construction materials (above all lime and wood) would likely not have been within economic reach of most people, since they were derived through a complex and costly production system (Barba and Cordóva Frunz 1999). The sponsorship that the state or intermediate elites may have offered to some sectors of society was likely not available to people with poor social connections, particularly those settled in peripheral parts of the city, making these individuals even more marginal. If the San José 520 people were immigrants, they may also have been squeezed out of better opportunities than people with longer connections in the city.

Household Possessions, Grave goods and Wealth:

As indicated earlier (Chapter 6) previous work has demonstrated the usefulness of household possessions in assessing variability in social wealth, and in evaluating the degree of engagement that households had with broader economic networks (e.g., González Licón 2003; Hirth 1993a, 1998; Smith 1987). One of the kinds of evidence most used to evaluate aspects of wealth and social differentiation in ancient societies has been grave goods from burials.

Previous investigations at Teotihuacan have demonstrated that the degree of investment in funerary contexts varies both among and within apartment compounds, with material objects interred in funerary deposits marking distinctions in status based on age, gender and possibly other factors (Cabrera Cortés 2001; Clayton 2002; 2009; Sempowski 1987, 1992). Despite this variability, and in contrast to the Maya region where exotic materials such as jade are concentrated in the hands of the elite, funerary patterns at Teotihuacan appear to indicate a slightly wider access to valuable, imported lapidary materials such as jade and other greenstones, particularly for use as symbolic objects in funerary contexts (Sempowski 1992, 1999). San José 520 burials fit this pattern as well, and suggest that even people of the lowest levels in socio-economic status could acquire at least some of these materials.

Evidence from burials found at this locality suggest that, despite other evidence consistent with low economic status, resident households had access to imported materials such as greenstone, pyrite, slate, quartz, and possible cinnabar, at least in small quantities. These materials (with the exception of slate) appear to have been reserved for exclusive use in what would have been relatively infrequent funerary rituals.

At the same time, although adult burials were deposited with relatively large amounts of ceramic vessels (outcurving bowls, bowls, jars, and small *tecomates*), most of were likely made by potters residing at this hamlet. Two imported pots (Thin Orange hemispherical bowls) were also deposited as grave goods, but this is a vessel type commonly found in households of all socio-economic levels throughout the city, although at widely varying levels. Only three vessels were recovered from these burials that could be described as fairly elaborate in terms of finish, decoration, or form, and two of these were probably 'recycled' in ways that may be consistent with scavenging from external sources. These latter include a vase and a direct-rim cylindrical tripod—the tripod was an originally impressive vessel that had clearly been recycled by having its walls cut down significantly in height, likely to remove a section damaged by breaking. Because of its still impressive size and finish, this pot was likely placed in the funerary pit both as a mark of respect and as a symbolically charged object (see Chapter 6). While recycled fragments of important vessels have been reported from funerary contexts in low-status apartment compounds as ritual objects (for Tlajinga 33, see Clayton 2009:197-198), I do not think they are common in burials associated with high-status apartment compounds close to the core of the city. I suspect that this pattern is more likely to be associated with people facing more challenging economic circumstances, suggesting as it does a perception of high value and cost for certain vessels.

Ceramic Production as an Economic Strategy

As stated in earlier chapters, ethnographic studies (Allen 1984; Arnold 1985; Deal 1998; Stark 1991) have demonstrated that craft production, and in particular pot-making, may be adopted as an economic strategy within agricultural societies as a response to economic pressure. These studies have emphasized the key role that limited access to productive farm lands for producing subsistence crops played in this regard.

Evidence presented in previous chapters concerning the economic conditions of the San José 520 people indicate that the residents of this hamlet lived in marginal economic conditions. Whether or not they farmed there (or ever intended to), it is clear that the residents of this hamlet adopted ceramic production as a strategy aimed at economic survival in a competitive urban system.

Economic stress and challenge is not the only factor underlying the adoption of ceramic production by the San José 520 people, however. Evidence presented here indicates that pottery making is only an option (even under circumstances of economic marginality) because of the potential for satisfying large numbers of consumers with important items that not every household could make for itself. Data presented in Chapter 5 indicate that the San José 520 potters adopted specialist potting not only as an economic strategy for survival, but strategized their options by specializing in the manufacture of the outcurving bowl—a particular type of serving vessel widely used by the residents of Teotihuacan in food service and ritual activities. This type of serving vessel was consumed broadly by members of all socio-economic levels, but is particularly abundant in areas near the core of the city where more wealthy people resided, and where such objects may have played important roles in feasting and other socially-charged practices. At smaller scales of use, this type of pot was also important in mortuary rituals and figure in ritual deposits that may be connected with life-passages ceremonies and dedicatory offerings. This suggests that these potters strategized production in response to consumption demands within the city.

At smaller scales of production, San José 520 potters also made other types of serving and ritual vessels and figurines, particularly in the latter phase of their occupation there, Xolalpan. Some of these vessels (vases and Storm God vessels) were consumed in larger numbers by wealthier households, and often in ritual contexts.

If the founders of the San José 520 community were immigrants they may have moved to the city in search of improved economic opportunities, and to gain access to the symbolically most important and influential center in the Central Highlands at the time. Whatever their origins, settling on the edge of the city placed these people in socially and economically marginal circumstances, but at the same time provided them with direct access to large number of consumers. As an independent workshop, distribution of their products likely occurred at the Great Compound market (or other, smaller markets) within the city, where pottery could be exchanged for subsistence products and other items such as exotic materials used in mortuary rituals.

It has been argued that items manufactured from inexpensive materials can be turned to "socially valued goods," gaining increased value from the contexts in which they are used (Spielmann 2002; Wells and Davis-Salazar 2007). Outcurving bowls were clearly of high demand, and valued in part because of their use in feasting and ritual practices, but it would probably be a mistake to regard them as prestige items. They were made in extremely large numbers in Teotihuacan (not just at San José 520) and as a class, they vary widely in terms of quality of manufacture, finish and decoration. If some gained social value from their contexts of ultimate use, there is no reason to imagine that this would have provided added benefit to their makers. Given likely levels of competition from other potters in Teotihuacan, we should imagine profit margins as very low, and this would have been a factor as to why the socio-economic status of the households based at San José 520 didn't improve over time.

As indicated in Chapter 2, it has been suggested (R. Millon 1988) that by the latter part of Xolalpan, various socio-economic problems may have affected the ability of Teotihuacan elites and leaders to control local and possibly external affairs. Widening social inequality is evident among the Teotihuacan inhabitants (Sempowski 1987, 1992; Sempowski and Spence 1994) and social tensions may be part of what underlies the significant loss of population that we see towards the end of the Teotihuacan Period, but which may have begun in Xolalpan. The adoption of ceramic production as an economic strategy appears to been a successful strategy at San José 520 during the most prosperous times of Teotihuacan, but it appears that, like many other people, these potters were affected by these important changes that affected Teotihuacan. Perhaps the density of consumers dropped to levels that made pot-making unprofitable, forcing them to leave this locality, and perhaps even the city itself. More speculatively, general economic factors of this sort might have combined with local issues particular to the San José 520 potters. As a small and probably relatively isolated social group, the sudden loss of even a few key members of the domestic unit (through disease, accidental death, conceivably violence) might have been enough to tip the balance—unreplaced, the loss of their labor might have made a previously successful economic niche suddenly unviable.

Social Marginality and Integration

As was discussed more fully in Chapter 3, people need to make use of both economic and social strategies to survive in urban, as well as other, societies. Participation in economic activities (hunting, farming, craft production, providing other services, etc.) is fundamental for most urban residents, but the success or failure of their survival relies not only on economic but also on social factors. The negotiation of identity and status in different social settings (possibly involving reinforcing ethnic affiliation, adoption of certain ritual practices, social display, etc.) can be understood as part of a broader strategy for integrating oneself and one's family into a larger community. This is the case for all individuals in a community, but in particular for recent immigrants, and those living under vulnerable or marginal conditions.

As already indicated (Chapter 3) *emic* perspectives on urban identity would be more meaningful to people within a society in question, but in the case of ancient societies known through archaeology, these are less accessible than e*tic* perspectives. Some of the elements that make individuals identify with or have a sense of belonging to a community, or to be so identified by others (e.g., wearing similar dress, speaking the same language), may not be accessible in the archaeological record. Nonetheless, some activities (for example, many funerary patterns and other use of ritual paraphernalia) leave material signatures that can be recovered archaeologically and help us assess the degree of social integration in a community. I used these two types of evidence to examine the similarities and differences in ritual behavior at San José 520 with respect to the rest of the society, and I concluded that these individuals were integrated in some aspects, but not others.

The mortuary evidence presented in Chapter 6 indicates that the people living in this hamlet practiced funerary rituals with characteristics that match the ones observed in burials found in other parts of the city. These include burying individuals in flexed positions under the floors of structures, confining burials to features such as pits cut into *tepetate* (Burial 2) and placing particularly small individuals in outcurving bowls (Burial 3). Greenstone beads were placed inside the mouths of some of these individuals, and a number of Teotihuacan vessels and other paraphernalia (e.g., figurines) were included as part of their funerary deposits. Practices involving recycling valuable vessels, “killing” vessels, and even depositing vessels that have been marked with graffiti have been observed in other funerary contexts at Teotihuacan (Clayton 2009:208-217), and were also present among the burials of this locality.

Other ritual paraphernalia (see Chapter 6) indicate that San José 520 people were aware of and participated in practices similar to those practiced by other people in Teotihuacan. Nevertheless, there are a number of important ritual objects that do no seem to be present at San José 520. For example, only one small fragment of a *candelero* was recovered, and no fragments of theater-type composite censers, Half-conical and Enthroned clay figurines were identified. These are all types of ritual objects that tend to be common in apartment compounds throughout the city.

The absence of these materials at San José 520 suggests various possible interpretations. On one hand it is possible that the inhabitants of this hamlet simply could not afford some of these objects. Theater-type censers are elaborate, composite artifacts that may have been made in specialized ceramic workshops and may have been quite costly. However, despite their economic status, San José 520 people were able to acquire other imported materials such as exotic semiprecious stones and pigments, which were probably also relatively costly. In addition, these people were potters with the skills to replicate, even if in a crude way, some of these objects, and particularly *candeleros*, which are small objects and simple to make. Above all, *candeleros* are unlikely to represent objects that were acquired at high cost. A quick and incomplete inventory of excavated *candeleros* reported in the literature suggests that they may be more commonly associated with localities regarded as occupied by people of medium and low status.

Candeleros are present in surface collections made at other sites interpreted as insubstantial structures located in other parts of the city, but a statistically determination of the level of association between these objects and such places has not yet been completed (Ian G. Robertson, personal communication 2011).

An alternative interpretation is that the inhabitants of San José 520 people simply didn't subscribe to the ideologies represented by these objects. Theater-type composite censers, and Enthroned and Half-conical figurines, have been plausibly associated with an ancestor-veneration cult practiced in apartment compounds (Headrick 2007). Perhaps this type of ritual practice was part of the social and religious organization that structured the lives of people living in apartment compounds, but which was largely irrelevant to people living in other types of smaller, simpler housing. Sarah Clayton (2009) finds that, despite the shared canons and relatively homogeneous characteristics of funerary practices within the city, the performances of these practices among members of different apartment compounds, even within the urban center, is heterogeneous. Similar types of heterogeneity likely existed in other types of domestic rituals as well. This variation could also be linked to differences in identity and/or ethnicity within Teotihuacan society. If the San José 520 people were recent immigrants, perhaps the absence or limited use of these objects was a signature of cultural differences linked to a different place of origin.

Integration of these people with broader society is also observed in the type of vessels that they were producing and that, to be acceptable by consumers, had to fit certain formal criteria. Outcurving bowls made at this locality fit well with the characteristic elements of outcurving bowls elsewhere in the city. This indicates that the potters of this hamlet were familiar with the forms and symbolism (for example, the 'cloud motif') that were necessary to produce vessels that other people in the city were familiar with and would have wanted to consume, particularly if they were going to be part of socially important serving and ritual activities.

Contributions and Relevance

Urban Spatial Components in Early Cities

Cities have become the dominant type of settlement in the world today as well as the locus of many of our most pressing social and economic problems; anthropology and the world in general has much to gain by improving its understanding of socio-economic dynamics in early urban centers. The work of this dissertation contributes to an anthropological understanding of the long-term phenomenon of urbanism through a systematic archaeological study of one part of the economy of Teotihuacan, one of the earliest and most striking examples of urban life in the New World.

As was more fully discussed in Chapter 3, urban systems are not limited or confined to the activities that occur within a city. While in some cases, like Teotihuacan, much of a city's subsistence is produced by its own inhabitants, other resources come from areas beyond its boundaries, through various mechanisms including trade and even tribute.

Most studies addressing state economies focus attention either on the urban center or the hinterlands. However, boundaries of cities, whether material or not, are dynamic, and change through time. My study highlights the idea that urban centers are often bounded by transitional zones that are not well defined and that change through time. These semi-rural or peri-urban zones (see Chapter 3) constitute zones of transition between densely settled parts of urban Teotihuacan, and more dispersed occupation of the inner periphery of the city. Although settling within the semi-rural area poses certain disadvantages, as described earlier in this chapter, the semi-rural zone may also provide advantages and opportunities with respect to urban socio-economics.

I think it is useful to regard San José 520 as a hamlet that was situated in a semi-rural zone, one that, despite its marginal conditions, sought to take advantage of opportunities and resources offered by both city and rural hinterland. People occupying positions of marginality should not be regarded as passive actors who do not struggle to make the best out of limited prospects. One locational advantage offered by San José 520 was proximity to a city with a large urban market. Among the many other things this would have made available, this provided this small community of potters with large numbers of potential consumers within a relatively short distance. This made it possible to sell heavy clay vessels profitably. A location on the lower piedmont slopes of Cerro Patlachique may have given heightened access to raw materials such as clay and fuel for pot making. The fact that this location was agriculturally marginal and sparsely populated may also have been regarded as a kind of advantage, at least under circumstances of general economic disadvantage and social marginality. Attempts to gain access to land offering better potential for farming would probably have required a level of social support that the inhabitants of this small settlement did not actually have—a particularly relevant point if they or their ancestors were relative newcomers to the area. Maguey farming in the vicinity of San José 520 would have been viable most of the time while light gardening and the collection of wild edible plants would have been possible in years of sufficient rain. But better land was likely already possessed by others.

Urban Socio-economic Diversity: San José 520 as a Case Study in a Low-status Urban Niche

As settlements of large and densely nucleated population, cities are by definition characterized by high levels of internal diversity. This diversity can be social, economic, or political in nature. Archaeologists have long recognized the importance of understanding the different aspects of diversity within urban systems to explain the social processes of ancient urban life. Despite our awareness, many dimensions of urban diversity have continued to be ignored or under-examined in archaeology.

Some of the dimensions of ancient social diversity are simply inaccessible to archaeology, particularly when no written documents can complement the material culture left in the deposits. However, and as already stated earlier in this dissertation, throughout the history of archaeology much more attention has been devoted to understanding the elite culture of ancient cities, and much less effort directed to other sectors of ancient societies. Although previous research at Teotihuacan has begun characterizing the socio-economic variation represented by its inhabitants, our understanding of overall Teotihuacan population diversity still has many gaps. Archaeological work at Teotihuacan is more extensively represented by research directed to understand the actions of city administrators and ritual practices sponsored by the state and ruling elites. To a lesser degree, inhabitants of various intermediate socio-economic levels living in apartment compounds have also been the focus of investigations, and have provided more solid knowledge for characterizing the cultural features of this distinctive and influential society.

My research at San José 520 allows us to look for the first time at a sector of Teotihuacan society that has received little prior attention. By examining the economic and social role played by a group of people of low socio-economic status settled on the margins of Teotihuacan and engaged in craft production activities, my work contributes to the long-term goal of generating a holistic understanding of the Teotihuacan economy.

San José 520 and Ceramic Production at Teotihuacan

This dissertation also provides complementary information regarding production systems of the ancient city, in particular involving pottery. For example, this investigation clearly confirms the existence of a ceramic workshop at a location that had been identified by the TMP survey of the 1960s. Based on a subset of the TMP surface collections (Hopkins 1995:144), Paula Krotser had suggested the existence of small, individual workshops focused on the production of utilitarian vessels such as Burnished ollas and jars; and Polished bowls. Such products were presumably destined both for domestic use by the potters themselves and to supply immediate neighbors (Krotser 1987:417). Results from the San José 520 Project are in accordance in the most general way with some of Krotser's proposals and further our knowledge of independent workshops at the city.

As was more fully described in Chapter 5, ceramic production at this hamlet appears to have been organized as a "workshop industry," typified by an economy where "revenues" derived from this production are the main source of maintenance for the potters and their families and products are made with the intention of supplying a relatively large number of consumers outside the workshop. In this level of ceramic production, potters often specialize in the manufacture of a relatively limited range of categories of wares or vessel forms.

The evidence recovered from San José 520 indicates that its inhabitants strategized production by specializing in the manufacture of a particular type of serving vessel widely used by the residents of Teotihuacan in food service and ritual activities—the outcurving bowl. Outcurving bowls are one of the most common types of vessels used by Teotihuacan people, and were probably important in kinds of social displays associated with food service and feasting. Although these vessels were likely produced by other workshops in the city, competition was probably not at the scale that would have existed, say, had these potters decided to specialize on domestic cooking and storage wares. This would have put them into direct competition with the large-scale production of San Martín Orange vessels in the Tlajinga district.

To improve their efficiency and to increase the scale and intensity of their own production, these potters also made notable use of a range of specialized tools, such as lunates, ceramic modeling platforms, and San José bowls—all tools made to be used within their workshop. In addition to formal potting tools, the San José 520 craftsworkers also maximized their resources by recycling the bases of broken vessels to be used as informal ceramic platforms and recycled certain kinds of pot sherds to be used as ceramic scrapers. While lunates and ceramic modeling platforms have been reported in other localities in the city, no other place has as many as the San José 520 workshop. Their presence in the Tlajinga district workshops, where potters specialized in a different suite of vessel forms, suggests that lunates and ceramic modeling platforms were probably not exclusively connected with the making of outcurving bowls, or other forms of vessels made at San José 520. There is nevertheless an emphasis on and intensity in the use of these types of tools at San José 520 that has not been detected elsewhere in the city, even in larger ceramic workshops.

While the scale of outcurving bowl production was notably high, the San José 520 potters produced some utilitarian vessels at a scale that appears only destined for local domestic consumption. This was probably just a predictable attempt to avoid the market costs for items they could make themselves. At a similarly modest scale of production, San José 520 potters also diversified their range by making other types of serving and ritual vessels and some types of ceramic figurines, particularly in the later phase of occupation. Such products, although conceivably consumed locally, at least to some extent, seem more likely destined for exterior consumption.

Work at San José 520 highlights the importance of detail analysis for identifying key features of the production system that otherwise might have been not detected. A sherd-by-sherd approach to pottery analysis proved to be profitable for identifying informal tools like sherds reused as scrapers and modeling platforms, as well as to characterizing the proportions of defective pottery within specific ceramic categories. Results from this analysis indicate an intensification of production in the Xolalpan phase and an improvement of firing techniques suggesting that adopting ceramic production was a successful economic strategy. The overall proportions of Tlamimilolpa pottery are significantly larger than those of Xolalpan, possibly indicating that individuals did not continue to settle this locality in the subsequent Metepec phase, and might not have been there during the entire Xolalpan phase. Their diversification to make other forms of vessels during Xolalpan may be connected with an attempt to expand their production, which may not, in the end, have been successful.

Unusual concentrations of particular ceramic wares and particular vessel forms in a given locality (Santley 2007; Stark 1985; Sullivan 2006) have been used successfully as archaeological indicators of ceramic production loci, and the data from San José 520 accords with this approach. However, to determine the types of vessels manufactured at this workshop it was important to pay attention not only to particular ceramic types existing in large proportions, or to use ratios of wasters and rims per vessel category, but also to examine the function of vessels represented by pottery wasters. In the case of the Tlaloc vessels, for example the proportions of wasters are very low in comparison with any other category, but given that no large amounts of these types of vessels would be expected in a low status locality such as this, it was possible to plausibly identify a type of vessels that was clearly made at a very small scale, but probably for external consumption.

San José 520 potters were likely full-time "seasonal specialists" for parts of the year (see Chapter 5), relying on the exchange of their ceramic products to maintain their households. Complementary subsistence items may have been obtained by selling locally-hunted meat, serving as soldiers, and engaging in small amounts of farming. Pot-making tools deposited as grave offerings presumably represented the economic orientations of the individuals with which they were buried; these associations indicate that males were involved in pottery making. This does not necessarily preclude the role of women in this work, however (see Chapter 5).

Previous data at Teotihuacan has exemplified ceramic production (1) in an attached workshop, producing state-related paraphernalia in the core of the civic-ceremonial center (Cuadrángulo Norte de la Ciudadela); (2) in independent communities focused on the large-scale production of domestic ware consumed throughout the city (Tlajinga 33), and (3) in an independent production locality manufacturing some types of ritual paraphernalia (Cosotlán 23). San José 520 contributes to our understanding of ceramic production at Teotihuacan by generating a case study of an independent and small workshop located in the semi-rural zone of the city, inhabited by people of the lowest socio-economic level who made serving and ritual vessels that were consumed by a variety of consumers within the city.

Contribution to the Topic of Ceramic Production in General

The results from my work at San José 520 provide a valuable case study from archaeology in general for an interesting ethnographic phenomenon, in which households living in circumstances of economic stress adopt pottery production as a means of earning a living. Economic stress is not the only force behind the adoption of pottery as economic strategy for survival. People move to cities because they appear to represent better economic opportunities. From an economic point of view, cities provide a much larger pool of consumers with varied needs. The case study here presented indicates that ceramic production can emerge from a combination of economic stress and high demand for certain types of socially valued objects. In the case of San José 520, these were fundamentally outcurving bowls used in serving and ritual contexts.

As previous research in ceramic production systems has pointed out, the most convincing interpretations of production loci emerge from the identification of several indicators co-occurring together in the archaeological record. As described in detail in Chapter 5, the ceramic production data recovered from San José 520 is particularly rich and varied. An important contribution is represented by a variety of tools used in this process, some of which have not been reported previously, and which can be used for comparative studies at Teotihuacan and elsewhere.

Future Research

Investigations at San José 520 generated significant results that made it possible to draw important conclusions and answer the questions originally possed by my research regarding the socio-economic level of its inhabitants and their economic activities and ritual practices. However, various issues remain unresolved and will require further research.

One important task will be to complement the oxygen isotopic analysis of human bone and teeth with strontium isotope analysis. This should make it possible to evaluate much more completely the tentative interpretation of these people as originating as immigrants. Ideally, excavations in other parts of the hamlet, including the northern portion, would provide a more robust set of samples from other possible burials at this locality.

More extensive excavation in the areas surrounding the insubstantial structures detected by my project might provide useful details into the organization of structures and open spaces, relevant for understanding the organization of social units associated with insubstantial structures, perhaps showing useful contrasts with other types of residences within the city. Complementary excavations in other parts of the hamlet will be important.

Detailed characterization of the San José 520 ware through systematic analysis will be necessary. Further analysis on technological aspects of ceramic manufacture at San José 520 in general and comparative analysis with other ceramic workshops also will contribute to our characterization of the ceramic system at Teotihuacan.

Systematic analysis of lithic artifacts from this locality will be crucial for complementing our understanding of the economic activities of the San José 520 people. Experimental work and use-wear analysis of obsidian tools in relation to ceramic work would also be important.

Conclusion

Modern cities provide numerous examples of people and households that survive on the margins, literally and figuratively, of urban systems. The "*cinturón de miseria*" that surrounds modern Mexico City, not far from Teotihuacan, is an example that is hard to ignore. Hundreds of thousands of people have been attracted to the economic, social, educational, and other kinds of opportunities offered by this modern capital, and make enough of a living there to stay. Many of them survive in part, however, by staying on its edges, and they are equally marginal to its main (or at least its formal) economic institutions. A similar situation in experienced by many Latin American cities.

My research has shown that we can examine similar kinds of urban phenomena in the past, in some of the earliest cities known to us. Of course, describing the "urban semi-rural zone" occupied by San José 520 as a "*cinturón de miseria*" would be an exaggeration in various ways, including the fact that the density of occupation there is remarkably sparse, rather than remarkably dense, as is the case around Mexico City. Nevertheless, degrees of spatial, economic, and social marginalization can be examined in both cases—showing that archaeological studies of cities, provided sufficient attention is paid to the various dimensions of internal diversity that exists within them, can usefully contribute to comparative studies of urban life-ways.

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