

CALIFORNIA STATE UNIVERSITY, NORTHRIDGE

ASTRONOMY AND SOCIAL INTEGRATION: AN EXAMINATION OF
ASTRONOMY IN A HUNTER AND GATHERER SOCIETY

A thesis submitted in partial satisfaction of the
requirements for the degree of Master of Arts in

Anthropology

by

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DEDICATION

I would like to dedicate this thesis to *Kakunupmawa* (SUN) which through the many frantic and frustrating attempts to monitor His solstitial position, I was taught the true meaning of punctuality, and to my wife, Gwen, who has been trying to teach me this for years. Also through the teachings of *Kakunupmawa*, I have learned the true meaning of Christmas (Winter Solstice), a time of "Great Expectations!" May his torch forever traverse the ecliptic!

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ABSTRACT

ASTRONOMY AND SOCIAL INTEGRATION: AN EXAMINATION OF ASTRONOMY IN A HUNTER AND GATHERER SOCIETY

by

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Master of Arts in Anthropology

Archaeoastronomical investigations at LAn-357, Burro Flats (sites Ven-551-Ven561), and Bell Canyon (sites LAn-413 and LAn-511) revealed evidence strongly suggesting that these sites were astronomically significant for both the Chumash and Fernandeno groups which occupied the west San Fernando Valley at the time of historic contact. Field research conducted at these sites during the winter and summer solstices of 1979-1980 revealed sunrise and sunset alignments which are believed to be ritually significant, as well as perhaps calendrically important.

Two types of astronomical solstitial alignments were discovered within the study area: (1) direct alignments,

documented for LAn-357, Burro Flats and Bell Canyon, and (2) indirect alignments, documented at Burro Flats.

LAn-357 and Burro Flats are village/habitation sites which consist of numerous rock art loci—pictographs and petroglyphs. Bell Canyon consists of an historic village (*Huwam* - LAn-413) and an ethnohistoric shrine (*Tswaya tsuqele* - LAn-511) used for the Winter Solstice Ceremony.

This thesis combines archaeoastronomical data, rock art interpretation and an intensive review of the ethnographic/ethnohistoric literature in an attempt to analyze the significance of these alignments in reference to Chumash and Fernandean ceremonialism.

Chapter 1

INTRODUCTION

Until recently, astronomy was not seriously considered to have had a significant role in ancient or prehistoric societies. The interdisciplinary approach of archaeoastronomy or "the study of the astronomies of ancient and prehistoric times" (Krupp 1977:XIII), has, with few exceptions, centered on highly stratified agricultural societies. It was believed that only in these societies would there be a functional need for astronomy, which would have stemmed from a necessity to establish an accurate calendar to regulate the planting and harvesting of crops to seasonal cycles.

This emphasis on agricultural societies reflects traditional concepts in anthropology, with hunters and gatherers being viewed as culturally far less developed than those societies possessing agriculture. Hunters and gatherers have in fact been perceived as being on the lower social order of cultural development, hence being far more influenced by environmental factors than agricultural societies, with natural resource base, requiring no specific form of calendrics.

Cultural development within hunting and gathering

societies has been perceived by functional cultural ecologists as resulting from crisis change, with stress resulting from population pressure and resource depletion being paramount in the evolutionary process of intensifying social stratification.

Several recent publications (Blackburn 1936b, 1974, 1975; Hudson et al. 1977; Hudson and Blackburn 1978; Hudson and Underhay 1978; Hudson, Lee and Hedges 1979) have presented a body of ethnographic material which strongly suggests that for the Chumash, as well as other native California groups, a sophisticated astronomy and ritual calendar existed, which at historic contact (A.D. 1542) formed the nucleus for ceremonial integration on a regional scale.

The importance of ceremonial exchange among the Chumash has prompted certain anthropologists, such as Blackburn (1974:105) to note that significant interrelationships existed between the *'antap* cult and the economic system. Based on this information it becomes apparent that the importance of internal dynamics in hunting and gathering societies, such as religion and ceremonial interactions have been greatly underestimated in the past.

Furthermore, it is apparent from information in the notes of John P. Harrington and C. Hart Merriam, as well as archaeological evidence, i.e., mortuary data, that a high degree of social stratification was present for the

Chumash as well as other native California groups. This stratification, previously thought to be restricted to horticulturalists and some agriculturalists, included chieftainships, craft specialization guilds, ritual cults and special ritual calendars, an economy which utilized shell bead currency, and chiefly redistribution (Larson and Major 1974:2-3). Regionally, at historic contact, the Chumash were organized into a series of provinces, with provincial capitals as well as at least two religious federations governed by the capital villages of *Muwu* and *'Upop* at Point Conception (Hudson and Underhay 1978:27-31).

Since astronomy was the basis for the Chumash religion, sophisticated ritual calendar (*masigtskmu*) and ceremonial network, there is a great significance for studying astronomy as a dynamic internal force in social development.

Hudson and Underhay (1978) have demonstrated the existence and potential importance of Chumash astronomy, based primarily on ethnohistoric information, plus some archaeological evidence. Based on this ethnohistoric information, it was revealed that the Chumash had full time astronomers (*'alchuklash*) and sun priests who presided over both large public ceremonial events and private rituals. Furthermore archaeologically, the ethnohistoric data also suggest that some rock art depictions represent certain astronomical phenomena, painted by the

'alchuklash to monitor celestial bodies for the purpose of calendrics and related ritual observances. Since this present study began, new archaeological evidence has been added, suggesting that astronomically related sites are widely distributed throughout the state of California.

With the emerging data demonstrating the existence of Chumash astronomy, this research focused on several potential astronomically oriented Chumash/Fernandeño sites located in the west San Fernando Valley. Before entering into a discussion regarding the specific goals, study area, methodological approach and problem orientation of this current study, a brief discussion of the data recovery potential of archaeoastronomy is in order.

Archaeoastronomy, as an interdisciplinary approach had its beginnings in the 1970's (Aveni 1977b:XI), and has had a multitude of problems which usually confront emerging fields; namely credibility with the scientific community and achievement of its potential capabilities.

Reyman (1977:205-216) has posed some critical problems with past and present archaeoastronomical research. In discussing the failures or "lack of success" in archaeoastronomy, he used the term "potentially productive," since it has the potential of making considerable contributions to archaeology and anthropology, but at present, has been anything but convincing.

This lack of success, as I see it, results from the investigators' shortcomings, in four distinct areas: (1) an inadequate conceptual scheme or theoretical approach; (2) an insufficient control of the relevant ethnohistoric, ethnographic, and/or archaeological data, particularly, the last; (3) the failure to formulate specific field problems, hypotheses, and test implications; and (4) the lack of consistent, systematic procedure for conducting fieldwork, coupled with the all too frequent use of unsuitable field equipment (Reyman 1977:205).

Baity (1973:390, 418), in discussing the potential significance of archaeoastronomy, states:

By whatever name, the new interdisciplinary studies are potentially of great significance for the insights they afford into the mental attainments of certain prehistoric, proto-historic, and early historic societies in Eurasia, Africa, and the Americas.

She further asserts that:

New working hypotheses based on the evidence indicating the importance of astronomy and astrology in early cultures, particularly in those areas where the religion was predominantly astral, will make it possible for us to examine sites, documents, and rituals in a new and meaningful perspective.

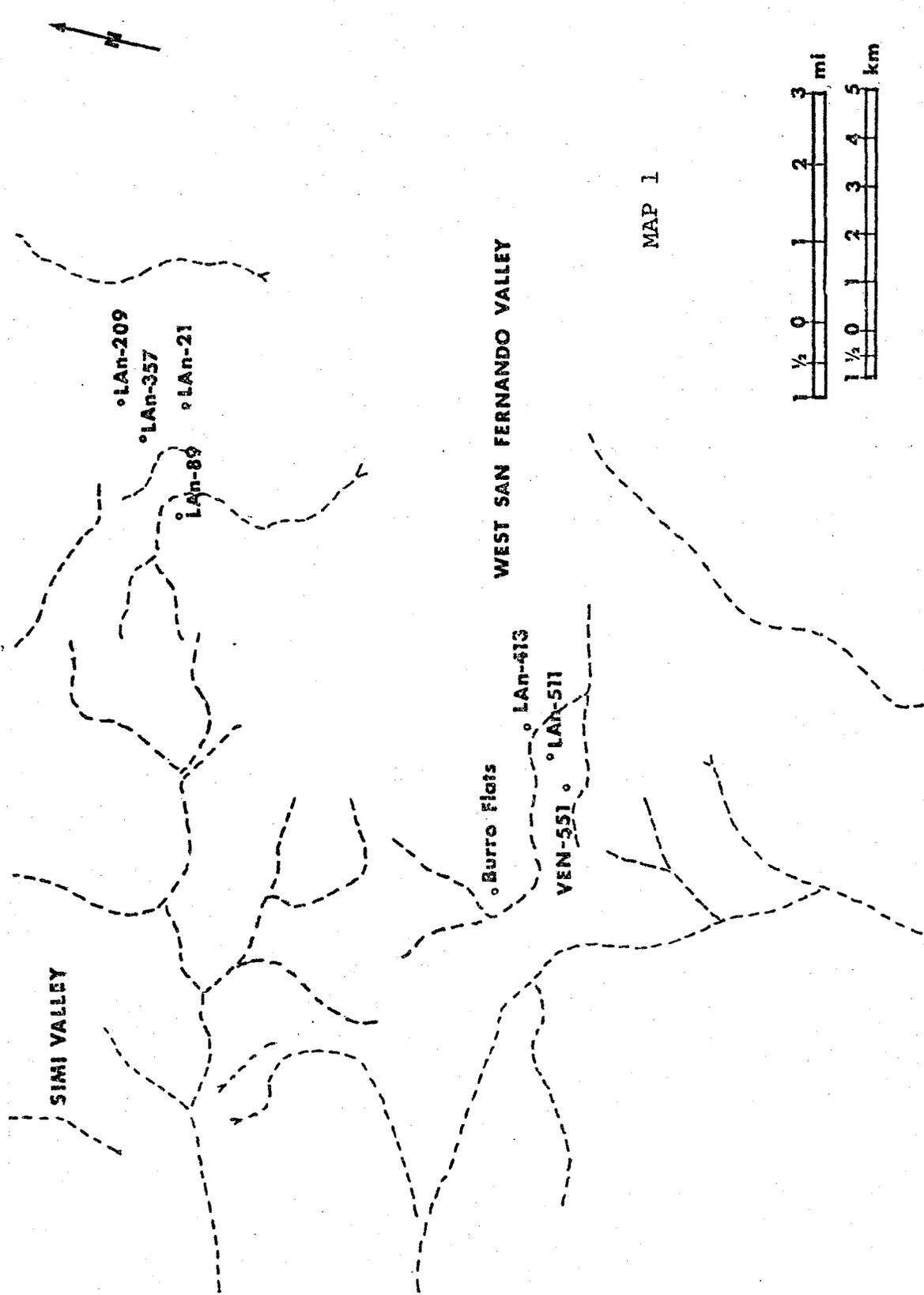
STUDY AREA

Archaeoastronomy, as a means by which information on native Chumash/Fernandeño astronomy and ceremonialism can be gained, is the main focus of this thesis. The specific sites chosen for this study are located in the west San Fernando Valley, which includes the present communities of Canoga Park and Chatsworth. This area was selected on the basis of ethnohistoric and archaeological data which

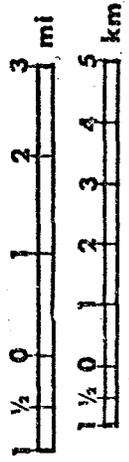
suggest that (1) the west San Fernando Valley area, specifically Bell Canyon, was the location of the large public Winter Solstice Ceremony and (2) the intensive/extensive distribution of rock art, mainly located at Burro Flats and LAn-357, was also astronomically related.

The sites under investigation within this study area are: LAn-413 and LAn-511 located in lower Bell Canyon, Ven-151-161 (Burro Flats) situated in upper Bell Canyon in the Simi Hills, and LAn-357, LAn-89, LAn-209, and LAn-21, all located in the northwest portion of the San Fernando Valley near the Simi Pass (Map 1). These sites are briefly described as follows:

1. Bell Canyon Sites - LAn-413 and LAn-511: LAn-413 is an historic Chumash/Fernandeño village site known as *Huwam* or *Jucjauybit*. LAn-511 is an ethnohistorically known mountain shrine called *Tswaya tsuqele* which contains numerous glass and shell beads. Both sites may have been ceremonially interrelated, and moreover, were quite probably integrally connected with the Winter Solstice Ceremony.
2. Burro Flats Rock Art Complex - Ven-151-Ven-161: This is actually one site composed of numerous rock art loci (pictographs and petroglyphs) with an intensive habitation midden associated. The ceremonial significance and ethnohistoric place-name are presently unknown.
3. LAn-357 and Surrounding Sites - LAn-209, LAn-89, LAn-21: LAn-357 represents a large village site associated with numerous loci of rock art (pictographs and petroglyphs). The village was apparently occupied historically and was referred to by the Spanish as Los Piedras ("Place of Stones") and perhaps was the historic Fernandeño/Chumash village of *Momonga* (King 1981). LAn-89 (Stony Point) is a possible mountain shrine, which once contained a number of rock art



MAP 1



loci. LAn-209 appears to represent a portion of LAn-357 (McIntyre 1980:376) and contains petroglyphs and an associated midden. LAn-21 is a mortuary cairn site excavated by Edwin F. Walker in 1939 (named the Walker Cairn Site), and was recently excavated by Louis Tartaglia. This site may have been associated with the Mourning Ceremony.

Since rock art, in some cases, may be associated with astronomy, implications concerning the potential astronomical significance of both LAn-357 and Burro Flats existed prior to the actual fieldwork. The presence of a mountain shrine, *Tswaya tsuqele*, within the Bell Canyon site complex suggested an astronomical significance for these sites, possibly as a location for a Winter Solstice Ceremony. This evidence is derived from ethnohistoric information pertaining to the use of mountain shrines as "depositories-of-the-things-of-the-dead" and as an integral part of the Winter Solstice Ceremony. LAn-21, LAn-89, and LAn-209 were selected on the basis of their close geographic proximity to LAn-357.

In general, the research questions posed for these sites concerned their potential usage as (1) observatories and (2) locations of private and/or public rites used for ritual observations of celestial events, such as the Winter Solstice Ceremonies. Furthermore, evidence was sought for two types of astronomical observations:

1. Direct Observations: Intrasite and intersite solstitial alignments of sites or rock art loci to a central site, i.e., horizon markers.

2. Indirect Observation: The effect on specific pictographs and cupule concentrations created at the moment of solstitial rise and set.

FIELD METHODOLOGY

The fieldwork employed in the investigation of these sites was essentially that which was outlined by Thom (1967:126) and Hawkins (1973:288-295). The field equipment consisted of a Beam and Arc Alidade, plane table, transit, stadia rod, theodolite, and a Brunton compass and tripod.

Initial alignment readings were obtained by using the Brunton compass and tripod; this was to arrive at a close approximation of solstitial alignment potential. The next step entailed mapping the rock art complexes of LAn-357 and Burro Flats, using the Beam and Arc Alidade and plane table, as well as the transit and stadia rod. All rock art loci were subsequently mapped into a series of datum points. The transit and theodolite were used to obtain precise readings on predicted solstitial alignments (precise to within minutes of arc), as well as mapping the projected horizon. Clear plastic tracings were obtained of all cupule patterns noted at LAn-357, Burro Flats, and LAn-209, with photographs taken of key pictographs. Finally, photographs were taken of all solstitial alignments. Fieldwork entailed the testing of numerous specific research questions, with the on-site winter and

summer solstice observations spanning from 1978 to 1980.

In reference to the valid criticisms of archaeo-astronomical research presented by Reyman (1977:205-216), this research will, in addition to investigating the astronomical potential of the selected sites, posit inferences regarding the nature and structure of Chumash/Fernandeño ceremonialism.

The applicability of archaeoastronomy in addressing hypotheses concerning hunting and gathering ceremonialism is based on the following theoretical assumptions. Since the Chumash and Fernandeño, as well as other native California groups had an astronomically based religion, an integration of astronomy and their religious system would be expected at important ceremonial sites. Based on this assumption it is logical to predict that a study of Chumash/Fernandeño astronomy is also a study of the archaeological manifestations of their religious/ceremonial structure.

This study will represent an integrated research focus encompassing archaeoastronomical fieldwork, the testing of research questions and the analysis of the findings in reference to the available ethnohistoric and archaeological data concerning the sites under study. This analysis will draw heavily upon ethnohistoric material regarding Chumash/Fernandeño astronomy and ceremonialism compiled from the recently published notes

of John P. Harrington.

The results obtained from this research are not to be viewed as entirely conclusive since a great deal of further research is required before reasonable scientific verification can be obtained. Therefore, this archaeoastronomical research represents a pilot study intended to seek out the astronomical potential of the sites in question, and posit inferences or rather, research questions which can be further tested.

The study will begin in Chapter 2 by presenting a synthesis of Chumash ethnohistoric information concerning their astronomy. Chapter 3 will present a discussion on the known archaeological evidence of Chumash and Southern California astronomy, which will briefly summarize the artifactual evidence and archaeoastronomical findings to date. Chapter 4 will discuss the ethnohistoric and archaeological evidence regarding the sites under investigation. Chapter 5 will present the specific research questions addressed for these sites, and will outline the methodology employed during the fieldwork. Chapter 6 will present the results and interpretations derived from this study. Chapter 7 will conclude with a discussion concerning the broader theoretical implications regarding the importance of astronomy and ceremonialism in Chumash/Fernandeño cultural development, based on a structural marxist analysis.

Chapter 2

ETHNOGRAPHIC BACKGROUND

INTRODUCTION

Sir Eric Thompson, taunted by innumerable speculators who theorized about the nature of Maya astronomy, developed an intolerance toward those who would play with numbers. Yet through it all he managed to leave with us some of the deepest insights into the nature of Maya astronomy. We would do well to follow the path he mapped out for us in pursuing our future studies of native American astronomy. His advice is simple: we must immerse ourselves in the knowledge of the culture and history of these people. Together with an understanding of astronomy, we must also pay close attention to the findings of archaeology, and finally, we must try not to look at their astronomy through European eyes. Only then can we begin to "get inside the skin" of the priest-astronomer (Aveni 1977:xvi).

This advice has particular relevance when investigating the astronomy of a hunting and gathering group such as the Chumash, who have left no clearly discernible physical evidence. Since hunting and gathering groups lack monumental architecture and architectural features which would constitute definitive archaeological evidence of man-made astronomical alignments, it is necessary to thoroughly examine and understand the culture's political and religious institutions as derived from the ethnographic, ethnohistoric and archaeological records.

The bulk of the ethnohistoric information on Chumash astronomy has been derived from the notes of John P. Harrington and C. Hart Merriam, which were collected in the early 1900's. In addition, there is some information on the Chumash religious system present in the mission records (Robinson 1970; Geiger and Meighan 1976) and diaries kept by early Spanish chroniclers (Bolton 1908, 1926, 1927, 1930; Smith and Teggart 1909; Teggart 1910, 1911; Priestley 1937; Brandes 1970).

Although this thesis centers on the investigation of the astronomy of the hunting and gathering Chumash society, this does not imply that astronomy in California was unique only to the Chumash. Neighboring groups such as the Salinean, Fernandeno, Gabrieliño, Tatavium, Kitanemuk, Yokuts, Luiseño, Cahuilla and Tubatulabal also appear to have had a sophisticated astronomy and ritual calendars based on celestial occurrences (Schiffman 1977; Hudson and Blackburn 1978; Hudson and Underhay 1978:30, 130). In fact, there is ethnohistoric evidence which strongly suggests that the Chumash *'antap* cult, or a similar counterpart, the *yévar* cult, existed among the Fernandeno-Gabrieliño who occupied the San Fernando Valley (Hudson and Blackburn 1978; Hudson and Underhay 1978:30).

CHUMASH ETHNOHISTORIC EVIDENCE

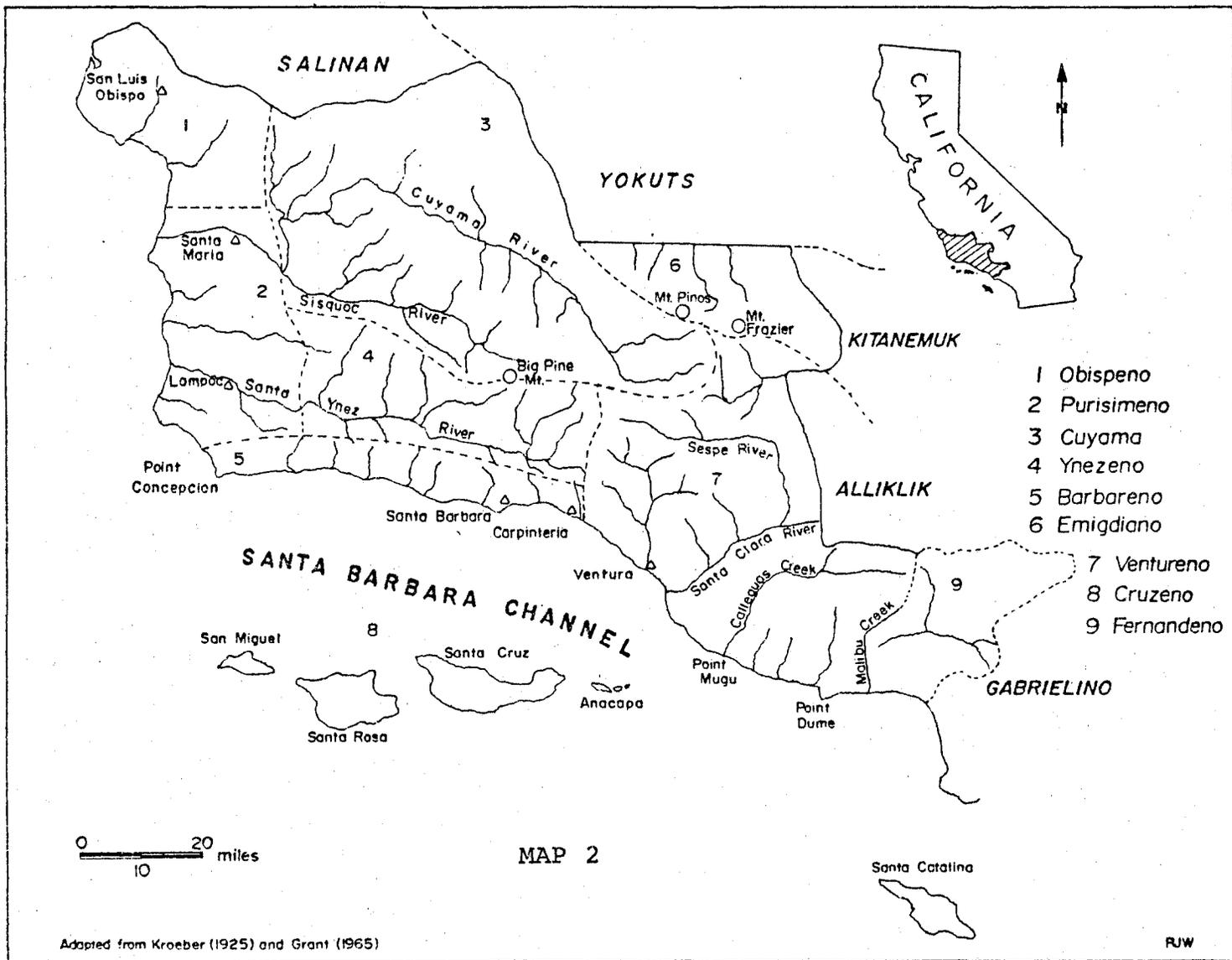
CHUMASH CULTURAL TERRITORY

At historic contact, the Chumash occupied the territory along the southern California coast, which now appears to have extended from at least the Topanga Canyon area in the southeast (Forbes 1966:138; Brown 1968:8) to Estero Bay in the north, and included the four Channel Islands of Anacapa, Santa Cruz, Santa Rosa and San Miguel (Blackburn 1975:8; Hudson and Underhay 1978:15). Inland they ranged as far as the southern edge of the San Joaquin Valley to the northeast (Blackburn 1975:8) and possibly the southern portions of the Upper Santa Clara River Valley (Bright 1975:230) (Map 2).

Based on the Mission San Fernando baptismal records, there was apparently a considerable amount of intermarriage between the Chumash and Fernandeno, with both groups inhabiting the San Fernando Valley (Forbes 1966:138; Brown 1967:8). The two village sites under investigation in this thesis, 4-LAn-413 (*Huwam* or *Jucjauybit*) and 4-LAn-357 (*Momonga*) both had nearly equal numbers of Chumash and Fernandeno living at these sites (Tartaglia and Romani 1978a:197; Edberg 1980:5).

EVIDENCE FOR BIETHNICITY BETWEEN
THE CHUMASH AND FERNANDENO

The biethnicity of the San Fernando Valley,



- 1 Obispeno
- 2 Purisimeno
- 3 Cuyama
- 4 Ynezeno
- 5 Barbareno
- 6 Emigdiano
- 7 Ventureno
- 8 Cruzeno
- 9 Fernandeno

MAP 2

Adapted from Kroeber (1925) and Grant (1965)

RJW

particularly the western portion, suggests that the Fernandeano and Chumash shared, along with certain aspects of material culture, significant political and religious similarities as well. Little is known regarding the specifics of Fernandeano political and religious structure, however, in view of the information presented by Kroeber (1942:2-4; 1976:899-900), Forbes (1966:138), Brown (1967:8) and Hudson and Blackburn (1978:246-247), it would appear that the Chumash political and religious structure was somewhat inclusive of the Fernandeano. In fact, the Chumash cultural influence is pronounced throughout the Gabrieliño coast from Topanga Canyon south to San Pedro, including Santa Catalina Island, during the late and post-contact periods and it would appear that "Canaliño Culture," as derived by D. B. Rogers (1929), represents a biethnic political, religious and economic structure fashioned by the dominating influence of the Chumash (Brown 1967:8; Kroeber 1976:633, 899-900; Hudson and Blackburn 1978:246-247; Romani n.d.).

In view of these aforementioned similarities and the biethnic nature of the current study area, a brief discussion of Chumash and Fernandeano political, religious and social similarities is in order.

The Spanish chroniclers traveling with the Portola expedition in 1769, noted a large village or villages with ". . . typical Channel-traits . . ." as they

entered into the San Fernando Valley. These traits included:

. . . multiple chiefs, regularly arranged grass roofed dwellings, underground dance houses, beads, and beautifully carved wooden flutes (Brown 1967:8).

Kroeber's statistical analysis of John P. Harrington's (1942:2-4) cultural element distribution data also suggests significant similarities between the Fernandinos, Chumash and Kitanemuk, such as the use of the self-bow, however not inclusive of the Gabrieliños east of the San Fernando Valley. Moreover, it has been suggested that:

. . . insofar as the name Fernandino is justified for a separate group of Shoshonean speakers, it may refer to those who had been influenced by, or had inherited, the southeasternmost Canaleno culture (Brown 1967:8).

Furthermore, Hudson and Blackburn's study of the "Northern and Southern religious complexes" (1978:225-250) infers strong ties between the Chumash, Fernandino and Gabrieliño coastal peoples in terms of economics, politics (to an unknown extent) and the development of the *'antap/yívar* cults, with the Chumash as the dominant influence.

These developments revolved around the *'antap/yívar* cult or religious complex, which appears to have had its origins in a convergence of such mythic and ceremonial elements as sun worship, highly developed mourning and solstitial rites, and elaborate eschatological beliefs. . . . Some of the diagnostic characteristics of this coastal religion included the use of the sacred enclosure, the employment of the bull-roarer and deer-bone whistle

in ritual, and cult officers who specialized in the performance of community-oriented ceremonies and (perhaps most importantly) enjoyed reputations for controlling awesome and unprecedented amounts of supernatural power. . . . It was the 'antap/yívar cult, not beliefs in Chingichnich, that inland groups most associated with the coastal Chumash, Fernandeno, and Gabrieliño (Hudson and Blackburn 1978:246).

Actually there are quite a few ethnohistoric accounts in the literature that provide evidence pertaining to various aspects of socio-religious interaction. Several examples are now presented, whereas others will be discussed later within this text.

According to Brown (1967:45-47), a Catalina Island man married a Chumash woman and became the chief of her village at *Humaliwu*. In another account, there were two brothers with Gabrieliño names, but who apparently lived at *Humaliwu*. Both of these brothers were members of the canoe-makers guild, along with being members of the *shan* (a part of the *siliyik* council) (Hudson, Timbrook and Rempe 1978:174, 178). Furthermore, many of the canoe travelers to the various islands, were also 'antap cult members. There was also considerable panethnic participation in the large Chumash ceremonial gatherings, such as the Mourning Ceremony.

POLITICAL ORGANIZATION

As discussed above, there is evidence for similarities between the Hokan speaking Chumash and their easterly

adjacent Takic speaking neighbors, the Fernandeano. This section will describe the Chumash proto-historic and historic political and religious organization, which may have similar manifestations within the less documented Fernandeano-Gabrieliño society.

Politically, the Chumash were organized into provinces. Two large provinces along the Santa Barbara Channel mainland were noted by Juan Rodriguez Cabrillo in 1542 (Hudson and Underhay 1978:27-28); one was *Xuco*, with the capital village being *Shuku*, possibly located at Rincon Point, whereas the other large province was *Xexo*, with its capital village possibly located at *Shisholop* near Point Conception (Kroeber 1976:553; Hudson and Underhay 1978:155). The exact number of provinces that existed is questionable; however, there were at least six provinces along the mainland coast at historic contact, with their capitals situated along major trading ports and mainland trade routes (Hudson and Underhay 1978:27-28). A patchwork of provinces may have existed in the interior.

The coastal provinces situated from north to south were: (1) Gaviota westward to Dos Pueblos was a "Point Conception Province" with either *Shisholop* (*Cojo*) or *'Upop* (Point Conception) as the capital, (2) the "Dos Pueblos Province" extended from Dos Pueblos towards Goleta, with its capital at *Mikiw* (Dos Pueblos), (3) the "Santa Barbara Province" began around Goleta and extended east to Rincon, with its capital at the village of *Syuh-tun* (Santa Barbara), (4) the "Ventura Province" with the capital at *Shisholop*, began about Rincon and extended somewhat south of Ventura, (5) the "Mugu Province"

bordered the Ventura Province and extended southeast towards Malibu with its capital either at *Muwu* or *Simo'mo*, and lastly (6) the "Malibu Province" extended from the "Mugu Province" southeast to possibly near Topanga Canyon, having its capital at the village of *Humaliwu* (Malibu) (Applegate 1975:Map 1; Blackburn 1975:13; Hudson and Underhay 1975:28).

Each village within a province had at least one *wot* or captain, with the larger villages perhaps having several.

A village chief (*wot*) was identified with a clan and a lineage (C.E.D.). Evidently each of the major clans represented in a village had a chief. Crespi noted that ". . . all the towns have three or four captains, one of whom is the head chief" (King 1969:41).

This latter case involving multiple chiefs for a given village may be erroneous, since the Spanish would use the word "captain" to anyone occupying a political office (Blackburn 1975:12). These village leaders were organized into a larger provincial ruling body and were presided over by one man or woman known, by the islanders, as the *paqwot* or "big chief," who resided at the capital village. These capital villages were the centers of all legal, economic, and ritual activity for the surrounding villages and hamlets (Hudson and Underhay 1978:27). These provinces or federations may have been based on kin relationships between village *wots* (Brown 1967:48), or possibly on membership in a ubiquitous elite religious sodality known as the '*antap* cult (Blackburn 1975:13; Hudson and Underhay 1978:29).

Further integration of these provincial units may also have been based on a protective unity against their neighbors. Although few details are yet known, it was reported by the Spanish that there was extensive fighting or feuding occurring between provinces and/or villages and also apparently earlier in time based on some mortuary data (Hudson et. al. 1977:Part 1; Hudson and Underhay 1978:29; King 1980:65).

RELIGIOUS ORGANIZATION

The *'antap* cult was a formal religious organization which was integrated into the political system; and was perhaps homologous to the *yívar* and/or *Chinigchinich* cult of the neighboring Gabrieliño and Luiseño peoples. Membership in the *'antap* cult included shamans, such as the *'alchuklash* (astronomer-priests, who were actually considered to be "jacks-of-all-intellectual-trades"), along with village *wots* (chiefs) and their families, and high status/wealthy individuals, who were all required to join (Blackburn 1974:104-105; Hudson and Underhay 1978:29, 38).

According to Blackburn (1975:105), "The parents of children who became members apparently had to pay a considerable sum of money for this privilege; presumably, only high-status families could afford this. . . ." Members were baptized into the *'antap* cult as children and served an apprenticeship eventually resulting in the

knowledge of sacred songs, dances, esoteric language and other manifestations of the ritual cult (Blackburn 1974: 104).

Each village had several *'antap* residents, with at least twelve members in major communities. The *siliyik* council was the religious organization at the provincial level and consisted of at least twenty or more members from the various villages within the province. The *siliyik* council would gather together at the provincial capital on matters pertaining to rituals, ceremonies, legal business and other responsibilities involving the province, which would necessitate ritual knowledge and power. This council, known as the "Twenty," was divided into two bodies; the *'antap* or "Twelve" and the *shan*, who were eight lesser officials (Hudson and Underhay 1978:29).

The *'antap* were stationed in specific villages, and may have even been the village chiefs. Together ". . . they alone, had the ritual knowledge to use power for maintaining, directing, and controlling man's interaction with his celestial, physical, and social environments." And ". . . exercised this power to maintain a dynamic equilibrium or balance of power in the universe" (Hudson and Underhay 1978:29). Individually or together, they would also perform other duties such as curing the sick, controlling the weather and providing council. It was this body that owned and used the ritual paraphernalia

(Hudson and Underhay 1978:29, 32).

The *shan*, however, were more or less free floating agents who would provide the '*antap* of any news within the province. They would also act as assistants to the '*antap* (Hudson and Underhay 1978:29-30).

Each province had a ritual leader or *paha* who politically and ritually integrated the *siliyik* officials into a common organization. This person may, traditionally, have been the actual provincial *wot* (chief), or perhaps the ritual assistant to the *wot*. However, in mission times, the *paha* was in charge and responsible for both public ceremonies and private rituals involving the secret society; and apparently commanded authority over all attending *wots* (Hudson and Underhay 1978:30). This change in authority, if in fact it occurred, may have been the result of the changing influence of the ritual leader brought about through religious suppression by the mission system and attempted dismantling of the Chumash political hierarchy.

The religious oriented '*antap* may also have been involved in the production and/or spatial redistribution of products, as follows:

Although it is too early as yet to do much more than speculate, it appears probable that some members of the '*antap* cult were also members of the various *gremios* or "brotherhoods" of occupational specialists (such as canoemen, makers of sinew-backed bows, etc.) that also cross-cut localized political and residential affiliations;

thus the 'antap cult may have provided a kind of supra-organizational framework for the integration of the kinship-chartered, economically significant sodality-like *gremios* with the political and religious hierarchy (Blackburn 1974:105).

RELIGIOUS FEDERATIONS

The 'antap cult may have been divided into regional religious entities or federations of which two are historically known, possibly being the same two that Cabrillo noted. The *Muwu* entity was centered in the Mugu area and consisted of all the eastern provinces. The religious leader at *Muwu* held the office of *Kwaiyin*. The *Kwaiyin* religious territory comprised all of the mainland provinces from *Humaliwu* (Malibu) to Santa Barbara, including the "Island Province." Controlling the western provinces was the Point Conception capital of 'Upop, which extended from the Dos Pueblos and Point Conception provinces and probably those farther to the north, as well as portions of the Santa Ynez Valley. The religious leader of this entity, at least in historic times, was named *Tilínawit* (Hudson et al. 1977:11; Hudson and Underhay 1978:31).

The political and religious influence of the *Muwu* Federation is documented in information collected by Bowers in 1897 from a Chumash informant, Juan Pico.

Here (at Mugu) lived a great chief or king whose authority extended to Point Concepcion 100 miles up the coast, and to Newhall and San

Fernando eastwardly. The chief of each town or tribe was a petty king, but subject to the Mugu rule. The town where the great chief lived was near a large spring of water (*Simomo*) which rises at the base of a basaltic hill two miles from the ocean and bordering the Santa Clara Valley. Here meetings of all tribes were held once in five years to pass laws and transact business pertaining to the numerous tribes of the district. . . . (King 1976:302).

An important point to mention here is that these religious federations were ritually organized on the basis of different calendars, each having a different beginning date for the calendar year. The calendar for the *Kwaiyin* federation began at the winter solstice, whereas the *Tilinanawit* calendar began in March, probably with the vernal equinox (Hudson and Underhay 1978:31). This difference in calendrics may be a significant point, since it may have ramifications as to the type of astronomical monitoring stations or observatories and related public gathering sites (large ceremonial sites) expected to be located in the different federation areas. Although these calendars and ritual events were distinct and yet similar, they were in some way synchronical and integrated together to be politically and economically beneficial (Hudson and Underhay 1978:31).

RELIGION AND COSMOLOGY

The Chumash religion can be summarized as follows:

Chumash religious beliefs, and their more important public (as opposed to private) rituals, revolved around the esoteric and metaphorical

worship of two sacred celestial "bodies," earth and sun. The sun was regarded as perhaps supreme, a vivifying male force or entity that was also vaguely threatening, a possible bringer of death; the earth, on the other hand, was the generally maternal provider of food and other necessities of life, to be worshipped in her three aspects of wind, rain and fire. A fairly precise twelve-month lunar calendar, semi-annually adjusted by reference to the solar solstices, was employed in determining the proper times to observe a variety of occasions; the importance of such astronomical cycles to the Chumash is demonstrated by the fact that there was even a kind of astrologer called an *alčuklaš* whose duties included the naming of new-born children according to their birth-month, the administering of toloache, and the reporting of illness or other social problems to the chief. When two of the most important ceremonial occasions, the late September harvest fiesta and the Winter Solstice ceremony, were held was directly determined by the phases of earth and sun (Blackburn 1975:14-15).

In Chumash cosmology, the universe was divided into three or perhaps even five "worlds." These worlds were flat and circular in shape and were perceived as floating above each other in a great abyss supported by supernatural beings (Blackburn 1975:72; Hudson and Underhay 1978:39-40). Each world was inhabited by supernatural beings which were attributed with the entire gamut of human characteristics, as well as being causative agents of natural phenomena. In this sense they were neither wholly good nor evil, as these were not considered mutually exclusive categories (Blackburn 1975:66-68). Each supernatural being ". . . has the potential for being both simultaneously although one end of the continuum may predominate most of the time" (Blackburn 1975:

Therefore, Sun can be manevolent (bring death if he wins the year long gambling game) as well as benevolent (his "rebirth" at the solstice, and presence sustains life). These concepts are a reflection of the uncertainties found in the natural environment in which only certain limits of control can be exercised through the use of ritual knowledge. Furthermore, Blackburn (1975:86) has suggested that many myths about the supernatural beings may be integrally tied into "allegorical expressions of shamanistic concepts and experiences. . . ."

The Lower World was believed to be inhabited by dangerous and powerful supernatural beings called *nunashish*. Middle World, *'Itiashup*, was the home of the "First People," who were supernatural beings having both animal and human qualities, as well as later being the human world. The Middle World was considered the "geographical center of the universe" with places or shrines of concentrated sacred power, such as Mt. Pincs (*'Iwihinmu*) and Frazier Mountain (*Toshololo*), which were located near the center of the world (Hudson and Underhay 1978:40). The Upper World (*'Alapay, Mishupashup* or *'Alapayashup*) was inhabited by the supernatural "Sky People" who were equated with various celestial bodies and cosmic phenomenon. Some of these beings were thought to have ascended to the cosmos or Upper World following the great flood on Middle World (Hudson and Underhay

1978:40).

The Chumash universe consisted of the sun, moon, various planets, stars and constellations. However, sufficient data on all the celestial bodies of the universe are lacking and some of the information derived from Hudson and Underhay (1978) is admittedly somewhat speculative and ambiguous, based on the known ethnohistoric accounts and present day knowledge of astronomy. Further data obtained through archaeoastronomy and the eventual publishing of more of the Harrington notes will undoubtedly increase and further substantiate the current knowledge of Chumash astronomy. The following sub-sections will discuss what is known about the celestial-supernatural beings pertinent to this thesis.

Sun

Foremost of all the supernatural beings was the sun, known to the Ventureño Chumash as *Kakunupmawa*, which translated metaphorically means "radiance of the child born on the winter solstice." He was a powerful male being who could cause both life and death. The sun's daily movement along the ecliptic was perceived in Chumash cosmology as follows:

Each day Sun takes his torch and follows a trail around the world, returning each evening with the bodies of people he has brought home for him and his daughters to eat (Blackburn 1975:36).

Kakunupmawa lived in his quartz crystal house in the

east but traveled to the west daily along a cord which circled above the Middle World (the ecliptic). This daily trek across the sky was known as the *'ulop ka wotoko*, or "equator of light." If the sun were to travel too close or the cord should break, his torch would burn the inhabitants of the Middle World. At sunset, the sun reached the far west and would then return to the east by way of the south (Hudson and Underhay 1978:51-52).

Throughout the year, the sun played a game with some of the other inhabitants of the Upper World, known as *peon*. The sun and the giant eagle, *Slo'w*, were on one team and were opposed by *Shnilemun* (the coyote being of the sky) and morning star, while the moon was the referee. The results of the game were decided at the time of the winter solstice. If coyote's side won, it meant a rainy, fruitful year for the inhabitants of the Middle World, whereas if sun's team won, many people in the Middle World would die (Blackburn 1975:36-37; Hudson and Underhay 1978:52).

Moon

The moon, known as *'Alahtin* by the Ventureño Chumash, was personified as a single female being who lived in a house near the sun. She was viewed as a cleanser or cleaning agent for all that is dirty. Her forces moved the tides and affected the stars. The time of the new

moon initiated a time for prayers of good fortune and health (Hudson and Underhay 1978:75-76). The significance of '*Alahtin*' to the Chumash can be summarized as follows:

. . . Moon was regarded as a significant supernatural being among the Sky People, and as a result participated, at least symbolically, in the Winter Solstice Ceremony. Observances to her, however, were not restricted to that time of the year, but occurred monthly. We can guess that her supernatural powers were in a constant state of flux as she waxed and waned. Moon must have been a key supernatural being watched closely by Chumash astronomers. In fact, the use of the term *hesiq'momoy* as a prefix to the month names in the Chumash calendar strongly suggests that the moon was equated with *Momoy* (*Datura*), the supernatural being who was also depicted as a widow in Chumash mythology (Hudson and Underhay 1978:77).

The moon's changing forms were perceived as affecting man's fate as well as being equated with the seasons. The shifting of the moon's horns at a horizontal position signified a time of rain, while the shift to a vertical position marked a time of possible death (Hudson and Underhay 1978:130).

Planets

Venus

Harrington's information concerning this planet is somewhat ambiguous and has numerous manifestations. Venus as the Morning Star was possibly symbolized as two of the Sky People, known as Two Thunders ("the givers of rain") and Sky Coyote's team member in the nightly *peon* game (Hudson and Underhay 1978:81, 97). Venus as Evening

Star may have been the Golden Eagle, *Slo'w*, who was also possibly the *wot* of the "Land-of-the-Dead," *Shimilaqsha*, a prophet of the future, and the Sun's partner in the *peon* game. Evening Star was also associated with the sacred cardinal direction west, the direction to the Land-of-the-Dead (Hudson and Underhay 1978:81-84). In ritual terms, Evening Star:

. . . was the same as that used for the Earth, *Hutash*; for it "spreads its light as does the sun" (Hudson and Underhay 1978:81).

. . . "Venus in the west mirrored earth and was called *Hutash*," may mean that these places were regarded as regions inhabited by both the living and the dead (Hudson and Underhay 1978:83).

Venus, in both aspects of evening and morning star, may have been ritually associated with the *Hutash* and Winter Solstice Ceremonies, as well as the Mourning Ceremony (Hudson and Underhay 1978:98).

Mars

Mars may have been symbolized as *Holhol*, the condor. His powers included the ability to travel rapidly and locate lost people or objects. These powers were transferable to anyone carrying his two sticks and wearing his clothing. These attributes may stem from the "loop-like" path of Mars (Hudson and Underhay 1978:92-93). *Holhol* may also have been ritually important during the Mourning and Winter Solstice Ceremonies in locating *Slo'w* as Evening Star, when the planet was invisible (Hudson and

Underhay 1978:92, 94).

Other Planets (Saturn, Jupiter and Mercury)

Although there is no direct association with the Sky People and these planets, they were probably observed and incorporated into myth and ritual by the Chumash *'alchuklash*, owing to their brightness, however, data are presently lacking in regards to their place in Chumash astronomy (Hudson and Underhay 1978:96, 98).

Fixed Stars

Polaris

The North Star was considered the "Star that Never Moves," and may have been represented by "Sky Coyote" (*Shnilemun*), a team member benevolent to man in the *peon* game. One of the three names given to Polaris was *Miwalaqsh*, which meant "to divide" or "to separate in the middle" and was also the name for the winter solstice sunstick (Hudson and Underhay 1978:101). Polaris may also have been used as an important navigational star during channel crossings in the *tomol* (plank boat) (Hudson and Underhay 1978:102).

Aldebaran

The brightest star in the constellation of Taurus may have been identified with "Coyote" (as differentiated from "Sky Coyote), who freely transcended between the

Middle and Upper Worlds and sometimes traveled with Sun on his journeys. Coyote was also associated with the administration of *Datura* sp. to young boys, which probably occurred during January, when Alderbaran was most visible (Hudson and Underhay 1978:102-103).

Other Stars

The Chumash probably knew of numerous stars and associated them with supernatural beings, but at present, there are no data available.

Constellations

Orion

The three stars of Orion's Belt (*Masiq loka 'iyilike*) may have been used to signal the month of the summer solstice. The Chumash may have associated this asterism with a bear constellation as did the Tachi Yokuts. Bears were considered one of Sun's pets and were especially dangerous to people during the summer and fall months (Hudson and Underhay 1978:109).

Pleiades

These stars may have been associated with Orion's Belt and also served as a summer solstice marker. Their actual symbolism is not clear; however, they were perceived as female beings and were mentioned in a song from the "Seaweed Dance" performed during the September *Hutash*

Ceremony (Hudson and Underhay 1978:112).

Milky Way

The Chumash perceived the Milky Way (*Shuyapíish* or *Suyapo'osh*) as an entity unto itself with different symbolisms based on its celestial orientation. During the late summer and early fall ". . . it was symbolic of the northward journey" to gather pinon nuts and was part of the *Hutash* rituals performed to honor Earth. The Milky Way's position shifted from northwest-south to northeast-west around the time of the winter solstice. At this time, it symbolized the "ghosts' road for spirits" with the path forking at the entrance to the Land-of-the-Dead (Hudson and Underhay 1978:118).

Cassiopeia

This constellation, and possibly a few other stars, may have been associated with *Wit*, the "Land-of-the-Widows," which was the first land encountered, or the stopping place located on a mountain, for souls traveling to *Shimilaqsha* (Land-of-the-Dead). It is visible in the evening sky from August to February, but is directly overhead during the time of the winter solstice. During the Winter Solstice Ceremony, funerary rites, such as the "Dance-of-the-Widows" was performed. Since *Wit* was described as located on top of a mountain, it may be the cosmological connection between the winter solstice

celebration and use of mountain shrines (Hudson and Underhay 1978:119-120).

Cygnus and Lyra

The supernatural being known as Scorpion Woman (*Malahshishinish*) was probably represented by the constellations Cygnus and Lyra. She was the mythological being encountered by souls, after leaving the Land-of-the-Widows, on their way to *Shimilaqsha*, and again associated with the time of the winter solstice (Hudson and Underhay 1978:120-121).

Aquila

This constellation appears just after sunset during the time of the winter solstice. Its position across the left fork of the Milky Way suggests its symbolic association with the Land-of-the-Dead and may have been used to mark the time of the winter solstice. Aquila is composed of a first magnitude star, Altair, with a third and fourth magnitude star on either side. The orientation of these stars, north to south, also corresponds to the erection and positioning of the Chumash feathered poles set up on shrines in threes at the time of the Winter Solstice Ceremony (Hudson and Underhay 1978:121-123).

Other Stars and Constellations

Other stars and constellations have been documented for the Chumash; however, the ones mentioned here have a

direct bearing on solstitial and ceremonial events pertinent to this presentation (cf. Hudson and Underhay 1978:99-125).

Meteorors

Meteors or "shooting stars" were called '*Alakiwohoch*. Shining balls of light traveling through the air were believed to be souls on their way to the Land-of-the-Dead (Blackburn 1975:33). Meteor showers may have been associated with the Winter Solstice Ceremony and rituals concerning the Sun, as death symbolism, since today a major meteor shower occurs near Castor and Pollox on December 14 (Hudson and Underhay 1978:96-97).

Comets

Although little is presently known concerning Chumash beliefs regarding comets, John P. Harrington did record the Ventureño name, *Iqut 'i qup*, which meant "a piece of news without any foundation" (Hudson and Underhay 1978:99).

Eclipses

At present there is no ethnohistoric information concerning Chumash beliefs about solar and lunar eclipses, although these events were undoubtedly observed and probably documented (Hudson and Underhay 1978:71). The neighboring Gabrieliño regarded them as bad omens

Johnston 1962:69).

Many of the celestial bodies and phenomenon mentioned above, which were perceived as mythical beings, may have been depicted in many of the pictographs within Chumash territory, as will be further discussed in Chapters 3 and 6.

THE CHUMASH CALENDAR

The monitoring of both the solar and lunar cycles was of ritual importance to the Chumash, because it enabled the establishment of an accurate ritual calendar. The solstitial occurrences, equinoxes, and lunar monthly and seasonal movements were all monitored by astronomers. The solstices—winter and perhaps summer—were the times of large public ceremonies, with the most important ritual event being the winter solstice, or *Kakunupmawa*.

The day (natural unit of the calendar) was probably the basic unit of Chumash time and was probably subdivided into three periods of daylight—sunrise, noon, and sunset—and perhaps divisions of the evening as well. Daylight was divided by using the sun's position along the ecliptic; whereas, evening may have been divided using the positions of bright stars or constellations (Hudson and Underhay 1978:126).

The '*alchuklash* (astronomer-priests) utilized a lunar calendar, *Masiqtskumu* ("twelve") which consisted of twelve

months of uniform length, thirty days. Each month was actually a half a day longer than the actual Synodic month consisting of twenty-nine and a half days. The lunar calendar year which consisted of 360 days was keyed to the solar year of 365 days, with both the winter and summer solstices pivotal to the lunar cycles (Hudson and Underhay 1978:126).

As mentioned earlier in this chapter, there were at least two calendars in existence, the *Kwaiyin* calendar which began at the winter solstice and the *Tilínawit* calendar which began in March, probably with the vernal equinox (Hudson and Underhay 1978:136). Whether the year was subdivided into four periods or seasons is presently a matter of conjecture; however, it would seem likely, since the Yokuts perceived such seasonal distinctions. It also appears likely that the Chumash would have perceived of a four season year, since both the solstices and equinoxes were the four most important solar events, requiring some form of astronomical monitoring. There is good evidence suggesting that these four events were marked by the calendar, despite seasonal irregularities, and are found in certain month names (Hudson and Underhay 1978:128):

December - '*An hushunuma qa qunup*' mawa - "Month when the sun's brilliance begins."

June - '*An sp' atata* - "Month when things are divided in half."

March - *Sqapuni* - "Month of spring."

September - 'An ciyam loqayi' alahw^{iw} - "Month when those that are dry come down."

Each month had a name, a description of natural characteristics, and probably a corresponding zodiac or constellation (cf. Hudson and Underhay 1978:Table 2). It is quite probable that 'antap members were capable of identifying certain stars and depicted them in star maps, such as on cult objects (e.g., deer-bone whistles). The twelve Chumash months and associated zodiac probably corresponded to the twelve 'antap of the *siliyik* council (Hudson and Underhay 1978:130-131, 135). Although only a few of the stars and important constellations are known, it should be safe to assume that those stars or constellations within or near the ecliptic (the zodiac) were of prime importance in both ritual and calendrical monitoring (cf. Hudson and Underhay 1978:Table 3). While some of the stars and constellations are documented ethnohistorically, others are speculative (Hudson and Underhay 1978:133-137).

Lunar calendars, such as the *Mas^{iq}tskumu*, were suitable for day to day activities, but would eventually become out of sync with the seasons and solar calendar (Krupp 1977:16). According to Blackburn (1974:104), the lunar calendar was semi-annually adjusted by reference to the solar solstices.

Hudson and Underhay (1978:138-139) have posited two

possible alternatives for the adjustment or synchronization of the lunar calendar.

1. Using a mnemonic device, the difference in days ($11\frac{1}{4}$) between the synodic year (354 days) and the solar year (365 days) were annually computed. At the end of three years, the difference between the end of the lunar year and the winter solstice is represented by 33 or 34 days. This would indicate when an added month is necessary for re-establishing synchronization.
2. Ignoring the synodic year, and instead computing the difference between the *Masiqtskumu* (360 days) and the solar year ($365\frac{1}{4}$ days) using a mnemonic device. Computing a total of five or six days (depending on how fractions were treated) each year would result in a number of about 30 at the end of five years; thus, it could be added to the Chumash calendar as an intercalary month, enabling synchronization.

Hudson and Underhay (1978:139) suggest that the latter alternative was probably more likely since there is ethnohistoric evidence which indicated that every five years a "national" meeting occurred at *Muwu* and was attended by *wots* and *'antap* officials. One of the purposes of this meeting may have been the synchronization of the lunar and solar calendars by way of adding an intercalary month.

The possibility also exists that the lunar calendar was annually synchronized at the time of the winter solstice. Since annually the difference between the lunar and solar calendars was five days and the duration of the annual Winter Solstice Ceremony was approximately five days, the two calendars could have been synchronized

at this time (Kote Lotah 1979).

MONITORING CELESTIAL EVENTS

In terms of the actual monitoring of celestial events by Chumash astronomers (*'alchuklash*), there is some good ethnohistoric information for solar observations, as presented in the following account by Candalaria Velenzuela:

Close to Saticoy there lived an old Indian named Tomás Cora, who was deaf. From his cabin in the last days of December he would watch the rising sun, seated in front of his door, on the ground. Three peaks can be seen to the south of east from his position. The sun would pass the middle peak on the way south, pass in the valley, remain two days, and on the third day would come up again over the middle peak on its way north. He would then notify the other Indians of the new year. He followed this practice for years (Blackburn 1963b:141).

This account refers to the monitoring of the winter solstice by an *'alchuklash*, using the point of sunrise at the standstill to mark the beginning of the new year when the sun again journeys north along the ecliptic.

Such a technique, using a distant horizon with characteristic features, was probably also used for the equinoxes as well. In addition, mid-points between the solstices and equinoxes may also have been monitored. There is ethnohistoric evidence suggesting that heliacal rises of prominent stars along the ecliptic were monitored, as evidenced by a J. P. Harrington note referring to Antares as being visible in January and Orion's Belt in

August, at times when these stars can be briefly seen in the pre-dawn sky (Hudson and Underhay 1978:133). A heliacal rising is the first appearance of a star in the pre-dawn sky which can be used to calibrate the solar calendar, as in the case of Egyptian astronomy and the Great Plains Medicine Wheel (Krupp 1977:32). It is known that the Chumash noticed the monthly phases of the moon which were of calendrical importance; however, to what extent other lunar events, such as the major or minor standstills were monitored—perhaps again using distant horizons—remains to be answered. Questions concerning the extent of Chumash astronomical knowledge and the possible archaeological manifestations of such knowledge are presented in Chapter 4.

It would seem that the importance of celestial monitoring by the Chumash for their solar and lunar calendars, served more as a vehicle by which the *'antap* cult, specifically the *'alchuklash*, could predict the time of celestial events, resulting in a regulated ritual/ceremonial calendar for private and public needs, rather than a need for indicating the time to gather wild plants, hunt or conduct other subsistence related activities.

The following quote by Blackburn (1975:13-14) demonstrates the integration of social-religious services or duties that were integrated into the Chumash calendrical system.

In discussing Chumash religious beliefs and practices, it may be useful to distinguish between those that were essentially private and those involving the community as a whole. Private ceremonies, primarily of interest to a few individuals or families, were performed on such occasions as birth, giving a child a name, adolescence, the taking of *Datura*, marriage, illness and recovering from illness, and wakes, while occasions calling for public observance included a chief's birthday, the appearance of rattlesnakes from hibernation, a mourning anniversary, completion of the summer harvest, and the summer and winter solstices. Perhaps the most significant ceremony as far as the individual was concerned was the drinking of *Datura*, for it was during the subsequent coma and hallucinatory state that the boy or girl established the special relationship with a dream helper (represented by the '*atišw̄in* or talisman) and received prognostications concerning his or her future from the *alčuklaš* or administering official. The great public ceremonies (the mourning anniversaries, the September harvest fiesta, and the winter solstice ceremony) involved performances by dancers and singers associated with the '*antap* cult, shamans' contests, the construction of a *siliyák* or sacred enclosure, and sacrifices of money, food or down to the sun and the earth (which is called either *xutaš* or *šup*) at the *šawil* or shrines. They also involved complex social, economic, and political interaction between villages over a wide geographical area.

MAJOR CEREMONIAL EVENTS

Summer Solstice Ceremony

At present, the information regarding the Summer Solstice Ceremony is rather scant. In contrast to the large public *Hutash*, Mourning Anniversary and Winter Solstice Ceremonies, the Summer Solstice celebration is only superficially mentioned in the currently synthesized

Harrington data and seems to be of a lesser ritual significance.

The Chumash may have viewed the summer solstice in a similar manner as that recorded for the Juaneño and Luiseño by Father Boscana.

They celebrated with more pomp and attention the sun's arrival at the Tropic of Capricorn [winter] than for the Tropic of Cancer [summer], for they were pleased with the sun's approach towards them. Its return meant much to them for it ripened their fruits and seeds, gave warmth to the atmosphere, and enlivened again the fields with beauty and productivity (Hudson and Underhay 1978:62).

A brief description of the Chumash Summer Solstice Ceremony obtained from one of Harrington's informants, Fernando Librado, is as follows:

. . . On [for] the sticks [sunsticks], men at time of Christmas and midsummer prepared [a] soft place in the earth and inserted [the sun-] stick surmounted by this stone ("*helo*"). The stone was the sun. [These men] made a prayer which F. [Fernando] remembers. Also in [the] midsummer [ceremony they] had a big "basket" and all [everyone] put valuables in it as offerings to Sun for crop increase. All [of these] were very mysterious (Hudson and Underhay 1978:66).

There is no mention of the use of shrines (*shawil*) or feathered poles for the Summer Solstice Ceremony, as was the practice for the winter solstice, and hence, the use and importance of such rituals for the summer solstice can only be speculated. Offerings to shrines may well have been a part of the ceremony, however the erection of feathered poles appears to be restricted to the renewal

ceremony of the winter solstice. The *siliyík* sacred enclosure was undoubtedly used, since it was an important element of all of the major Chumash ceremonies.

Hutash Celebration

The Hutash or fall harvest ceremony was held in commemoration of Mother Earth, who was characterized as a benevolent female provider of food. Hutash was the name for Earth, but also meant Venus as Evening Star, as well as the name for the coffeeberry shrub. The activities during the five or six days of the celebration were concerned with maintaining the universe in a state of equilibrium.

First, there is the cardinal arrangement of ceremonial structures and movements. . . . Second, the ceremonial events are concerned with biotic life on earth—the dances and songs performed were Seaweed, Barracuda, Blackbird, Fox, Skunk, Beaver and Bear. Third, the sun is symbolically present at the ceremony, being represented by the *siliyík* with its rays (symbolized by twelve red feathered banners positioned at this structure, and by the twelve 'antap officials (Hudson and Underhay 1978:48).

During the mission period, the Ventureño Hutash Ceremony may have been scheduled to occur around the time of the San Miguel Day, September 29; however, in pre-mission times there is mention of the celebration occurring either in the middle or end of September, although the name for August means "month of fiesta" (Blackburn 1975:102; Hudson et al. 1977:43, 104; Hudson and Underhay

1978:45-56). Although it is not specifically stated, this celebration may have coincided with the observance of the fall equinox, following the fall harvest.

At least in mission times, neighboring groups, such as the Yokuts and Kitanemuk, joined the Ventureño celebration. A significant aspect of this celebration also involved various trading activities which included everybody. Every two, three or more years, the final days of the *Hutash* Ceremony were dedicated to the Mourning Anniversary in commemoration of the dead. The timing of this event may have coincided with the appearance of Venus as Evening Star (Hudson and Underhay 1978:46, 85).

Following the *Hutash* Ceremony, a ritualistic meeting was held to discuss the time and preparations for the forthcoming *Kakunupmawa* festival—Winter Solstice Ceremony. The strong interrelationship and complementary powers of both the sun and earth can be understood in the sense that seasonal changes occurring on earth were being carefully observed in terms of the sun's changing position along the horizon, which in turn could be predicted from the seasons on earth (Hudson and Underhay 1978:48-49).

Mourning Ceremonies

Mourning Ceremonies, called *Shihuch* or "big fire" by the Ventureño, were held in honor of those who had recently died. During the mission era, this ceremony

was described as occurring during the final days of the September *Hutash* celebration; although both may have been held in August or late summer in pre-contact times (King 1969:52; Hudson and Underhay 1978:45-46). The event was spaced at intervals of either three, four, or five years (Blackburn 1974:101; Hudson and Underhay 1978:94), or within a year for a prominent man (Blackburn 1963b:146). Apparently, the Chumash would have several Mourning Ceremonies during a single season, involving numerous people which would also cross-cut cultural boundaries (Hudson and Underhay 1978:46).

An important Ventureño Chumash fiesta, for example, might be attended by sizeable numbers of people from as far west as Gaviota or Santa Inez Valley, as far east as Malibu or the San Fernando Valley, and as far north as Tejon, while performances by Yokut dancers were not uncommon on such occasions (Blackburn 1974:100).

The ancient custom was for capitanes of various rancherias to talk together and plan to give a series of fiestas all in the same year and three weeks to maybe a couple months apart. The capitan of *mat'apxa'w* would plan maybe to give one first and El Piru to follow, etc., till the last fiesta might be way down San Fernando way. Fiestas were not given as one gives a dance now, nor every year either. They were given by a captain in honor of his relative or relatives who had died and also for his people who had lost relatives—as an obligation. They came off only every three or four or five years. The people had to save for them long (years) in advance and work for them in advance, preparing food, etc. A series of fiestas like the above-mentioned would come off one year and then for four or five years there would be none anywhere (Blackburn 1974:101).

Although there is no definitive data that corrolates the timing of these Chumash ceremonies to an astronomical observance, which is so prominent in the timing of other ceremonies and rituals, Hudson and Underhay (1978:95, Table 1) have conjectured an association with the visibility of the Evening Star, Venus. Since the events occurred in a series of perhaps several months, this would also necessitate the visibility of the star for several months which has been demonstrated from at least September 21 to December 21, 1965 to 1972.

There would be intervals of about three years during which the Evening Star, *Slo'w*, would be easily visible at this critical time, and years during which it would not be visible. Since the mourning rituals were not held annually, but were spaced about every three years (Hudson et al. 1977:104, note 53), and since this ritual may involve *Slo'w* as the *wot* over the Land-of-the-Dead, it might be suggested that the ceremony was timed to coincide with those fall (*Hutash*) and winter (*Kakunupmawa*) months when the astronomer-priests knew that the Evening Star would be visible in a dark sky (Hudson and Underhay 1978:94).

There is no definite Chumash data suggesting either the use of an eagle dancer or the ritual killing of an eagle during the Mourning Ceremony as in association with *Slo'w*, the eagle, as does occur with the Yokuts and Gabrieliño. The Ventureño *shihuch* dancer was dressed as a swordfish (Hudson and Underhay 1978:85). However, there are strong implications from a Fernandeno myth told by Juan Melendrez, grandson of a *Humaliwu* chief (Edberg

1981), that the ritual killings of eagles may have actually been an ancient custom of the Chumash, perhaps of the Malibu Province. The following passage from the myth illustrates this point.

It was anciently the custom in the fiesta when they caught an eagle to spread out a skin on the ground and tie the eagle sentado on it. Then all threw chía, corn, bellota, everything, till the eagle was buried up to its neck and thus paid it (lo pagó), then a good shot shot an arrow at its head and killed it. . . . (Harrington n.d.a).

Latta (1949:232, 238) described one Yokuts Mourning Ceremony that coincided with the appearance of the Evening Star, and a few days later it was mentioned that the Morning Star became visible. Powers (1976:390) mentions only the visibility of the Morning Star during a Yokuts Mourning celebration. Otherwise, such ceremonies for neighboring groups are usually said to occur in late summer or fall, often following a harvest (Hudson and Underhay 1978:94).

The spacing of perhaps several years between the ceremonies was also heavily influenced and tied into the financial situation and burden placed on the bereaved families. Ethnohistoric data for the Chumash (Hudson et al. 1977:48, 104; Hudson and Underhay 1978:46) and their neighboring groups such as the Yokuts (Gayton 1930:375-377, 1948:124-131; Kroeber 1976:500), Gabrieliño (Blackburn 1963a:35; Kroeber 1976:626) and the Tejon Tong'va

(Merriam 1955:77-85) describe the destruction of the deceased's property, along with effigies and "sacrificial" items such as baskets, beads, food and other objects, by throwing them into a fire. Although, many of the items were actually thrown to or gathered up by the spectators. However, these offerings or goods had to be supplied by the bereaved families which would take years to make or save for.

Gayton's *Wukchumni* Yokuts Mourning Ceremony data (1948:124-131), is probably highly applicable to other neighboring ethnic groups, and is used as an analogy for the Chumash structuring of their financial situation and preparation. In summary, this extremely complex interaction involved at least three tribelets:

(1) a host group sponsoring the ceremony; (2) a financial recipient group that provided money for the host group [at the time of the festival at 100% interest] in exchange for equivalent amounts of food or gifts; and (3) a group having a reciprocal ceremonial relationship with the host group involving the ritual washing of mourners at the close of the six-day ceremony (Blackburn 1974:99).

The financial preparation for the ceremony entailed the raising of money by the bereaved family, chiefs, sub-chiefs and others who wanted to contribute or invest. One or more tribes were then selected to receive the money, but usually not the tribe providing the ceremonial reciprocants or washers. The recipients received the money prior to the ceremony, but were expected to return

the sum with 100% interest at the time of the ceremony. During the time of the "loan" they would engage in trading in order to obtain the interest they owed. The original contributors were also expected to provide gifts or food at the end of the ceremony, for the recipient group, equivalent to their original sum of money; and thus they received the money or commodities back from the "'loan' to the recipient group." This money was used to pay the washers, singers, eagle or *huhuna* dancers and others. Throughout the ceremony, an extensive amount of side trading was conducted (Gayton 1948:124-126). Apparently, also during these ceremonies, chiefs often made large profits by sponsoring entertainers or ceremonial performers, who were paid by the spectators. Chiefs also received notariety for "making" the ceremony (Gayton 1930: 376-377). Although the sponsoring chiefs could also be ruined by a festival and it was the sub-chiefs and people who then had to pay the deficit.

The "unholy alliance" that Gayton noted between Yokut chiefs and shamans also appears with the Chumash. Prior to a Mourning Ceremony, important chiefs and shamans would meet to choose a "Poisoner" and a person to be "poisoned." The shaman would then poison a rich person for months, in a sense extorting money, to let him live, thus increasing the offerings at the upcoming fiesta (Blackburn 1974:106).

Winter Solstice Ceremony

The Winter Solstice Ceremony, honoring *Kakunupmawa* the Sun, was the most important annual ceremony of the Chumash. This was the critical time when the sun reached its furthest point south and needed man's pleas and supernatural knowledge "to aid in the cosmic rebirth of the universe" to "'pull' the sun back again on a northward course. . . ." (Hudson and Underhay 1978:62). Extensive planning by the *'antap* was necessary for this event and began shortly after the *Hutash* festival.

Therefore, far in advance of the large public celebration, there was a private meeting of the *'antap* and village *wots* of the province. Based on the results of a *pi* game, the presiding sun-priest was chosen (Hudson et al. 1977:55; Hudson and Underhay 1978:62). During the interim time before the solstice, plans were made for the date and location of the ceremony, along with the preparation of the ritual paraphernalia, such as making new feathered poles. The time preceding the public ceremony also enabled careful observations of the sun in order to select the correct date for the event (Hudson and Underhay 1978:62-63) and possibly compensate for various viewing conditions based on the weather.

Exercising ritual knowledge and supernatural powers, the sun priest and his twelve *'antap* assistants assumed the burden of keeping the cosmic forces in balance, while begging Sun to provide the Middle World with the necessities of life (Hudson and Underhay 1978:72).

The actual public ceremony usually took place between December 20 and December 26, and lasted from five to six days. During this time numerous rituals and dances were performed, various offerings, such as food and money were made, and year old financial debts were settled.

The financial transactions occurring in connection with the Winter Solstice ceremony are particularly illuminating; during the course of the ceremony a public meeting was held for the purpose of settling any and all outstanding debts contracted during the year by anyone present, before the beginning of the new year. The *alpaxa* [*paha*] presided at this meeting and received the large quantities of money and goods offered on this occasion in honor of *xutas*, the earth; again, presumably, a part of this went to enrich the chief, the *alpaxa* and the other '*antap*' (Blackburn 1974:105).

If a person was poor and did not have the money to pay off his debts, he could sell his property, for example, food, in return for the necessary money, or perhaps leave contributions to the *paha* such as firewood (Hudson et al. 1977:56).

Two of the most important rituals that transpired during the public ceremony were (1) the erection of the sunstick (called '*okshposhinash* or *miwalaqsh*—"to divide" or "separate in the middle") on December 24 to "pull the sun back towards earth again" and (2) the placement of the feathered poles at a sacred place or shrine on December 26, with the top feathers symbolically oriented east-west. The sunsticks were used only during the solstice ceremonies; whereas, the feathered poles, which

were replaced every winter solstice, remained throughout the year as a place for prayers and offerings (Hudson et al. 1977:56; Hudson and Underhay 1978:66-67).

Shrines

Mountain shrines (*shawil*), such as *Tswaya tsuqe* (LAN-511) located in the west San Fernando Valley, were a major element of the Winter Solstice Ceremony, as well as other ritual occasions. The use of mountains as shrines was a reflection of their belief that mountains were locations of concentrated power, as demonstrated in various myths (Hudson and Underhay 1978:40, 119-120). An example, by a priest from Mission San Buenaventura, describes shrines as being:

. . . sacred places and were kept very clean. People came to them on pilgrimages or out of necessity, petitioning for rain, abundance of food, protection from bears and rattlesnakes, and for good health. The Spanish priest added that offerings of beads and seeds were made to the "Invisible One," who provided rain, seeds, fruits, and all manner of things. The "Invisible One," of course, was Sun (Hudson and Underhay 1978:68).

Each year the sacred feathered poles placed on mountain shrines were renewed, the old ones being burned. An interesting account of a winter solstice shrine (*Waha'as* - "ominous" - Applegate 1975a:45) was given by Candalaria in 1913 and presented by Van Valkenburgh as follows (letter dated July 31, 1933):

San Cayateno is west of Sespe Canyon on the Coast Range. On the east peak it was the custom of the Indians to gather at the time of the winter solstice for a ceremonial. A pole was in the center, and upon this were crow feathers. The people danced around this pole and threw in offerings of acorns and chia. They came as far as Ventura. In the 30's the head of the ceremonial lived at Saticoy. He was the last shaman.

Visits to this shrine were also said to have been made at other times, such as around the fall harvest, for prayers and/or to make offerings of food, beads or other trinkets. Apparently, the use of this shrine continued into the 1870's (Blackburn 1963b:145; Hudson and Underhay 1978:69).

Mountain shrines were also used as depositories-of-the-things-of-the-dead, as evidenced by the following account:

'Iway^zk'z, meaning "mystery" was the name given to the shrine at the place where the things of the dead were deposited. It was about a mile and a half west of Ventura on the shore. There were thirty stations up there, distributed all the way up the slope of the hill. At the top place there was a feathered pole of holly, three inches wide in diameter, with the bark removed. This pole, called *spn kakunupmawa*, meaning "sun-pole," had feathers tied about the top, and two condor feathers projecting, one to the west and one to the east. The pole was about four feet or so above the ground, set in a hole lined with stones. The post was painted dark vermillion, not red. . . . The Indians used to throw the things of the dead on the east side of this pole (Hudson et al. 1977:62-63).

Not all shrines were restricted to mountain tops, since there is ethnohistoric mention of sacred trees, caves, springs, along with man-made enclosures, which were

regarded as shrines, such as at the village of *he'lo*, located on Goleta Estero Island (Applegate 1974:198, 1975a: 25, 26, 30, 32, 33, 34, 39, 44; Hudson and Underhay 1978: 66-69). It is not certain if all these shrine types were associated directly or indirectly with the winter solstice, per se, as with the case of Ventureño mountain shrines, since there are no recorded mountain shrines for the Barbareño, although this may be due to insufficient data. However, the use of springs as shrines or sacred places, and the significance of water symbolism, were other important aspects related to the winter solstice and the Sun. Both water and springs were often integrated into curing rituals and requests for rain, which required prayers to the sun (Hudson et al. 1977:65-66; Hudson and Underhay 1978:59-60). There are numerous locations of shrines cited in Applegate (1974:187-205; 1975:187-205); however, the patterns of specialized or general use throughout the various linguistic or provincial areas of the Chumash territory through time, have not been systematically studied.

Chapter 3

ARCHAEOLOGICAL EVIDENCE FOR A NATIVE CALIFORNIA ASTRONOMY

INTRODUCTION

This chapter deals specifically with a review of the existing archaeological evidence for a native California astronomy. The emphasis is on the Chumash; however, owing to the dearth of existing astronomical information for most native California groups, corroborative data from other cultural areas will be presented.

Recent publication of the Harrington data (Blackburn 1963b, 1974, 1975; Hudson et al. 1977; Hudson and Blackburn 1978; Hudson and Underhay 1978; Hudson, Lee and Hedges 1979) as well as other ethnographic sources, has enabled more specific interpretations of certain artifacts and sites once ascribed the enigmatic label of ceremonial. Many Chumash artifacts and sites have now been reinterpreted as having a specific astronomical purpose and/or related ceremonial significance.

Most of the evidence has recently been acquired through fieldwork by independent researchers, which in many cases remains speculative and subject to

interpretation. The following text will present the existing evidence by individual researchers and their interpretations with no intent on the author's part to posit any alternative views.

ARTIFACTUAL DATA

Artifactual material which might be attributed to astronomical observations and/or associated rituals, among the archaeological literature remains scant. For the most part, artifacts which have been associated with astronomical purposes are known for only a few sites in the Chumash area, the most noteworthy being Bowers Cave in the lower Santa Clara River Valley. The artifactual material described in the following pages represents what is presently known for the Chumash area. An intensive review of the literature along with perhaps a re-analysis of the varying collections would be required to substantially enhance our present data base. Such an exhaustive effort is far beyond the scope of this study.

BOWERS CAVE COLLECTION

An astronomic and related ritual significance can be posited for the Bowers Cave collection obtained by Reverend Bowers in 1885. Included within the cache of ceremonial objects were:

4 sunsticks

33 feathered bands

45 deer tibia whistles (4 with *Olivella* shell bead inlay)

14 bull roarers

a wooden sword/dagger

a wooden hook

baskets

an abalone shell cup (Elsasser and Heizer 1963:4-29).

Although all of the ritual items may have been used in ceremonies commemorating astronomical events along with other ceremonies as well, only the sunsticks, feathered bands and deer tibia whistles have ethnohistoric reference specifically linking them with astronomical events. The feathered bands and whistles found at Bowers Cave are highly problematical as to their specific ritual usage; however, they will be briefly discussed, along with the sunsticks, as to their potential ritual association in Chumash astronomy.

Sunsticks

Four perforated stone disks hafted onto wood were initially interpreted as stone clubs (Elsasser and Heizer 1963:37); however, Dr. Thomas Blackburn (1974) posited an astronomical nature for these specimens (Hudson and Underhay 1978:63).

The Bowers Cave specimens fit the ethnographic

description of Chumash sunsticks. An examination of three of the objects revealed that two were canted at 10° from vertical, while another was canted at 18°. The 10° angle closely coincides with the angle of the sun during the time of the summer solstice (approximately 11.5° at the Bowers Cave locality). During the summer solstice, these sunsticks would virtually cast no shadow, while at winter solstice they would cast the longest shadow. The specimen canted at 18° may have served to mark the sun's position in August, a month noted for Chumash festivals (Hudson et al. 1977:105; Hudson and Underhay 1978:65). The best preserved of the three canted specimens (PMH-39264) has a wooden shaft measuring 15³/₄" in length and ³/₄" in width, with a sandstone disk hafted on one end (Hudson and Underhay 1978:64, Fig. 7). Of extreme interest is the design element on the top surface of this disk. The design consists of radiating lines, roughly corresponding with solstitial angles from north to south.

Deer Tibia Whistles

Among the 45 deer tibia whistles, four contained *Olivella* shell-bead inlay. Although these have not been specifically examined for possible celestial depictions in their bead design, they exist as possible candidates (Hudson and Underhay 1978:131-132). There are numerous ethnohistoric accounts referring to the use of bone

whistles by the 'antap during the performance of sacred songs during the Winter Solstice Ceremony (King 1969:43; Blackburn 1975:39-40, 156, 290-291; Hudson et al. 1977:42, 45, 50, 72, 78, 91; Hudson and Blackburn 1978:131).

Feathered Bands

The ceremonial usage of the 33 feathered bands remains problematical as noted by Elsasser and Heizer (1963:13).

In the relatively meager literature on feathered bands, the designation "head bands" is usually applied, although it is known that in historic times feather bands were used by the Chumash for other purposes. J. P. Harrington (1942:17), for example, lists, besides use as bands worn on the forehead, down the back, and as a bandolier, feather bands hung on poles as banners.

Fifteen of the bands were recovered complete—the longest being 100 cm—with the majority lacking tie strings ordinarily used for headbands. The most common feathers found in the bands were: Red-Shafted Flicker, Crow, Brown Pelican, Condor, Red-Shouldered Hawk, and Snowy Egret (Elsasser and Heizer 1963:13-16).

Although the true function of the Bowers Cave feathered bands is conjectural, it is quite possible that some, if not all, of the specimens represent archaeological examples of Chumash feathered banners; such as those that were hung from the sacred *siliyik* enclosures or from winter solstice shrine poles. As discussed in the

previous chapter, feathered banners are mentioned in the ethnohistoric literature as often being associated with rituals performed at the Winter Solstice Ceremony.

CAVE IN THE SANTA PAULA-VENTUREÑO AREA

Two deer tibia whistles (*'ichunash*) and a feathered headress were recovered from a dry cave, presumably in the Santa Paula region. The *Olivella* disc bead inlay configuration of one flute in particular, is of potential astronomical significance (Hudson and Underhay 1978:131).

As previously mentioned in Chapter 2, there does exist ethnographic information regarding the use of star charts by the Chumash *'alchuklash*, as well as other California groups. Moreover, star charts necessary for calendrical purposes were apparently reproduced on some cult objects. Conceivably, this whistle may be an archaeological example of this practice (Hudson and Underhay 1978:131).

The whistle exhibits an *Olivella* bead inlay pattern which strongly resembles the constellations of the Pleiades, Orion's Belt, and Aquila. The Pleiades configuration is situated on the distal end or mouthpiece of the whistle, whereas the possible Orion's Belt and Aquila representations are located on the proximal end; separated by the anterior border which runs the length of the tibia shaft (Hudson and Underhay 1978:131, Fig. 18).

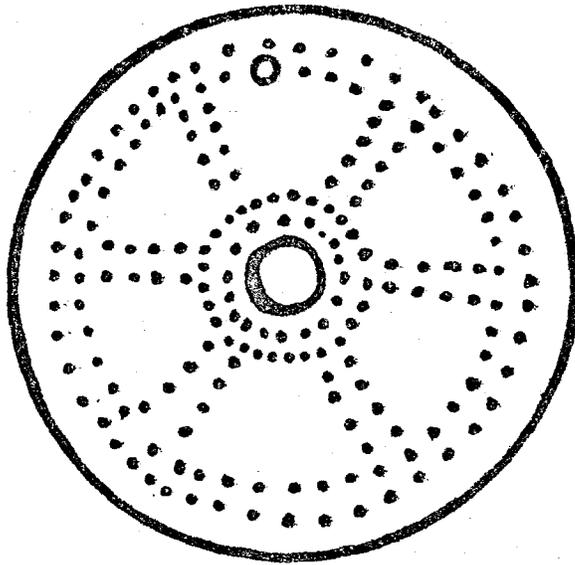
Hudson and Underhay hypothesized that the whistle depicts stars from Orion's Belt, Pleiades and Aquila in an east to west orientation. This pattern represents a stellar configuration which can be seen ". . . at the close of evening twilight during the critical days marking the winter solstice, when the 'antap played sacred songs on these whistles" (Hudson and Underhay 1978:131).

SHELL ORNAMENTS

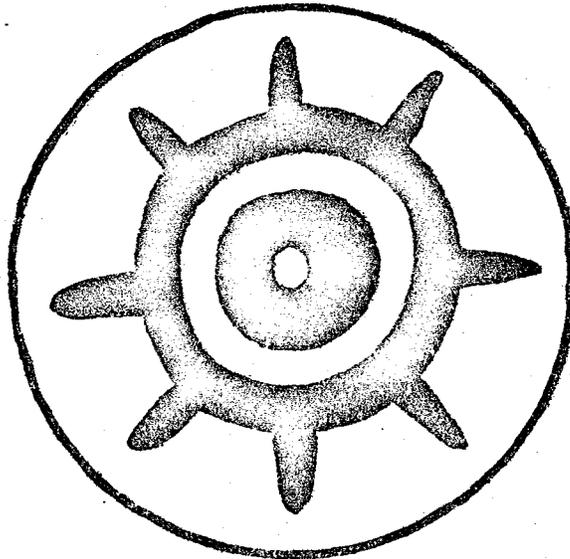
Gifford (1947:15) posed a similar stellar meaning for some punctate curvilinear designs on shell ornaments as being suggestive of star patterns or constellation depictions. As noted by Gifford (1947:15):

. . . some of the types with both central and multiple peripheral perforations from southern California, suggest the possibility of the perforations representing stars of constellations. This possibility is strengthened by the interest of modern Indians in heavenly bodies; for example, they sometimes represent them in sand paintings.

Upon a close perusal of ornament illustration charts compiled by Gifford (1947:95, Fig. V3) a similar design pattern was noted between an illustrated shell ornament (Figure 1) and the Bowers Cave sunstick—PMH-39264 (Hudson and Underhay 1978:Fig. 8). The Bowers Cave specimen has two more lines than the ornament design, perhaps indicating the equinoctial sunrises and sunsets.



A



B

Figure 1. (A) Shell ornament, (B) Bowers Cave Sunstick.

DISCUSSION

The artifactual material thus may well represent ritual paraphernalia used in ceremonies commemorating the sun at the time of the solstice, and in the case of shell ornaments, perhaps a replication of stellar patterns or sacred symbols ascribed an astronomical and religious importance, possibly worn exclusively by cult members.

The Bowers Cave collection would appear to represent a clandestine cache of ceremonial *'antap* paraphernalia. The ethnographic and linguistic data presented by Bright (1975:228-230) suggests that the cave is in Ventureño Chumash territory, formerly considered to be Alliklik. The presence of glass trade beads, along with the well preserved nature of the collection indicates an historic date for the use of the cave, probably A.D. 1770 or later, although some items may be from an earlier time period (Elsasser and Heizer 1963:2-3).

We can further speculate that the cache represented ceremonial paraphernalia used at villages and sacred sites in the lower Santa Clara region during the mission and post-mission periods. A relationship may well exist between this cache and the winter solstice shrine known as *waha'as*, which means "ominous" (Applegate 1975a:45), located on San Cayetano Mountain near the town of Fillmore, and visible from Bowers Cave to the west. Perhaps this cave was recurrently used as a cache for a number of

years while traditional ceremonies were being performed secretly, and conceivably was the intentional last resting place for the cult regalia, as expressed in the following account.

When the medicine men of the *I'aliklik* tribe of California Indians saw their native gods in favor of the new religious forms brought to them by the Spanish padres they were determined to preserve the symbols of their own primitive faith—and so they hid their feather robes, ceremonial wands and magic blades of obsidian in a remote cave in the mountains which border the California desert (Van Valkenburgh 1952:5).

ARCHAEOASTRONOMICAL SITE DATA

The advent of archaeoastronomical research in California, which was largely influenced by Hudson and Underhay's (1976) hallmark study, has led to the discovery of sites with a ritual and/or functional astronomical aspect. All of the sites discussed have been documented by field observations.

Since most of these sites have been adequately reported on by Hudson and Underhay (1978) and Hudson, Lee and Hedges (1979) they warrant only a brief summarization here for the purpose of acquainting the reader with the current status of archaeoastronomical site interpretations. The following sites will be discussed in regard to locality, using the state trinomial system (state, county and site number), and in relation to the general type of solar phenomenon monitored, either a direct or indirect observation. A direct observation entails

watching the sun's movement along the horizon from a fixed point, whereas an indirect observation involves the use of a light beam producing a light or shadow effect (Hudson, Lee and Hedges 1979:45-50).

It should be mentioned here that both direct and indirect solar observations have been documented in the American Southwest, as well as throughout the Americas. For example, the Hopi were known to have watched the rising and setting positions of the sun in reference to thirteen fixed points along the horizon (Hudson, Lee and Hedges 1979:45). The use of direct observations is ethnographically documented for the following California groups: Wintu, Atsugawi, Achumawi, Shasta, Klamath, Modoc, Maidu, Kontow, Nisenan, Wiyot, Pomo, Chumash, Cupeno, and Yuma (Hudson, Lee and Hedges 1979:47). Only the Cahuilla are ethnographically known to have observed indirect solar phenomenon (Hudson, Lee and Hedges 1979:50). In the Southwest, indirect observations have been archaeologically documented at Fahata Butte, New Mexico, where a light dagger strikes a spiral petroglyph motif during the solstices (Frazier 1979:57-67).

SANTA BARBARA COUNTY

Direct

4-SBa-550 (Honda Ridge): Chumash -- A pictograph site located on Honda Ridge in the Vandenberg Air Force Base

and approximately two miles from the coastal village of *Nacto*. The site contains pictographs painted on a south facing cliff, with two of the motifs having possible astronomical significance. One appears to represent a sun symbol, while the other may depict three suns above a series of four mountain peaks (Spanne 1979;1-2). Two observations were made of the winter solstice sunrise: (1) on a prominent hill above the rock art, the sun was seen rising in a notch on the distant horizon, at an azimuth of 117° and (2) from the rock art site itself, the sun was observed rising above a prominent hill approximately 550 meters away, at an azimuth of 121.5° . This latter observation point was accompanied by a light effect on the unpainted portions of the cliff (Spanne 1979:2).

4-SBa-655 (Window Cave): Chumash - A rock shelter site with petroglyphs, one of which appears to be a sun symbol. This south facing shelter is situated in upper Honda Canyon on Vandenberg Air Force Base. A natural window in the shelter frames Tranquillon Mountain and overlooks Honda Canyon. Looking through the natural window, the winter solstice sunrise illuminated Tranquillon Mountain, and the winter solstice sunset appeared to hover over the same peak, but set slightly to the west. Spanne noted that Tranquillon Mountain had been cut by at least 25 feet and may originally have been the actual

point of sunset from the shelter window (Spanne 1979:3).

Indirect

4-SBa-101 (Condor Cave): Chumash - This site is a rock shelter located in the Los Padres National Forest. It contains numerous rock art motifs suggestive of winter solstice rituals; however, one in particular strongly coincides with ethnohistoric information on body painting and hand gestures associated with the winter solstice (Hudson and Underhay 1978:71). Moreover the shelter contains a man-made window where light is cast onto the southwest wall of the shelter at the time of the winter solstice sunrise. No specific motif is mentioned as having been affected by this shaft of light. In addition, the winter solstice sunrise when viewed from the window, rises above a conspicuous sandstone outcrop situated on an otherwise flat plain. It is believed that the site was used for ritually monitoring this solar event and may have had sunsticks placed inside the shelter for more accuracy (Hudson and Underhay 1978:53-54).

4-SBa-103 (Edward's Cave): Chumash - A south facing rock shelter site near Condor Cave. The site has a natural stone column with a painted concentric circle motif which is bisected diagonally by light from the winter solstice sun. The accuracy of this light affect is not known; however, it has been suggested that only near

the time of the winter solstice, when the sun is at an extreme southern angle, could light penetrate inside the shelter (Hudson, Lee and Hedges 1979:51).

KERN COUNTY

Direct

4-Ker-317: Tubatulabal - This pictograph site is located near Walker Pass. Rock art elements present at this site may include abstract sun and mountain symbols, one of which seems to depict the sun rising over a prominent peak, with other motifs representing mountain symbols which replicate the distant horizon. The rock art was hypothesized by Schiffman (1979:11) to indicate the positions of the winter and summer solstice sunrise. The monitoring of both solstitial events supported this hypothesis since the winter solstice sun rose over Owens Peak and the summer solstice sunrise appeared above another unnamed peak to the north, as Schiffman predicted from the pictograph symbols. Thereby, he concluded that the site was a solar observatory (Schiffman 1979:11).

Tubatulabal Pictograph - Schiffman (1977:25-28) interpreted a rock art site located along the South Fork of the Kern River as a possible Tubatulabal calendar. Ten out of the fifteen symbols were interpreted as having both a functional and symbolic calendrical representation. It was postulated that the symbols represented the sun,

north star, rain, counting system, dry season, directional indicators and an astronomical clock. According to Schiffman (1977:27), "Viewed as a whole, the pictograph assemblage has an emphasis on counting and plotting observations and events (galactal)." He mentioned no direct or indirect solar phenomena occurring at this site.

SAN DIEGO COUNTY

Direct

4-SDi-6648 (Viejias Mountain): Tipai - A cross shaped rock alignment once existed at this site and was situated on a high saddle on Viejias Mountain. The long axis of the cross was oriented at 120° azimuth in alignment to the winter solstice sunrise on a distant peak (Hudson, Lee and Hedges 1979:49).

4-SDi-5693 (Cowles Mountain): Tipai - This is another rock alignment site consisting of a bisected circle. The bisection of this circle is oriented to an azimuth of approximately 122°. As with the Viejias Mountain site, Ken Hedges confirmed that the alignment of this axis was pointed at the winter solstice sunrise on the distant horizon (Hudson, Lee and Hedges 1979:49).

TULARE COUNTY

Indirect

4-Tul-19 (Painted Rock): Yokuts - This is a southeast

oriented rock shelter which contains polychrome paintings on the ceiling. One prominent motif may depict the Yokuts' mythological being, *Sok-so-uh* ("Coyote"), which was perceived as holding the sun in its mouth, as portrayed in this pictograph. The winter solstice sunrise was observed to rise in a gap on the distant horizon, and was accompanied by a light affect within the northwest corner of the shelter. Underhay concluded that this site may have been used to monitor the winter solstices since this affect would only occur near this time (Hudson, Lee and Hedges 1979:51).

BAJA CALIFORNIA

Indirect

LC-44-18 (La Rumorosa): Tipai - A rock shelter with pictographs located in northern Baja California. First sunlight at winter solstice sunrise cast a light effect on a red-horned anthropomorphic figure. The effect consisted of a dagger-like beam of light which crossed the eyes of the figure, and later effected the entire motif. Ken Hedges concluded that the positioning of the motif was purposefully intended to take advantage of this light effect. He felt that the accuracy was no closer than ten days to the solstice (Hudson, Lee and Hedges 1979:51).

MORTUARY SOLAR ALIGNMENTS

The discussion up to now has centered on sites which may have served as solar observatories and/or ritual locations chosen to observe the solstitial events. As presented, there exists no clear cut distinction between a more functional (i.e. calendrical) or ritual activity, except perhaps in the level of accuracy achieved.

The following discussion centers on site features with a more obvious ritual or cosmological intent—the solar orientations of burials.

4-LAn-243 (Medea Creek): Chumash — The Medea Creek burial orientation data indicates that the majority of the inhumations were positioned 70° north of west and 80° south of west (magnetic), whereas three burials were oriented easterly. King postulated an intended winter and summer solstitial sunset alignment for these burials, indicating that a ritual astronomical significance was applied in mortuary practices. She cautioned, however, that the possibility existed that some or all of these burial orientations were actually directed at some geographical feature: a fixed point on the horizon. The burials chosen for this study were oriented from an angle off of true west on a straight line extending from the base of the spine to the foramen magnum. Infants were discounted due to burial position complexity and orientation uncertainty; however, they appeared to be oriented

westerly (King 1969:36).

4-LAn-21 (Walker Cairn Site): This is a mortuary cairn site that was first excavated by E. Walker in 1939, and the focus of an archaeoastronomical study by Gary Fowzer in 1978. The findings of both the 1939 and recent 1976-1979 excavations will be further discussed in Chapter 4.

Fowzer (1978:1-7) attempted, as accurately as possible to reconstruct the cairn orientations using Walker's original field data. For his study, the Locus A Cairn was chosen, since this locus possessed a distinct central cairn and, moreover, was far more symmetrical in actual configuration than the Locus B Cairn. The dimensions were 15 feet long by 4 feet wide. In long axis, the cairn was oriented at azimuth 335° , looking north and azimuth 155° looking south. In short axis, the azimuth was between $60-65^{\circ}$ looking east and $240-245^{\circ}$ looking west (Fowzer 1978:2).

Solstitial rises and sets, both major and minor lunar standstills and a total of fifteen bright stars were calculated in reference to the cairn orientation, based on the site's specific latitude. However, the long axis may have had an alignment with the summer solstice sunrise and the winter solstice sunset, since it was noted as being directly aligned with the center of the Group B Cairns and the center of LAn-357 (Fowzer 1978:4-5).

All alignments were oriented in relationship to the declination of True North (set at 15.5°). The potential inaccuracy of Walker's initial mapping used in this study, may represent an unknown error factor, and consequently not accounted for in the cairn alignment reconstruction (Fowzer 1981).

4-Ven-606: Chumash - This is a high status cemetery with an associated lithic scatter located just north of the Conejo Valley. The cemetery is situated on a small bench, with a lithic scatter continuing down the ridge to the south. The site consisted of sixteen burials (three of which were cremations) and at least three cairns. Three of the burials were adult, all of which were buried closely together and had virtually no burial goods associated; the remainder were sub-adults with high status burial accouterments. These burial offerings included abalone pendants, shell beads, quartz crystals, bone awls and a '*ichunash*' (deer tibia whistle). One quartz crystal was found positioned in the teeth of a sub-adult burial (Toren 1979, 1980).

The burials were clustered in the south end of the site, with all but one of the burials situated within close proximity to each other. All the burials within the cluster, which included the three adults, had their heads oriented towards the highest of two peaks situated northwest of the cemetery. Separating the two peaks was

a prominent saddle. Transit readings, taken from a central point in the burial cluster to the top of the prominent peak, revealed an approximate summer solstice alignment of $294^{\circ}40'$ azimuth with an altitude of $12^{\circ}40'$. The monitoring of the summer solstice sunset on June 21, 1979, confirmed a summer solstice sunset alignment between the burial orientations and the peak; however, the sun set approximately 4° south of the center of the peak at azimuth $290^{\circ}5'$, altitude 9° . The isolated burial (sub-adult) was oriented approximately True North (horizon altitude $19^{\circ}30'$); however, there were no conspicuous geographic features noted in this direction (Toren 1980).

On the basis of the burial data, Toren postulated that Ven-606 represented a late period high status cemetery of probable 'antap affiliation. He further posited that the orientations of the burial cluster were ritually aligned to the summer solstice sunset and not merely a coincidental solstitial alignment resulting from an intended orientation towards a conspicuous geographical feature.

The burial aligned True North may well have been oriented towards Polaris (Sky Coyote) and hence its aberrant alignment in relation to the burial cluster as well as its spatial separation, suggests a social and/or ritual differentiation. The burial orientations and spatial positioning may be the result of ascribed status

differentiation within the 'antap cult, or perhaps a ritual distinction within the cult based on clan or guild membership (Toren 1980).

Sacramento Delta (Windmiller Tradition): Yokuts - Mortuary evidence from four Windmiller Tradition sites (550-112, Sac-168, 68, and the Old Bridge Site, 5-127) located in the Sacramento Delta region, were examined and found to have a significant correlation with the north-south range of the "setting sun." According to the study findings, it seemed clear that the majority of the burials (80%) were oriented towards the winter solstice sunset, with smaller numbers oriented towards the summer solstice sunset and equinoctial sunset. The solstice points were approximate, within 59° of solar arc (Schulz 1970:185-198).

ROCK ART

Rock art studies (pictographs and petroglyphs) in California have offered a myriad of interpretations regarding the archaeological/cultural significance of the art—with some verified by ethnographic data. Explanations include: hunting magic and game trails (Heizer and Baumhoff 1959, 1962; Davis 1962:48-49; von Werlhof 1965; Grant, Baird and Pringle 1968; Heizer and Clewlow 1973:4); tribal boundaries (Nesbitt 1968; Heizer and Clewlow 1973:622); male and female initiation and/or puberty rites

(Rust 1906; DuBois 1908; Sparkman 1908; Strong 1929; Steward 1938:227; Heizer and Baumhoff 1962:228; Heizer and Clewlow 1973:36; Minor 1973:30-31; Kroeber 1976:664); female fertility rites (Loeb 1926; Heizer 1953; Davis 1961; Heizer and Baumhoff 1962:228; Payen and Boloyan 1963; Payen 1966, 1968:37; Heizer and Clewlow 1973:4); and weather control (Goddard 1904; Dixon 1907; Driver 1939: 364; Heizer 1953; Heizer and Clewlow 1973:4). All these explanations suggest significant ritual or magical intent. As stated by Lee (1977:12), "Rock art was not meant to please, but to evoke." And furthermore, "The frequent choice of high rock outcroppings may be a reflection of the sacred nature of the art for, to primitive man, high places were impregnated with religious forces" (Lee 1977: 1).

While inaccessible places for rock art appear to follow the norm, possibly associated with post-contact times due to the need for secrecy from the missionaries (Grant 1965:96; Hudson and Underhay 1978:20, 23), rock art is also located within large habitation and/or ceremonial sites, such as with LAN-357 and Burro Flats. This association is further elaborated upon by information gathered by Latta (1977:600-601) on the neighboring Yokuts.

The *Wukchumne* said that the paintings generally were placed at an important village site, one which was inhabited permanently or at some place where ceremonies were performed. They

stated that tribal equipment, such as symmetrical bowls or mortars and pestles used for mashing and cooking jimson weed (*Datura*) roots, and for grinding Yokuts tobacco, or costumes for tribal ceremonies, often were concealed near these paintings.

The idea furnished was that the paintings added prestige to the spot, indicated that it was *tripne* (supernatural) and served to awe the lesser characters of the tribe and instilled in them respect for the equipment concealed there.

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 Indians readily recognize the symbols that represent animals, just as we do, but do not know why the symbol was put there, and they offer no explanation except of the geometrical designs and line drawings of the sun, moon and *Chapet* (Chah-pet - the Indian Doctor's magic tray), and a few mythological characters.

Recent interpretations, derived from the ethnohistoric literature associating mythological ritual and cosmological views, have suggested an astronomical basis for some Chumash rock art (Hudson et al. 1977:6; Lee 1977:1-14; Hudson and Underhay 1978:146-147; Romani et al. n.d.). This connection has been presented in the section discussing sites currently being astronomically monitored, within this chapter.

The association of rock art and celestial observations has also been demonstrated and/or suggested for other Native American groups. The Luiseño and Diegueño both portrayed the universe, which included depictions of the sun, moon and various asterisms, in sand paintings (DuBois 1908:88, Pl. 17; Sparkman 1908:Pl. 20; Waterman 1910:314-320, 352-353, Pl. 20, 25, 26; Kroeber 1976:662-

663, 682, Fig. 56F; Hudson and Underhay 1978:106-124). There is also evidence indicating the use of rock art for star depictions in the American Southwest (Britt 1977: 89-107). For example, a total of fourteen Navajo planetarium star paintings were recorded in Canyon de Chelly, Arizona, all of which were painted on the ceiling of high overhangs or rock shelters (Britt 1977:92). According to Britt, these stellar depictions were primarily ceremonial in intent, and secondly, used as a mnemonic device (Britt 1977:102). As further evidence for such prehistoric practices, Mayer (1977:109) was able to associate 53 petroglyph (cupule) concentrations with stellar patterns within the Great Basin area, and possibly the depiction of the Great Supernova of A.D. 1054.

There are several recorded connections between rock paintings, astronomer-priests and the sun. In one instance, a Chumash *'antap* member named Rafael Solares (whose surname actually meant "belonging to the sun") and another Indian, Joaquin Ayala, would venture into the mountains behind Santa Barbara "to paint rock art at the time of the winter solstice" (Blackburn 1975:127; Hudson and Underhay 1978:58). In a Chumash narrative, there was once an "evil" Gabrieliño wizard or astrologer who "painted many figures of men and women bleeding from the mouth and falling down." He then took this rock into the mountains to present it to the sun. There was a long

drought and famine that was said to have resulted from this sorcery (Blackburn 1975:Narrative 79). Actual painted representations of the sun were made, as evidenced by a sun symbol which was painted on a whale bone disc for presentation to the sun during the ritual meeting that occurred prior to the winter solstice (Hudson et al. 1977:50-51, Fig. 6; Hudson and Underhay 1978:48). Another interesting note refers to an '*alchuklash* and weather shaman, named Albino, who used "star maps" to observe seasonal changes throughout the year (Hudson and Underhay 1978:37).

Although not specifically stated in the ethnohistoric data, there is a probable connection between the use of the hallucinatory drug *Datura*—by shamen or '*antap* members—and rock art (Applegate 1975b:15). As Blackburn suggested (Applegate 1975b:15) "at least a third of the Chumash motifs are common phosphenes; the visual patterns seen behind closed eyes, which hallucinogens intensify greatly." Kroeber (1976:938) also noted the association between the greatest distribution of rock art in California with the strongest manifestations of *Datura* cults (which would include the Chumash territory). It may be that during Chumash initiation rites involving the use of *Datura*, rock art may also have been painted, similar to Luiseño initiation rites and the creation of sand paintings (Applegate 1975b:15).

In addition, astrologer/astronomers used *Datura* to help them predict the future, such as prior to the winter solstice event to foresee the results of the *peon* game (Applegate 1975b:14-15; Hudson and Underhay 1978:57). The ingestion of *Datura* during this time may have been used by astronomers such as Rafael Solares, to enhance their knowledge and powers which may have been manifested or portrayed through rock art depictions.

The following is a brief discussion of selected Chumash rock art depictions, suggestive of astronomical and/or related symbolisms based on analogies from ethno-historic and archaeological data concerning ceremonial cult objects, mythology and rituals.

SUN SYMBOLS

Hudson and Underhay (1978:59, 65-66, Fig. 8) have suggested that circles divided into four, six or eight parts may represent the sun and its solstitial parts on an astronomic plane. This rock art motif is considered fairly common throughout the Chumash territory (cf. Grant 1965:Pls. 4, 7, 10, 27, 31, Figs. 68, 69, 76; Lee 1977:3, Fig. 1) and has a close similarity to the sun/solstice symbols on ceremonial solstice objects such as sunstick stones and whale vertebra discs (Hudson et al. 1977:50, Fig. 6; Hudson and Underhay 1978:66). The emanating rays may represent solstice points, cardinal directions, and/or,

if twelve rays, months of the year (Hudson and Underhay 1978:66).

Linda King (1980:27) interpreted the curvilinear-rayed and the finger painted motifs at Vasquez Rocks, as possible depictions of celestial bodies . . . "sun, moon or stars and perhaps earth." She also noted two curvilinear rayed motifs, which are usually more suggestive of sun symbolisms.

The Luiseño and Diegueño sandpainters used a simple circle to represent the sun (Kroeber 1976:662-663, Fig. 56f; Hudson and Underhay 1978:59). Concentric circles may also have symbolized sun motifs as in the case of Edward's Cave and the Main Panel at Burro Flats.

SOLAR ECLIPSES

It is known that the Chumash were aware of both lunar and solar eclipses; however, there is no data explaining the sun's disappearance. Hudson and Underhay (1978:71) have interpreted at least two rock art paintings that may depict this solar event: one is a completely black disc (cf. Grant 1965:Pl. 2), whereas the other is a black disc encircled by a white border (cf. Grant 1965:Pl. 14; Hudson and Underhay 1978:Fig. 11).

EARTH

The earth may have been portrayed as a simple disc

as it is described in Chumash mythology or portrayed more elaborately as Fernando Librado described it ". . . all a circle, an eddy within an abyss" (cf. Lee 1977:2, Fig. 5; Hudson and Underhay 1978:45, Fig. 2). The Diegueño and Luiseño both portrayed earth, again, as a circle or a large encompassing disc (Kroeber 1976:662-663, Fig. 56; Hudson and Underhay 1978:45).

MOON

The moon may have been represented by a circle motif, although it was portrayed as a red or black crescent on sunsticks (Hudson et al. 1977:57). According to Hudson and Underhay (1978:77), crescent designs are relatively rare in Chumash rock art. Grant (1965:Pl. 11) illustrated one panel where a red crescent is portrayed four times surrounding another unidentified motif. The new moon was symbolized by a crescent and a circle depicted the full moon in Southern California sand paintings (Waterman 1910:352-353, Pl. 20, Nos. 8, 9; Kroeber 1936:662-663, Fig. 56f).

STARS

Finger-painted rayed motifs were interpreted by King (1980:15, 27) as star symbols and were referred to in her study as seven and ten pointed stars. She postulated a ritual significance to these motifs, and stated, "My impression is that these symbols were used in ritual

which conceptually involved celestial bodies. . . ."

(King 1980:27-28).

Hudson and Underhay (1978:99-125) have described a number of stars, planets and constellations that were known to the Chumash and that were equated with celestial supernatural beings. In some rock art depictions, they may have been portrayed as "star" motifs, small bodies with various numbers of rays emanating (cf. Hudson and Underhay 1978:Fig. 14). Elsewhere, depictions may be more representational of the various mythological beings. Again, drawing close analogies from the Chumash mythological and/or cosmic perceptions, Hudson and Underhay (1978:117-119, Fig. 16, 132-133) have postulated two elaborate Emigdiano designs as portraying the Upper World, Sun and Milky Way, and an entire Ineseño panel as representing a cosmic map of the Upper World (cf. Grant 1965:Pls. 27, 3).

It is known that stars and constellations were represented in Southern California sandpaintings, often as dots or circles (e.g. Orion and Pleiades) (Kroeber 1976:662-663, Fig. 56e, 56f). Grant (1965:Pl. 21) recorded a Chumash rock art panel with small "star" motifs similar to a Diegueño depiction of the Pleiades (Hudson and Underhay 1978:112). Stars and/or constellations may also have been depicted in cupule patterns.

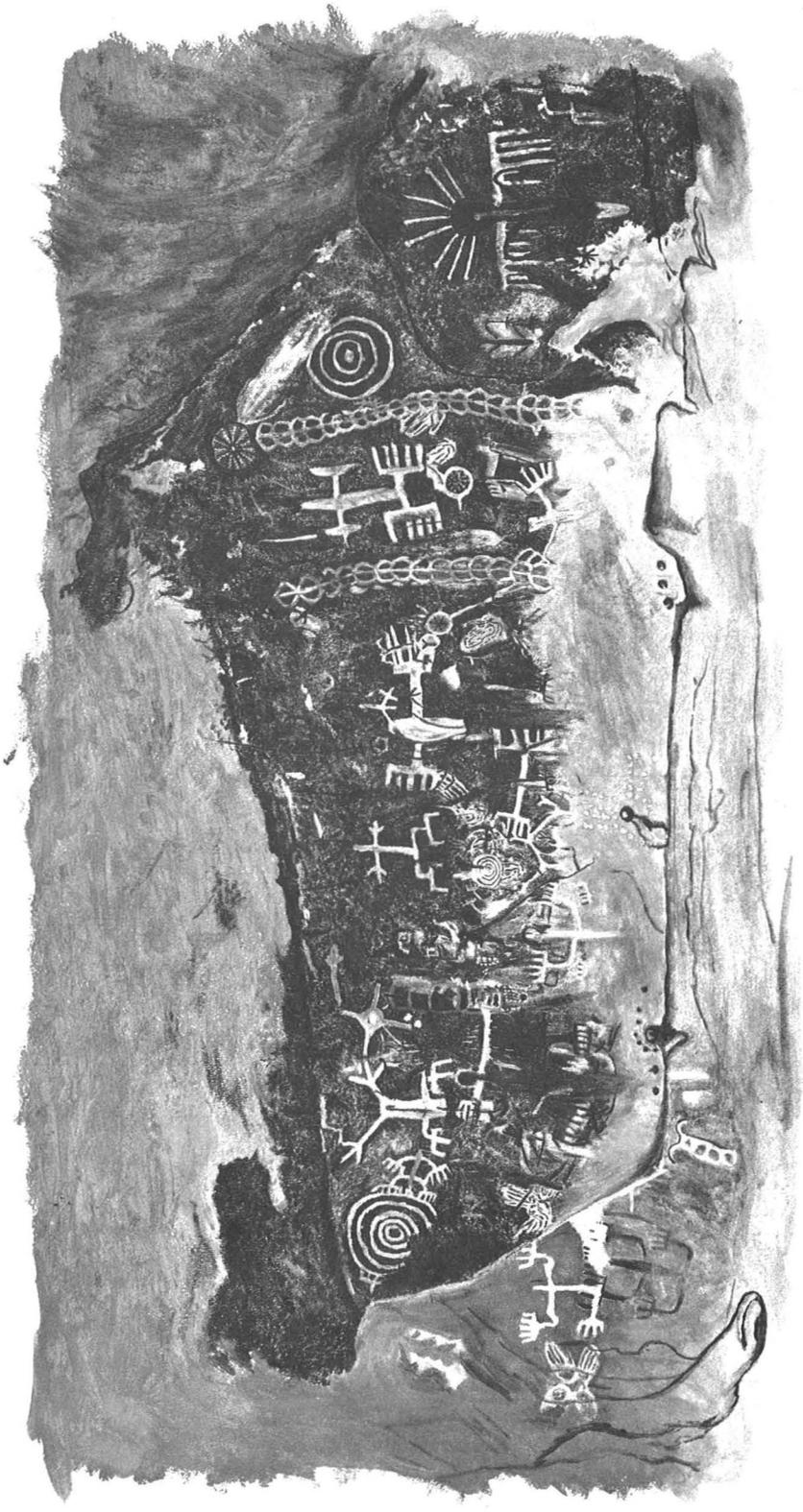
COMETS

There are two known comet-looking motifs and both occur at the Main Panel in Burro Flats (cf. Fig. 2). The portrayal of these motifs may be either two distinct phenomena or the same comet seen at different time intervals (Hudson and Underhay 1978:99, Fig. 14).

MYTHOLOGICAL DEPICTIONS

Lee (1977; Lee and Horne 1978; Lee 1979) has posited that many, if not all, designs depicted in rock art are actual reflections of Chumash mythological characters or depictions of entire myths. Since the repetition of symbols occurs throughout the Chumash area, it further indicates the common background of these myths. Some of the characters she has singled out include: *Slo'w* (eagle), *Shnilemun* (Sky Coyote), *'elyewu'n* (swordfish); whereas themes relating to events or to ideas include depictions of: the universe, comets, the four cardinal directions, or the world being supported by two giant serpents (Lee 1977:1-14, Figs. 2, 3, 12, 1, 15, 14, 4). Lee and Horne (1978:216-224) have also tentatively associated a rock art site (Painted Rock) in the Sierra Madre Mountains with *Sapaksi* "House of the Sun," a place which has been ethnohistorically described by Maria Solares as relating to a myth concerning the "First People" being transformed to stone. The surrounding area also has

Figure 2. Main rock art panel at Burro
Flats.



numerous shrines which Maria described as being associated with solstitial renewal ceremonies.

SUMMARY

This chapter has served to illustrate the present state of archaeoastronomical research in California. As cited in the previous pages, artifactual knowledge (technological) is scant; perhaps, a result of either past archaeological emphasis or a true indication of the nature of native astronomical observances. However, more and more sites are being interpreted as having astronomical significance. Moreover, in the majority of these sites, a relationship between astronomy and some rock art depictions is indicated.

The data thus far suggests that both direct and indirect forms of astronomical observance were used by Native California groups; however, it would appear that in all cases presented thus far, the question of precision remains unanswered. In viewing the present data base, it appears that astronomical significance has been postulated for specific sites viewed as potential observatories or ritual viewing localities, as well as cemetery burial alignments indicating a more purely ceremonial or cosmological significance.

A complex problem exists in attempting to draw a distinction between a more ritual solar/celestial

observance and a truly precise solar observatory used for accurate calendrical functions. The question is clearly one of accuracy, and hence, can only be successfully addressed on sites where precise astronomical studies have been conducted.

For instance, when a specific light affect or alignment is observed to last for periods significantly longer than the solstitial episode (perhaps two weeks), a more ritual, or less calendrically accurate, form of observance is indicated. It should be mentioned, however, that whether or not the alignments were intended for precise calendrical synchronization, a significant element of ritual would have been involved. The question regarding the precision of Chumash astronomical sites is addressed in Chapters 5 and 6. What can be gleaned from the previous discussion, and ultimately served as the impetus for this study, is that the archaeological manifestations of Chumash astronomy are also manifestations of their ceremonialism.

Chapter 4

SITES WITHIN THE STUDY AREA

INTRODUCTION

An interest in the relationship between Chumash astronomy and ceremonialism drew attention to the west San Fernando Valley based on certain archaeological and ethnohistoric information which indicated that the west San Fernando Valley was an area of religious and/or ceremonial prominence for both the Chumash and Fernandeno/Gabrieliño.

An archaeological test excavation conducted at the mouth of Bell Canyon, served as the initial impetus for this current study. The test excavation was conducted in 1978 by the Northridge Archaeological Research Center on a complex of prehistoric and historic sites located in the lower Bell Canyon area; in what is now the modern community of Canoga Park (Tartaglia and Romani 1978a).

Ethnohistoric information indicated that an historic Chumash/Fernandeno village called *Huwam* and a mountain shrine known as *Tswaya tsuqe*le, "the feather banner is waving," were located in close proximity to each other in the west end of the San Fernando Valley. Further

ethnohistoric information described large public ceremonial gatherings during Winter Solstice Ceremonies and the use of shrines in conjunction with these festivals. Archaeological data obtained from the excavations in Bell Canyon have substantiated the existence of both sites, which are located adjacent to each other. Thus, based on all the available data, it was then hypothesized that *Huwam* (LAN-413) served as a host village for the large public Winter Solstice Ceremony, which culminated in the placement of feathered poles along *Tswaya tsuqe* (LAN-511) (Tartaglia and Romani 1978a:212-215).

Other ethnohistoric data suggests a relationship between rock art, ritual and astronomical observance. Numerous rock art sites (pictographs and petroglyphs) are located on sandstone outcrops throughout the west San Fernando Valley area. Two sites in particular, Burro Flats and LAN-357, possess the majority of the rock art loci in this area. Hence, the presence of numerous rock art localities coupled with a winter solstice shrine and potential adjoining ceremonial host village, suggested that the west end of the San Fernando Valley would serve as a highly promising area for archaeoastronomical/ceremonial research.

The sites selected for this study are the Burro Flats complex (4-Ven-151-161), 4-LAN-357, 4-LAN-89 (Stony Point), 4-LAN-209, 4-LAN-413 (*Huwam*) and 4-LAN-511

(Castle Peak - *Tswaya tsuqele*). Both Burro Flats and LAN-357 contain numerous rock art loci (pictographs and cupules) along with intensive/extensive midden deposits. LAN-209 contains two loci of petroglyphs (cupules), whereas Stony Point is reported to have once contained pictographs. No rock art is known to exist in the vicinity of LAN-413 and LAN-511 in lower Bell Canyon. The general geographic locations for the aforementioned sites are shown on Map 1.

THE SITES

The following discussion will provide a synthesis on the known archaeological and ethnohistoric information regarding the sites under investigation. The emphasis of this discussion will be on establishing an interpretative framework from which archaeoastronomical data can be significantly evaluated.

ARCHAEOLOGICAL DATA FOR THE BELL CANYON SITES (LAN-413, 4-LAN-511, 4-Ven-551)

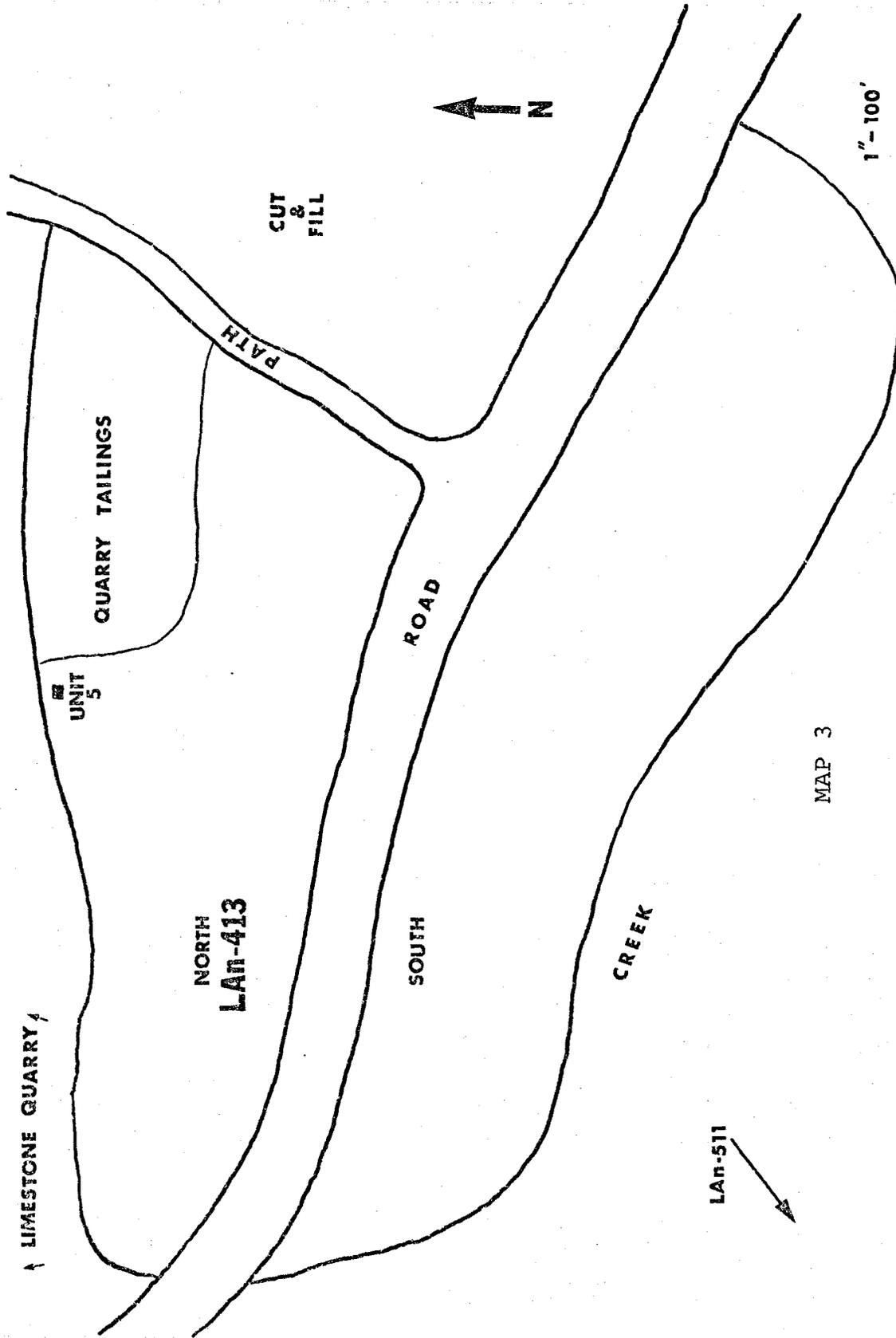
All three sites are located in or near lower Bell Canyon and, with the exception of Ven-551, were the focus of an archaeological test program undertaken by the Northridge Archaeological Research Center (1978) under the field direction of this author.

4-LAn-413 (Historic Village)

The archaeological excavation revealed a moderately large inland village site with considerable depth (approximately one meter) of midden. Analysis of temporal diagnostic artifact types, specifically shell beads and projectile points, indicated a terminal middle, late to historic date of occupation (A.D. 500-A.D. 1542 historic contact) and with the presence of *Olivella* sp. chipped disc and saucer beads, a date from Post A.D. 1810-1820's (Tartaglia and Romani 1978a:2).

The actual sample size was statistically invalid since the intent of the excavation was to conduct a nominal test (Map 3). Considering the obvious sampling limitations, certain indices were still obtained from the preliminary test excavation suggesting a ceremonial significance for this village site (Tartaglia and Romani 1978a:212).

The artifactual assemblage indicated that spatial differences existed between the north and south components; the north component lacked significant numbers of core tools and certain daily used maintenance items such as bone awls, but had a preponderance of ground stone (primarily manos and a lesser degree of metate fragments, bowls, and mortar fragments), tarring pebbles, coarse grain soapstone bowl fragments, shell beads, and a relatively high frequency of fish and shellfish remains



MAP 3

LAN-511

(Tartaglia and Romani 1978a:213-214).

The ecofactual material was comprised of almost 30% marine resources, a significant percentage considering the distance of LAn-413 (*Huwam*) from the coast (approximately 25 miles) (Tartaglia and Romani 1978a:213-214). The disproportionate ratio of core tools, i.e., abriders, choppers, angular hammers, to ground stone appeared significant since angular hammers and abriders are commonly associated with ground stone manufacture and maintenance, as well as perhaps the primary processing of vegetal matter, whereas choppers are probably associated with primary plant processing, hunting and wood working (Singer 1981).

On the basis of these anomalies in the artifactual assemblage, the north component of LAn-413 was postulated as a ceremonial site, serving as a host locality for ceremonies conducted on the adjacent shrine mountain, LAn-511. For example, if LAn-413 served as a host village for the large public Winter Solstice Ceremony, then congregations of people from nearby villages would be expected to have brought in large quantities of stored foods, perhaps acquired during late summer and fall, whereas coastal villages were likely to have brought fish and shellfish. Since the large ceremonial gathering (possibly upwards from 200 people to perhaps 500 people or more, similar to some recorded Mourning Ceremony

estimates) (Blackburn 1974:100) would only be at the site for a short time period, perhaps a week or more, there would be little need for intensive plant procurement and processing. The population probably existed on stored resources brought in as offerings for the ceremony (Tartaglia and Romani 1978a:212-214).

4-LAn-511 (Castle Peak - *Tswaya tsuqe*le)

The archaeological data indicate that LAn-511 was a shrine where numerous beads have been deposited, dating from at least A.D. 1500 to post A.D. 1830. The post A.D. 1830 date of its usage is based on the presence of blue-faceted glass trade beads, manufactured by the Hudson Bay Company (Tartaglia and Romani 1978a:64).

Shell beads recovered from LAn-511 suggest a date of post A.D. 1500 for intensive use of the shrine; however, it may have been occupied as early as A.D. 700, based on the tenuous presence of *Mytilus* sp. disc beads. Moreover, the shell beads consisted of both money type beads (callous beads) and ornamental beads, many with incising which possesses a higher prestige or status value (King 1974:89). This is in sharp contrast to LAn-413 (*Huwam*) which lacked, for the most part, any status bead types (Tartaglia and Romani 1978a:136-138). Other artifacts such as a soapstone comal and arrow shaft straightener, as well as a possible burial, was also said to have been

removed from the peak in the past (Tartaglia and Romani 1978a:138).

4-Ven-551 (Bats Cave)

Although this cave site was not part of the 1978 Northridge Archaeological Research Center (NARC) test excavation, both archaeological and ethnographic data suggests that this site was contemporaneous and ceremonially related to LAn-413 and LAn-511 (Tartaglia and Romani 1978a:199). Its ceremonial relationship with both LAn-413 and LAn-511 merits a brief discussion, even though this site was not significantly investigated in the present archaeoastronomical study.

Ven-551 is a large cave situated on the southwest side of the same ridge system as LAn-511 (Castle Peak). The cave's massive cathedral high opening in a rock face, has at least a 12 meter high ceiling which has numerous rock niches and ledges, as well as openings in the sides and ceiling (Tartaglia and Romani 1978a:198-199).

This cave is perhaps one of the largest of its kind in the Los Angeles County area. The site, though ravaged by natural erosion as well as relic collecting, does possess archaeological resources on the talus slope in front of the opening. The artifacts noted in the midden on the talus slope include: *Olivella* cupped and lipped beads, a fine grained steatite pipe stem fragment,

granitic mortar fragment, quartzite, chert, and fused shale flakes, worked bone, and mano fragments. Also associated with this cave are over fifty Jimsonweed plants (*Datura* sp.), the highest percentage by far noted within the Bell Canyon area. The bead types suggest that Bat's Cave is contemporaneous with LAn-511 (Castle Peak) and LAn-413 (*Huwam*) (Tartaglia and Romani 1978a:199).

The awesome appearance of the cave, as well as the artifactual assemblage recorded thus far, suggests that this cave had a ceremonial significance. Soapstone pipes were ethnographically known to be used in various rituals conducted by shamans. The abundance of Jimsonweed situated in front of the cave may have been the indirect result of extensive use of *Datura* by shamans conducting specific ceremonies or rituals at the site. *Datura* has been mentioned in numerous accounts as playing a significant role in Chumash and Gabrieliño religious rites (Applegate 1975b:7-17).

On the basis of the ceremonial/ritual nature and contemporaneity of this site with LAn-413 and LAn-511, it was postulated (Romani in Tartaglia and Romani 1978a:211) that this cave may have functioned as a private 'antap viewing/ritual location for the Winter Solstice Ceremony. However, owing to the extensive disturbance of the archaeological remains and lack of ethnohistoric data, this postulate may be non-testable.

ETHNOHISTORIC DATA FOR THE
BELL CANYON SITES4-LAn-413

This site represents the archaeological remains of an historic Chumash and Gabrieliño/Fernandeño village, since it had both a Chumash (*Huwam*) and Gabrielino (*Jucjauybit*) name, along with a biethnic population of between thirty and sixty people (Applegate 1975a:Map 1). This village was referred to by the Spanish as El Escorpion (Tartaglia and Romani 1978a:197).

No translation is known for either *Huwam* or *Jacyaubybit*; however, the Spanish placename, El Escorpion suggests a possible connection and/or symbolic significance with scorpions, which are one of the *Chinigchinich* cult avenger animals (Hudson 1979:359). Hudson refers to these avenger animals as "animals that cause pain." Moreover, in a Chumash myth, the scorpion is depicted as a female celestial being. "Scorpion Woman" consists of a series of stars comprising the constellations of Cygnus and Lyra, and is situated near the Milky Way. She was symbolically portrayed as a guardian along the ghosts road to *Shimilaqsha*, or "Land-of-the-Dead" (Hudson and Underhay 1978:120-121). In view of this latter potential symbolic representation, Schupp-Wessel (1981) postulated that *Huwam* may have symbolically functioned as a guardian or caretaker village which protected the entrance to the

Burro Flats rock art complex located at the mouth of Bell Canyon.

According to King (1969:40), *Huwam* was politically a part of the *Humaliwu* Province which was comprised of the villages from below Point Mugu (*Muwu*) to Malibu (*Humaliwu*), and included the villages of Century Ranch (*Ta'lopop*), Westlake (*Hipuk*) and Thousand Oaks (*S'apwa*). The preponderance of marine resources suggests that *Huwam* may have served as a provincial religious center for the large winter solstice gathering, since this site is immediately adjacent to *Tswaya tsuqele* (LAN-511 - Castle Peak), an ethnohistorically and archaeologically documented shrine.

4-LAN-511 (*Tswaya tsuqele* - Castle Peak)

The ethnohistoric data collected by J. P. Harrington and H. Henshaw (Heizer 1955) suggests that LAN-511 was the mountain shrine known as *Cwaya cuqele* or *Tswaya tsuqele*, which means "the feather banner is waving." Henshaw states that "sorcerers used the *cuqele* to summon up the wind" (Applegate 1974:198). There are, with the exception of *Huwam*, four other ethnohistoric placenames known for the west San Fernando Valley (Heizer 1955:33). They are:

1. *Kas'elew* ("the tongue"): A place located in the west San Fernando Valley.
2. *Kaspat kaslo'w* ("nest of the eagle"): a mountain in the west San Fernando Valley.

3. *Kasi'wey* ("the pass"): The pass between the San Fernando and Simi Valleys.
4. *Tswaya tsuqe* ("the feather banner is waving"): A shrine mountain located in the west San Fernando Valley.

Harrington (n.d.b) in his ethnohistoric notes on the "El Escorpion Region" listed the following locational information:

1. *Kas'ele'w*: The picacho [peak] near Bell's house.
2. *Kaspat kaslo'w*: One of the peaks seen from Escorpion.
3. *Tswaja tsukele*: Name of a peak seen from Escorpion.

As indicated by the Harrington accounts, all of the information pertaining to the three cited placenames centers around El Escorpion as a central point from which these places can be located.

Tswaya tsuqe is the only mountain placename mentioned as a shrine (Applegate 1974:198; 1975a:45) and moreover, its translation, "the feather banner is waving" best describes the archaeological information for LAN-511. However, it must be mentioned that the location given for *Kas'ele'w* also closely conforms to the location of LAN-511. The reference to a peak near Bell's house strongly suggests that if not LAN-511 (Castle Peak), then the mountain referred to as *Kas'ele'w* is within close proximity.

It is possible, although not likely, that LAN-511

had two placenames, *Tswaya tsuqele* and *Kas'ele'w*, depending on the religious context. Also, *Kas'ele'w* may refer to the peak and ridge directly behind LAn-511 in the area of Bat's Cave.

The use of LAn-511 as a winter solstice mountain shrine and "Depository of the Things of the Dead" seems consistent with the ethnohistoric accounts (Hudson et al. 1977:62-63; Hudson and Underhay 1978:68-70). Furthermore, the placement of feathered poles or mountain shrines during the Winter Solstice Ceremony seems to further support the contention that LAn-511 is in fact *Tswaya tsuqele*, "the feather banner is waving."

4-Ven-551 - Bat's Cave

Although there is no known Chumash or Gabrieliño placename for Bat's Cave, it is possible that this cave was the location known as *Kas'ele'w* ("the tongue"). As mentioned previously, *Kas'ele'w* was referred to as a mountain located near or above Bell's house (Harrington n.d.b). In fact, the appearance of the opening, a large vertical slit in the face of the sandstone conglomerate cliff face, as well as an odd beak-shape stone on top of the cave, can be interpreted as a tongue. Interestingly, *Kas'ele'w* appears as a placename for two other localities, one which is a rock near Piru; the other is mentioned as a canyon west of Malibu (Applegate 1975a:32).

Another possibility, although less probable, is that either Bat's Cave or Castle Peak may have been the mountain peak known as *Kaspat kaslo'w* ("nest of the eagle"). There would appear to be two other more likely locations for the "nest of the eagle," which will be discussed in the ensuing pages.

A myth obtained from a Fernandean informant, Juan Melendrez, by John P. Harrington (n.d.a) clearly establishes a ritual/ceremonial connection between Castle Peak (LAN-511 - *Tswaya tsuqe*), El Escorpion village (LAN-413 - *Huwam*) and Bat's Cave (Ven-551). The association is expressed in a portion of the myth, as follows:

munits [a brujo/shaman] lived in a cañada this side of El Escorpion, inside a *big* hollow stone. When he entered the stone, all the people of the ranchería came up outside and called out to him to give up the capitan chiquito, but the stone was very large and high and they could not climb up. "Toma su capitan" ["here's your chief"] cried munits, and he threw an arm out of a hole in the rock. Then he threw the other arm out of another hole on the other side, and continued dismembering him and throwing each piece out of a separate hole (all the bones that he threw out were *pelado*) [skinned] till last of all he threw out the head. The people gathered up the bones, all very sad and crying, and went to tell the father, 'ra'wijawi', that his son had met with misfortune and been killed. When 'ra'wijawi' saw all the people crying, it made him sad and regretful and he said of munits: "me vas a pagar [You're going to pay me] (exclam.). Te le voy á mandar á matar tambien." [I'm going to order you killed also.] Therefore 'ra'wijawi' paid the gabilan [hawk] to kill munits—"Me ha matado a mi hijo." [I have killed my son] 'ra'wijawi' told the gabilan. "Esta bueno," [all right] the gabilan said. munits slept arriba [on top]

of the picacho en el Escorpion [peak on Escorpion].

The myth accurately describes the morphological character of Bat's Cave, as well as describing its geographic association with Castle Peak, and *Huwam*. Moreover, it further strengthens the political significance of *Humaliwu*, as a provincial capital, along with a further connection of *Huwam* within the *Humaliwu* sphere of influence.

The excerpt of the Juan Melendrez myth suggesting this political relationship appears after 'ra'wijawi' (*Tujunga wot*) grieves for the death of his son, a death contrived by 'ra'wijawi' and munits (brujo from El Escorpion). 'ra'wijawi' then transforms himself into an eagle (*euwot*) and flies to a number of villages in search of his own death, ending with an encounter with the Ciervol (*wot* or *paha*) of *Humaliwu*. The passage reads as follows:

He came buscando su muerte [looking for his death]. It was anciently the custom in the fiesta when they caught an eagle to spread out a skin on the ground and tie the eagle sentado [seated] on it, then all threw chía, corn, bellota [acorn], everything, till the eagle was buried up to its neck and thus paid it (lo pagó), then a good shot shot an arrow at its head and killed it. They spread a skin and the eagle ('ra'wijawi') sat himself on it (they did not have to tie or hold him) and they threw things to him till only his head stuck out. The vieja [old woman] took her nietos [grandchildren] and left, saying she could [not] bear to look on, and she was the only one of all that ranchería who remained alive, for all fell

dead when the arrow was shot at the eagle's head. Then 'ra'wijawi' (still in the form of an eagle) said: "Estaban contentos y yo estaba sufriendo" [they were happy and I was suffering] and he flew away and left the dead. As soon as 'ra'wijawi' left that place, the calandria [skylark] came and saw all the dead and went to avisar [warn/notify] the Ciervol [buck?], who was the rey de Maligo [king of *Humaliwu*]. The calandria cried out kasísoko' 'ra'wijawi' (inf. does not know if all this is the name of the maldito [wicked] capitan or if kasísoko' means: "ya viene") [he comes], just as he does to this day. When the Ciervol heard this he thought: "Surely something is coming," and he went down the coast to meet 'ra'wijawi' who was traveling up this way. When the Ciervol met 'ra'wijawi', he said: "Que andas haciendo, tienes idea de matar todo la gente?" [What are you doing? Do you have ideas of killing all the people?] 'ra'wijawi' replied: "No es tu negocio." [None of your business.] The Ciervol said: "No sabes con que estas hablando." [You don't know who you're talking with] then he told 'ra'wijawi' to turn his back. When 'ra'wijawi' looked around again he saw that it was the Cerviol, the Dios [god] and rey [king] of them all, and 'ra'wijawi' recognized him and asked the Cerviol to pardon him. "Bueno, vete," [Good, you see] said the Cerviol, "y no vas hacer mas nada" [and you're not going to do anything more]. So 'ra'wijawi' came to the sierra de Tujunga, quien sabe donde, y se sentó y se hizo piedra tambien [who knows where and he sat down and became stone also]. 'ra'wijawi' and his wife, turned into stone, are still seated there in the sierra, facing the ranchería de Tujunga.

What is explicitly stated in this passage is that the Malibu *wot* or *paha* was the supreme God or King, reigning over the surrounding villages. Another significant point pertaining to this myth is the reference made to the eagle killing ceremony, which by its context within the myth appears to refer to a large rancheria within a Chumash province, since a villager had gone to Malibu to

seek advice. The significance here is that little is known as to whether the Chumash actually practiced the ritual killing of eagles (Hudson and Underhay 1978:86-88), however, the myth implies a ritualistic nature to the killing and that the Chumash did practice this custom, as was documented for the Gabrieliños, Juaneños and Luiseños (Hudson and Underhay 1978:88).

It can be further derived from this myth that *Tujunga*, clearly believed to be a Gabrieliño village, now appears to be either politically part of the Chumash *Humaliwu* province or politically less powerful as a Gabrieliño/Fernandeño political entity, subservient to the *Humaliwu* chief or *wot*. This, of course, is based on the individual perception of the Chumash and Gabrieliño political relationship. For example, the informant telling this particular version of the myth to Harrington was Juan Melendrez, son of Espiritu, who was the daughter of Odon, the last *Humaliwu* chief (Edberg 1981). Being of Chumash descent, Juan Melendrez adds an element of Chumash political or religious supremacy to his version of the myth, which had been told to him on many occasions by his mother, Espiritu. The Gabrieliño version of this myth, as told by Hugo Reid (Heizer 1968:55-68), perhaps from his Gabrieliño wife, refers only to Gabrieliño villages, with no mention of El Escorpion or *Humaliwu*. The myth may be conveying ideas as to how the Chumash and Gabrieliño/Fernandeños

actually perceived each other and themselves in relation to political dominance.

The importance of this myth to the present archaeological study is that it further eludes to a political relationship between *Huwam* (El Escorpion) and *Humaliwu* (Malibu) and hence strengthens the present hypothesis regarding *Huwam* as having ceremonial/religious prominence within the Malibu province as a provincial ceremonial center. Such a relationship is further supported by historic documentation which states that Odon (*wot* of *Humaliwu*) and his daughter Espiritu were both residents and part owners of the historic Rancho El Escorpion, where *Huwam* was situated (Edberg 1978:152).

ARCHAEOLOGICAL DATA FOR BURRO FLATS

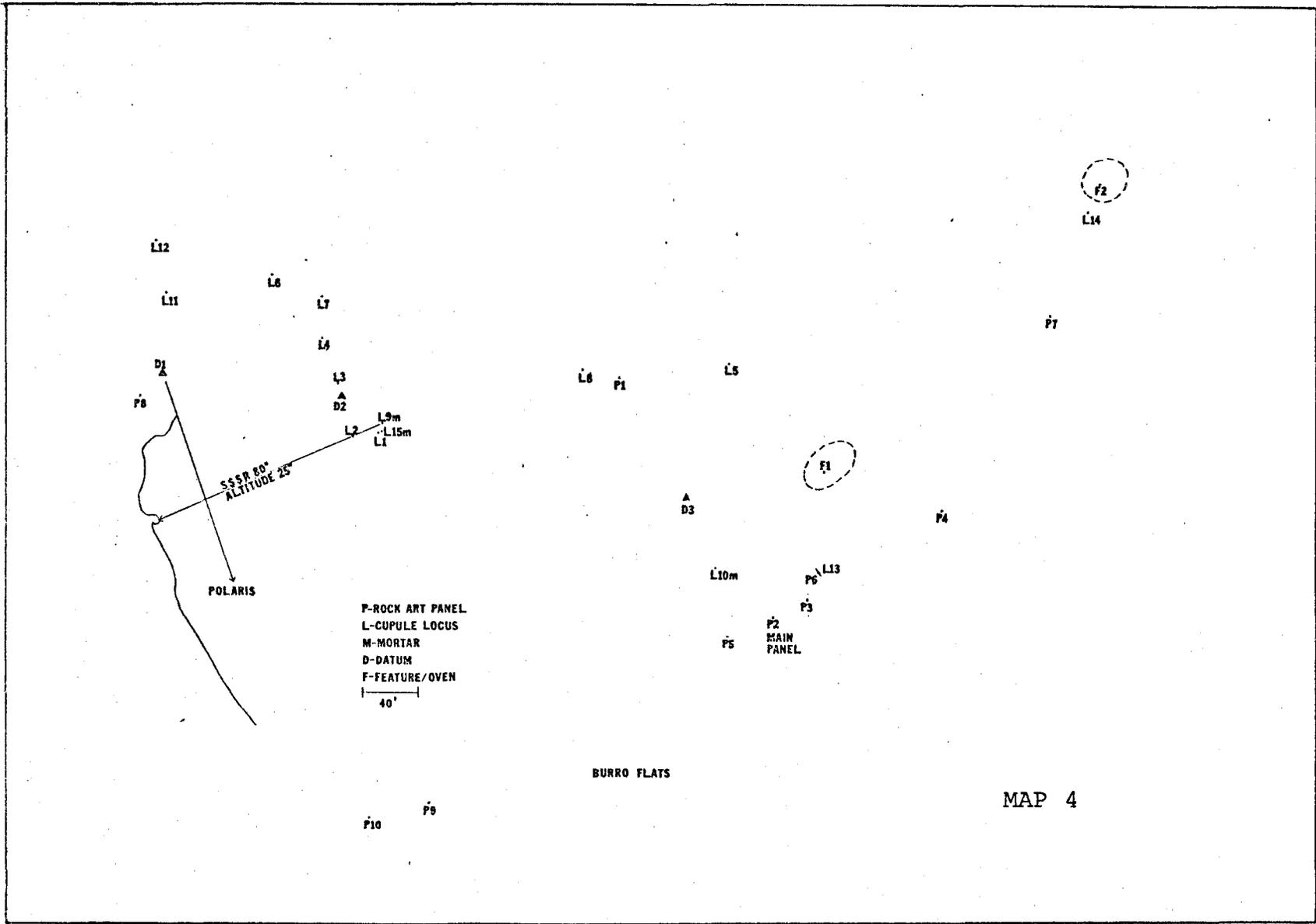
The Burro Flats rock art complex has been of interest to archaeologists and laymen alike since the early 1950's, beginning with a rock art study conducted by Charles LaMonk in 1953. Excavations were conducted by the San Fernando Valley State College (now California State University, Northridge) field classes under the direction of Dr. Charles Rozaire in 1959-1960. Unfortunately no comprehensive report of these excavations has been published, with the exception of a partial artifact list within the Arroyo Sequit Report (Curtis 1959:Appendix V).

To date, at least nine pictograph panels and

fourteen distinct petroglyph concentrations (cupules, incised rocks and mortars) have been located on sandstone outcrops throughout the intense midden of the site (see Map 4). One large pictograph panel excels beyond the others in terms of its complexity, and contains both pictographs and petroglyphs (Figure 2). Although Burro Flats was originally treated as ten distinct sites (Rozaire 1959; Fenenga 1973), there is now little question that this complex actually represents specific activity areas within a single site. Moreover, this site is unquestionably ceremonial in nature, although its true complexity awaits proper analysis of the archaeological data.

Fenenga (1973:6) reported that the midden area comprised approximately 112,875^{2m} (525m N-S, and 215m E-W), with a midden depth of at least 1.5 m, as observed in the sidewalls of a previously excavated test pit. Situated in the north end of the site are three possible earth oven features or perhaps crematories, one of which appears to have been excavated in a large block exposure during one of the 1950's excavations. (These features were noted during the course of the recent solstice monitorings).

Curtis (1959:Appendix V), in her "Comparative Trait List for Late Southern California Sites and Areas" listed the following artifact types for the Burro Flats site: concave base points, knives, blades, flake and core



scrapers, drills, portable mortars, pestles, manos and metates, steatite bowls, sandstone bowls, hammerstones, perforated stones, stone beads, pendants and incised painted stones, arrow shaft straighteners, steatite beads, shell beads, pendants and disks, fish vertebrae beads, ochre, cremations, bone awls, and glass trade beads in the top levels.

Based on the available data, this site appears to have an historic component, owing to the presence of Spanish glass trade beads. Although glass trade beads can by no means suffice to confidently date the rock art, given the potential for long-term use, the well preserved appearance of these pictographs does suggest more recent origin. Cremations were reportedly recovered from an east-west oriented sandstone ledge situated west of the main pictograph panel. This ledge houses three other pictograph galleries as well, further emphasizing the importance of ritual in this portion of the site. Although cremations are associated with Shoshonean speaking people, including the Fernandeano-Gabrieliño, they are extremely rare for the Hokan speaking Chumash. It is quite possible that Burro Flats was occupied by both Chumash and Gabrieliño people.

The pictographs on the main panel (Figure 2) at Burro Flats appear to depict comets (Hudson and Underhay 1978:100, Fig. 14), sun and stellar symbols, as well as

symbolic depictions of the Chumash universe (Romani, Larson and Romani 1978, 1979; Benson 1979:18; Romani et al. n.d.; Edberg 1980:14-15). There is also a sun or star motif located at Panel 1, south of the main panel, along with a highly stylized anthropomorphic motif.

Numerous anthropomorphic and zoomorphic figures, the majority of which have raked hands and/or feet are also depicted at the main panel (Figure 2). The most discernible zoomorphic figures appear to represent centipedes, frogs, lizards and perhaps water striders. There are other elements represented at the main panel which have been interpreted as hand prints (Kathleen Conti 1980), and by their small size appear to be those of children or adolescents. Cupules (petroglyphs) are also associated in the west end and lower portion of this panel.

Situated in the east portion of the main panel (Figure 2) are two anthropomorphic bird-like motifs, both having headdresses—a series of linear rays emanating from the head—although only one is depicted with wings. Rozaire (1959:3-4) noted a similarity between these motifs and the costumes worn by the "Big Head Dancers" of the western Wintun, in north-central California. A similar motif may have existed on another smaller panel (Map 4 - Panel 16) situated at the western extreme of the sandstone outcrop. The motifs noted here are common throughout the Chumash territory.

Rozaire concluded that the pictographs at Burro Flats are similar to ". . . those in the west-central coast ranges of Santa Barbara, Kern, Los Angeles, and Ventura Counties" (Rozaire 1959:4). On this basis he postulated the following cultural affiliation: "The pictographs dealt with in this paper appear to be more like those of the Canaliño and adjacent groups in the north than those of the prehistoric Shoshoneans to the south and east" (Rozaire 1959:5). Therefore, stylistically they would appear to be Chumash, although the incorporation of some, poorly documented, Gabrieliño elements cannot be ruled out.

LaMonk, an artist who conducted the first systematic study of the Burro Flats main panel, felt that he was able to discern three separate time periods for the main panel pictographs. As interpreted by LaMonk, the earliest paintings were done in black on an original buff colored sandstone surface. The panel was then sooted over, leaving a black background. A second series of pictographs were painted onto this surface primarily using white and red. The panel was again sooted over forming a new black background. A third and final series of pictographs were painted onto this surface, which were far more elaborate and included a larger array of colors (Rozaire 1959:3).

Verification of LaMonk's three periods awaits a further detailed systematic investigation. A valid date for

this panel would require the radiocarbon dating of the soot, which by present techniques is out of the question due to its destructive ramifications. A less accurate but more reasonable approach would be to correlate dates obtained from the archaeological deposits within direct association to the various rock art panels. At least in this manner, we may be able to establish relative time frames for the paintings with some assurity.

ETHNOHISTORIC DATA FOR BURRO FLATS

There is no known ethnographic information pertaining to the Burro Flats site, although with further compilation of the Harrington and Merriam notes pertinent data may be revealed. It is conceivable that Burro Flats was the ethnohistoric place known as *Kaspat Kaslo'w* ("nest of the eagle"), since there are at least two bird/anthropomorphic motifs (bird dancers) painted on the main panel, one of which appears to match an eagle in color combinations. The sandstone outcrop housing the Burro Flats rock art complex can be seen by the naked eye, from the top of Castle Peak (Escorpion area), and hence could fit the Harrington (n.d.b) reference as "one of the peaks seen from Escorpion." However, it's not clearly distinguishable from this location, and perhaps more importantly, is not actually visible as a mountain peak, but rather as a series of sandstone outcrops and ledges. It is believed

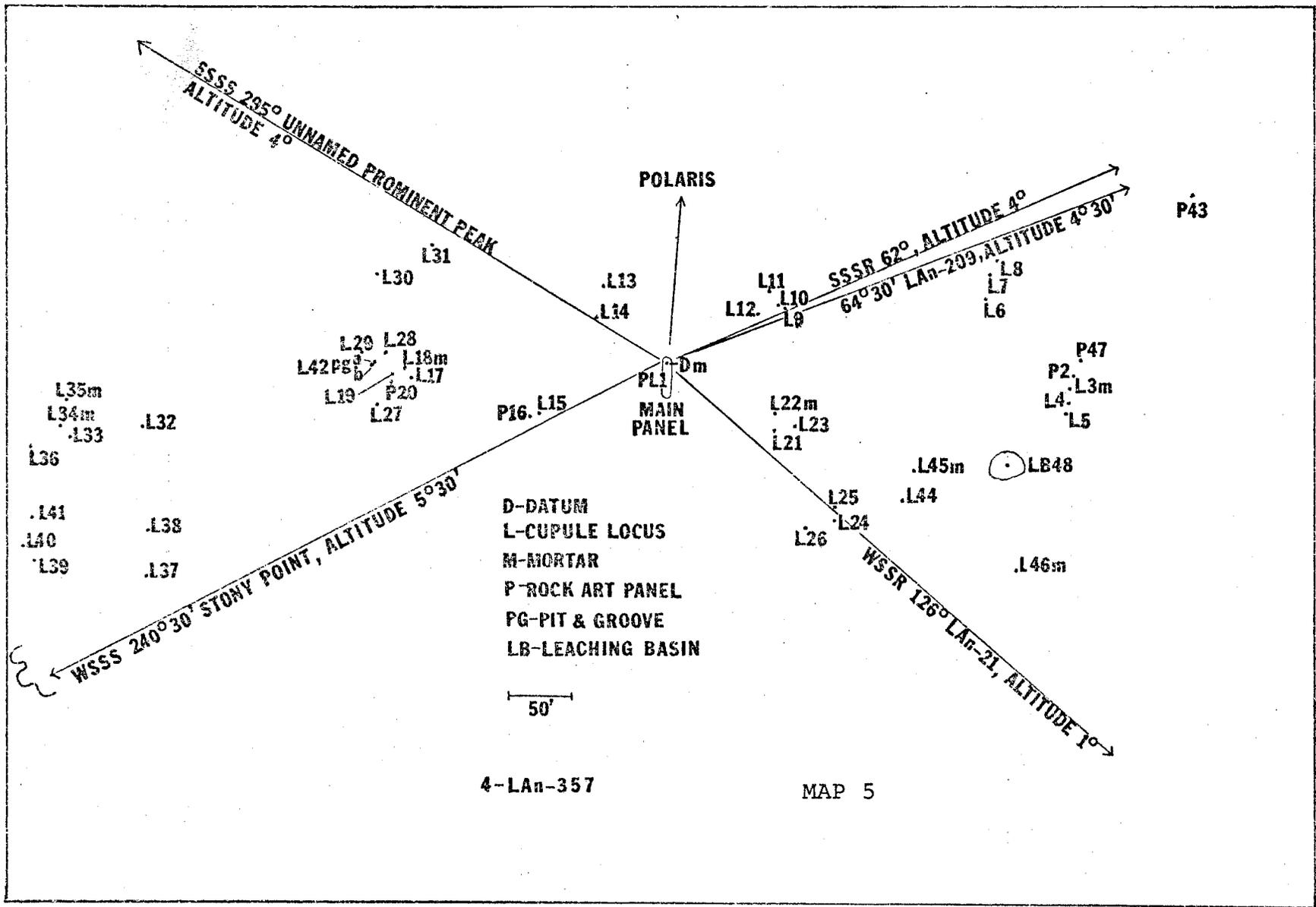
that Stony Point is a more likely candidate for this placename, as will be discussed in the following pages.

The Burro Flats collection is reportedly housed at the Southwest Museum and perhaps also at the University of California at Berkeley (Rozaire 1981).

ARCHAEOLOGICAL DATA FOR 4-LAn-357

This site was recorded in 1964 by Clay Singer and James West and was partially excavated in the early 1970's (1970-1974) by Robert Pence of Los Angeles Pierce College and Ken Kraft of El Camino High School. As with Burro Flats, there has been no published report to date. The rock art at this site was, however, the focus of a study by Sanburg et al. (1978:37).

Situated throughout the site (see Map 5) are forty-seven petroglyphs, consisting of either distinct cupule concentrations often associated with bedrock mortars, or isolated bedrock mortars, and at least seven pictograph panels, one of which appears to be a stylized coyote motif, located on the ceiling of a small isolated rock shelter. The rock art loci are interspersed between open areas of concentrated midden. The likelihood is that more pictograph panels existed at one time, but have since been eliminated by the elements or by human negligence. A sulphur spring also exists towards the southwest portion of the site. Such springs are ethnographically



known to be sacred and often used for medicinal purposes. The site extends one-half mile, east-west, and has a depth of at least 1.4 m.

Archaeological information suggests that LAn-357 represents a village habitation site, dating from perhaps the Middle Period (1100 B.C. to A.D. 1100), and was intensively occupied through the Late Period (A.D. 1100 to A.D. 1542) into the Historic Contact Period (post A.D. 1542). The historic date of occupation is again based on the presence of Spanish glass trade beads (Day 1973:32). Leonard (1974:6) postulated that the bulk of occupation occurred post A.D. 1500.

The artifacts noted from the 1973 excavation (Day 1973:25-31) are as follows:

Level I (0-20 cm): Projectile points, hammerstones, manos, flakes, cores, and a paint palet or pigment grinder.

Level II (20-40 cm): Tarring pebbles, flakes, cores, pestles, manos, projectile points, and hammerstones.

Level III (40-60 cm): Cores, flakes, projectile points, manos, choppers, hammerstones, ochre (pigment) grinder.

Level IV (60-80 cm): Cores, hammerstones, choppers, manos, flakes, projectile points, metate fragments, beads.

Level V (80-100 cm): Flakes, hammerstones, manos, cores.

Level VI (100-120 cm): Flakes, cores, knife.

Level VII (120-140 cm): Flakes.

Included within the LAn-357 artifactual assemblage (although not presented in the artifact distribution tables by Day, 1973) are soapstone beads (chlorite talc schist), soapstone bowls (coarse grain) and bone awls. The ecofactual material consists of land mammals, as well as marine resources such as shellfish and fish remains, although no ratios have been calculated. In view of the manner by which LAn-357 was excavated (20 cm levels) and analyzed, using inexperienced student laboratory personnel, a re-analysis of the existing collection should be performed before the data are used in a valid comparative analysis.

This site once contained a mortuary complex which reportedly had both burials and cremations; however, it was bulldozed before an accurate archaeological evaluation could be made (Day 1973:33).

The Sanburg et al. (1978:28-32) study concluded that the existing rock art motifs were examples of the Santa Barbara Chumash style rather than that of the Gabrieliños. They further described the LAn-357 pictographs as similar to those found at Burro Flats. The various characteristics are as follows:

. . . naturalistic figures, typified appendages that project away from the body with bending, or bending down, and three digits on the arms and legs are common. Rakes, unconnected groups of lines, and extremely abstract rectilinear alignments are seen. There are some curvilinear designs. These are all examples of the

Santa Barbara style associated with the Chumash (Sanburg et al. 1978:32).

The cupule petroglyph style (recorded at both LAn-357 and Burro Flats) was also considered by Sanburg et al. to be more commonly associated with Chumash rock art.

The petrographic art present at the Chatsworth site relates well to previously presented material from the Chumash area. With the lack of rock art in any reported form from the Fernandño-Gabrieliño, it may be safe to assume this site to be the product of the Chumash with their near at hand comparable examples (Sanburg et al. 1978:32).

ETHNOHISTORIC DATA FOR 4-LAn-357

As in the case of *Huwam* and perhaps Burro Flats, LAn-357 was probably also a bi-ethnic village, having both a Chumash and Gabrieliño resident population, as may be the case for the entire west end of the San Fernando Valley. Since the village was occupied into the historic period, it therefore supplied a number of converts to the Mission San Fernando. According to King (1981), this was probably the village of *Momonga*, which may have been referred to by the Spanish as *Las Piedras* ("The Rocks"). Johnston (1962:11) referred to a village in the west San Fernando Valley as *Tototngna* ("the Place of the Stones"); however, she placed its location at El Escorpion. This location is in error since the mission register data refer to *Jucjauybit* as the Gabrieliño name for *Huwam*. Furthermore, according to Edberg (1981), the village of

Tototngna was located in the upper Santa Clara region.

ARCHAEOLOGICAL DATA FOR 4-LAn-21,
4-LAn-209 AND 4-LAn-89

4-LAn-21

This is a cairn mortuary complex located approximately 300 meters southeast of LAn-357. The site was excavated in 1939 by E. F. Walker and again in 1976-1979 by Dr. Louis Tartaglia of California State University, Northridge. Tartaglia (1980:318) posed a late period date for LAn-21 (A.D. 500-A.D. 1542) based on obsidian hydration dates along with the preponderance of coarse grain soapstone bowls and comals, and a probable ceremonial relationship with LAn-357. Walker (1951:99) postulated that LAn-21 served as a location for the Mourning Ceremony; however, Tartaglia (1980:334) hypothesized that LAn-21 did not represent a Mourning Ceremony site as was historically recorded, but perhaps a variant of it.

The site consisted of two main cairn loci, "A" and "B," comprising a total of thirty-five separate cairns (cf. Walker 1951:80, 83, Fig. 15, Pl. 27; Fowzer 1978:3, Fig. 1; Tartaglia 1980:120, Map 3). Although many of the artifacts were burned, there was no evidence to suggest they were burned on site since they were often found in association with unburned rocks (Walker 1951:99). Walker concluded on the basis of this data, that the artifacts

were probably subjected to ceremonial burning elsewhere, and then deposited at the cairn locations.

The artifacts recovered from the excavations consisted mainly of the following items: coarse grain soapstone bowls and comals, chlorite schist and chlorite talc schist beads, a chlorite talc schist shaman sucking tube, pestles and mortars, metates, projectile points, bone awls, hair pins, harpoon barb, and possible gaming pieces (bone), cores, core tools (abraiders, hammerstones), flakes, and flake tools (scrapers, knives, and a graver). Absent from this assemblage were shell beads, shell ornaments, or unmodified shell, possibly resulting from soils non-conducive for the preservation of such material; however, a cultural or ritual bias cannot be ruled out.

4-LAn-209

This site was recorded as an inland seasonal seed gathering site; however, recent information (McIntyre 1980:376) suggests it was probably part of the eastern portion of the LAn-357 village complex. The site contains an intensive midden deposit, to at least 60 cm in depth (Tartaglia and Romani 1978b:7-8).

A portion of this site was excavated by UCLA in 1968-1969, under the direction of Fred Prinze and Joe Chartkoff in response to the proposed Simi Freeway. There has been no report on the excavation findings published to

date, however the notes and collections are housed at the UCLA Archaeological Museum (ACC. 453). The site record (updated in 1977 by Susan Hector) indicated that flakes, cores, scrapers, projectile points, and one red clay pot were among the artifacts collected. The presence of a possible Tizon brown potsherd indicates an historic or proto-historic component to the site. Rock features were also noted. Of particular interest to this present study, are two rock shelters containing cupules situated within a sandstone outcrop along the north edge of the site. Both shelters are small, perhaps spacious enough for two people to sit comfortably inside. Only Shelter I, situated towards the northern extreme of the site, had an extensive midden deposit accompanied by a dense artifactual assemblage. This assemblage included cores and abraders as the predominant tool types, along with mano fragments, numerous flakes and perhaps flake tools. The predominant lithic type was quartzite, with lesser amounts of chert and fused shale. Burned rabbit bone was also noted along with a fragment of coarse grain soapstone. Situated on two rocks in front of this shelter are fifteen cupules, five of which are arranged in a conspicuous "V" pattern (Tartaglia and Romani 1978b:7-8).

Shelter II is situated south of Shelter I on the same north-south oriented sandstone outcrop, and has an exposed sandstone floor with a few associated quartzite and fused

shale flakes. Pecked into the sandstone floor were nineteen cupules, of varying depths and diameters, centered around what appears to be a large pecked and ground depression. In addition, located within close proximity to both shelters is a large boulder containing a series of incised lines (Tartaglia and Romani 1978b:7-8).

4-LAn-89

This site is commonly known as Stony Point and was recorded by Joseph Chartkoff in 1966. It was described as a series of temporary campsites in and around rock shelters. The site itself, is actually a huge weathered sandstone outcrop with numerous crevices, rock shelters and overhangs. The site record mentions at least two dozen rock shelters/overhangs with most of them containing midden deposits. The artifacts noted included hundreds of flakes, along with hammerstones and ground stones.

Personal visits to the site in the late 1970's revealed similar artifact types, along with at least one bedrock mortar on the east side of the peak, and a large fire-burned soil area near the northeast base of the peak. The burned soil area is exposed in an erosional gully, and may well be the remnant of a prehistoric camp or bonfires in this area, or even possibly the actual crematory for LAn-21.

No rock art was mentioned in the site record, nor

was any observed during the author's recent visits to the site; however, a report written by a local rock art "officianado" indicated that rock art did exist at one time. Harold Cleveland described the pictographs he saw at Stony Point in 1932 as follows:

An extremely interesting collection of pictographs was found at Chatsworth, California. Some good specimens are located on the top of a huge rock, located at the north end of this town, between the railroad tracks and the old highway. Although this location has been frequently visited over the past years, the markings were still visible and in good shape and condition (Cleveland 1971:5).

He further described a portion of this rock art as follows:

Carved in the top of an overhang stone surface was the design of a bird and a sick Indian lying beside the water sign. This water hole was found to the east, and proved to be a stinky sulfur spring (Cleveland 1971:5).

Clearly, Harold Cleveland was referring to Stony Point, with the sulfur spring located at LAN-357 to the east. Unfortunately his rock art interpretations and most of his drawings appear to be the product of a vivid imagination and are not totally comparable to most of the pictographs in the west San Fernando Valley area. However, certain stylistic traits, such as rake-hands and feet do appear to be stylistically Chumash. The description of the bird design atop Stony Point may also be valid, perhaps an eagle or condor dancer as found at Burro Flats and elsewhere in the Chumash area; however, his artistic rendition is far from comparable to any other

recorded bird motif. What can be said with some assurity is that rock art did exist on Stony Point until at least 1932, but has subsequently been destroyed by heavy pedestrian traffic and weathering. However, with the recorded existence of pictographs on Stony Point, at one time, a ceremonial/ritual connection with the LAn-357 village is strongly suggested.

ETHNOHISTORIC DATA FOR 4-LAn-89

As in the case of Burro Flats and LAn-357, the ethnohistoric placename for Stony Point is speculative. Only a few placenames exist for the west San Fernando Valley and of these both *Kase'lew* and *Tswaya tsuqe* appear to be represented at Bell Canyon. This leaves only one known ethnohistoric placename applicable to either Burro Flats or Stony Point. As maintained earlier, *Kaspat kaslo'w* ("nest of the eagle") would be a more likely name for a conspicuous or prominent peak which can be seen from El Escorpion. In this regard, Stony Point, which can easily be seen from atop Castle Peak, seems to be the most likely candidate.

Such a name for Stony Point might apply to the fact that an eagle motif once existed there, however an equally plausible explanation would be the rocky nature of the peak, perhaps affording a unique and localized nesting area for eagles. Furthermore, since eagle killing rituals

were part of the Gabrieliño and Yokuts Mourning Ceremonies, Stony Point may have been used as a place to obtain the sacred bird for ritual sacrifice during the Mourning Ceremonies conducted at LAn-21 or LAn-357.

SUMMARY

The sites chosen for this archaeoastronomy study have strongly implied a ceremonial significance as indicated by the presence of rock art (pictographs and petroglyphs), mortuary cairns, or in the case of Bell Canyon (El Escorpion) an association with a known shrine site. This ceremonial/religious importance is further and perhaps more significantly indicated through ethnohistoric information. In the case of Bell Canyon, this information indicates the presence of a mountain shrine (*Tswaya tsuqe*le - "the feather banner is waving") which based on both archaeological and ethnohistoric information appears to represent a Chumash/Gabrieliño winter solstice shrine. Moreover, this shrine, adjacent to the historic village of *Huwam*, and large ceremonial cave (Bat's Cave) are all specifically linked together in a Fernandeano myth obtained by J. P. Harrington (n.d.a). All three sites may have served a specific, yet integrated ritual function during the *Kakunupmawa* festival (Winter Solstice Ceremony).

Furthermore, in view of the archaeological and

ethnohistoric information, it can be stated that the west San Fernando Valley possessed a significant ceremonial/religious importance, perhaps having had an integral religious function within the *Humaliwu* Province. In the proto-Historic and Historic Periods, the influence of the Chumash *'antap* cult and Gabrieliño counterpart, *yávar* cult, must have certainly made its presence well known within this cultural borderland.

A bi-ethnic occupation of the west end of the San Fernando Valley is strongly indicated in the ethnohistoric and archaeological data, as well as in the mission baptismal records. Cultural similarities and cultural inter-marriage between the Ventureño Chumash and the Fernandeno has been discussed (Forbes 1966:138; Brown 1967:8; Hudson and Blackburn 1978:246-247), and as indicated by the previous discussion, a religious/ceremonial inter-relationship appears to have existed within this study area.

In an attempt to establish an interpretative basis through a synthesis of the known archaeological and ethnohistoric information—by which the following results of the research can be evaluated—I have attempted to respond to the criticisms of past archaeoastronomical research as stated by Reyman (1977:205-216). In this regard, I have attempted as much as possible to ascertain the chronological and cultural affiliations of the sites undergoing

investigation.

The reasons for understanding the chronological relationship is quite obvious, since any two sites postulated as having an astronomical alignment and ceremonial relationship would therefore necessitate that they were in fact contemporaneous. Moreover, it is equally important to establish the date of occupation of a site observed as having a solstitial or stellar alignment to determine, if in fact, the observed alignment would have occurred at the time the site was occupied.

Although difficulty exists in establishing contemporaneity between the sites, generally owing to the lack of published information, it would seem that with the possible exceptions of LAn-21 and LAn-209, they were fairly contemporaneous, having terminal Middle, Late (A.D. 500-A.D. 1542) and Historic (A.D. 1542 - Mission and Post-Mission era) components. LAn-357 may have also had an Early or early Middle Horizon component—perhaps as early as 1500 B.C.—indicating a longer time span of occupation than is presently indicated for *Huwam*, *Tswaya tsuqe*le and Burro Flats.

The sites presenting the most difficulty, LAn-209 and LAn-21, will henceforth be discussed with a level of caution when archaeoastronomical interpretations are presented. However, based on the present data, LAn-209 now appears to have been part of the LAn-357 village

complex, and moreover, has an historic or proto-historic component indicated by the presence of a possible Tizon brown potsherd.

Chapter 5

SITE COMPARISONS, PREDICTIONS AND METHODOLOGICAL APPROACH

INTRODUCTION

Archaeoastronomy studies in North America have produced convincing evidence on solar alignments (Eddy 1974: 1035-1043, 1974:133-164; Williamson et al. 1977:33-44; Williamson 1978:78-85). Although many stellar and lunar alignments have been hypothesized or observed (Eddy 1977: 149-159), the data compiled thus far suggest an overwhelming emphasis on solstitial and equinoctial alignments. This is certainly true for California, as evidenced by the studies conducted to date where solar alignments are exclusively indicated. A solar emphasis is further supported by the ethnographic information, which for the Chumash, implies that the sun was of paramount religious importance.

In view of this emphasis, the primary focus of this archaeoastronomical study was to determine if solstitial, or possibly equinoctial alignments occur at the sites under study. The focus was certainly not exclusively limited to solar phenomena, since the possibility of

stellar or lunar depictions in rock art was taken into account throughout the course of this research. However, conclusive results regarding stellar and lunar predictions as well as potential alignments will require a further analysis beyond the scope of this initial study.

The specific research questions posed for this study parallel those expressed in other California archaeological studies. A major divergence from these studies relates to the complexity of the sites within this study area. The previous California studies have centered on isolated rock art features and their astronomical relationship to geographic features and/or the indirect effect created on the rock art during solstitial rise and set. Such solstitial elements are certainly a major focus of this present study; however, the scope of analysis is far more complex since the sites chosen for this research represent major rock art/ceremonial complexes as well as peripherally related sites.

A further element has hence been added to this study; the concept of "astronomical projections" as discussed by Horst Hartung (1977:193-204) and Anthony Aveni (1977a:163-189) in reference to Mesoamerican architectural orientations. In short, this concept concerns the astronomical positioning of architectural features within a given ceremonial center as well as their positioning on a distant horizon (as much as three

to five miles away) in astronomical alignment with a central ceremonial center. In addition to architectural features, glyphs (sculptures) and cemeteries may have been incorporated within a city or ceremonial center astronomical layout (plan) (Aveni 1977a:187-189, 1977c:182-183; Hartung 1977:195).

Furthermore, Aveni (1977a:187) perceives the possibility of even grander astronomical plans for the Maya Lowlands and has speculated as to ". . . whether the locations of Maya cities were precisely determined according to astronomical phenomena occurring along the horizon."

Horizon markers, perhaps used as foresights, have been discussed for the Southwest at Chaco Canyon (Eddy 1977:145-146; Williamson et al. 1977:33-43). At Casa Rinconada, Reyman noted that fire burned areas situated on distant mesa tops, which were found to be on solstitial alignments with a kiva at Casa Rinconada, may have served as signaling fires (Eddy 1977:145-146). Further studies in Chaco Canyon indicated that both man-made and natural features may have served as horizon markers (Williamson et al. 1977:34), and by surveying the mesa tops at least two instances of petroglyphs as solstitial horizon markers were found (Williamson et al. 1977:37-38).

In applying this concept to the present study, although lacking architectural features, the rock art

complexes were analyzed in regard to their internal arrangement as well as their external orientations to other sites. Using rock art and other archaeological features in lieu of architecture, it was felt that certain astronomical patternings (cardinal or solstitial) may be seen in the internal arrangement of these sites, as well as a possibility that rock art was used as horizon markers to denote the points of solstitial and equinoctial rise and set on a distant horizon.

RESEARCH QUESTIONS

The primary questions addressed within this study area are:

1. Does archaeological evidence for a native astronomy exist within the sites under investigation?
2. What level of sophistication/precision does the data suggest?

More specific questions are whether these sites represented observatories and/or locations for private and/or public rituals used for the observation of celestial events. Evidence was sought for two types of astronomical alignments:

1. Direct Observation: Intrasite solstitial alignments between site features, specifically rock art loci, and intersite solstitial alignments of sites, rock art loci, and/or sacred or conspicuous mountain peaks as viewed from a central site—horizon markers.
2. Indirect Observation: The effect on specific pictographs and cupule concentrations created

at the moment of solstitial rise and set.

SITE COMPARISONS

The following is a comparison of the internal and external relationship of the sites under study and the astronomical alignments posed for these sites (research questions). The research questions will be expressed as a series of astronomical predictions, which will explicitly state the expected astronomical relationships—direct alignments and indirect effects.

The internal arrangement of both Burro Flats and LAN-357 is very similar in many ways (see Maps 4 and 5). Each midden site is thoroughly interspersed with sandstone outcrops which have numerous cupule concentrations on horizontal and vertical surfaces, along with pictograph panels, most of which are small. More importantly, both sites have one pictograph panel which is inescapably more elaborate and extensive than the others. Each main panel appears to be an integral element of its site and hence the primary focus of this investigation. Only the Burro Flats pictograph design elements are truly discernable, given their excellent state of preservation, whereas vandalism and weathering have almost totally obliterated the pictographs at LAN-357.

Major differences exist in the orientation of the long axis of the sites and in their specific geographical

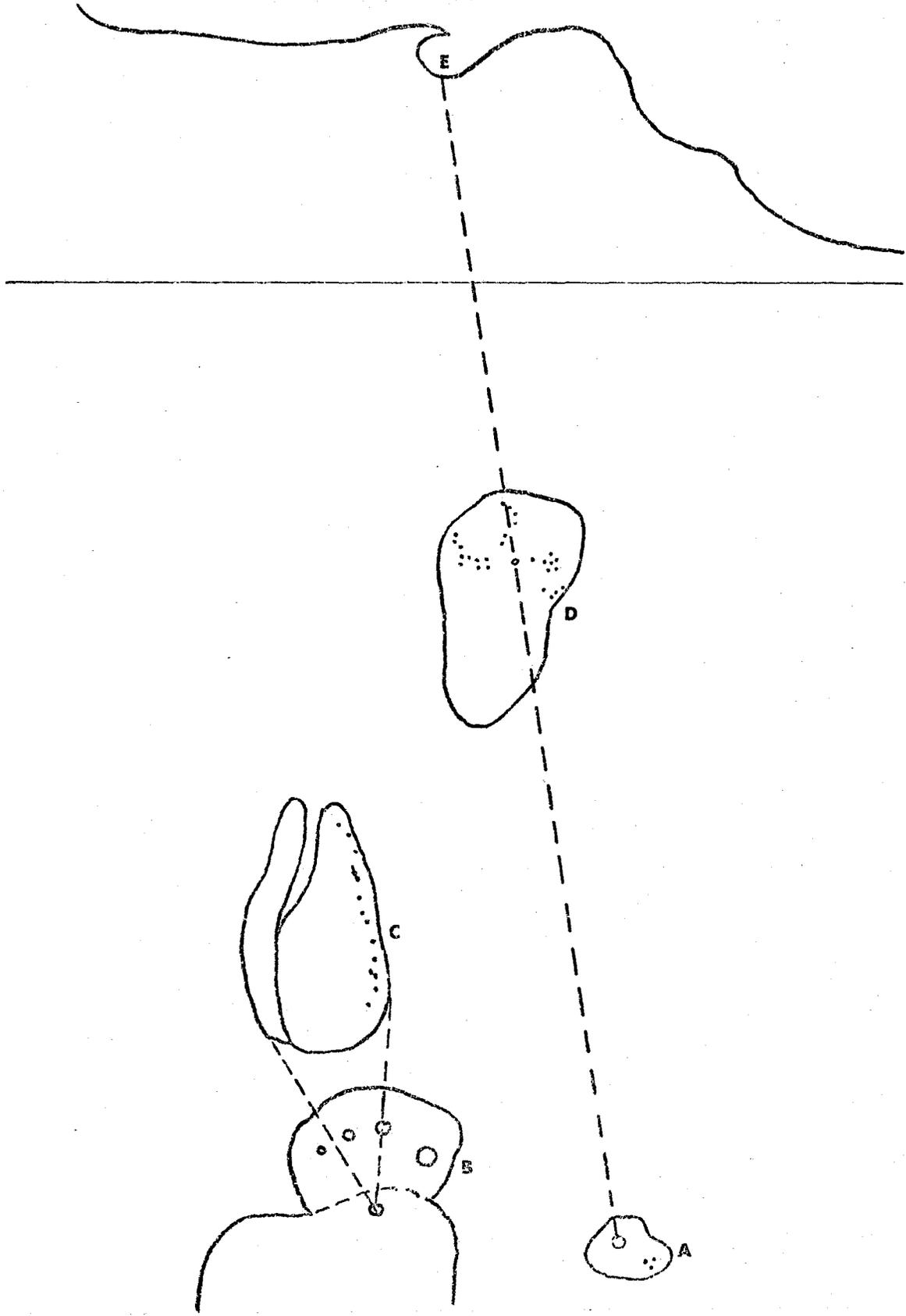
environment. The long axis of LAn-357 (see Map 5) is oriented almost due east-west, whereas the long axis of Burro Flats (see Map 4) runs almost due north-south. In terms of the geographical setting, LAn-357 is situated on a broad terrace which abuts the base of the Santa Susana Mountains, and from this location commands a 360° panoramic view. Burro Flats, on the other hand, is nestled in a small canyon in the Simi Hills, with an immediate and drastically limited view of the horizon (see Map 1).

The main pictograph panel at Burro Flats (Figure 2) contains many motifs that appear to depict celestial bodies such as comets and/or meteors, stars and the sun. These apparent celestial motifs and the southern exposure of the shelter housing the panel suggested a potential winter solstice alignment. It was predicted that at the winter solstice sunrise, a particular set of concentric circles, which were thought to symbolize the sun, would be affected by light falling through a natural notch or archway in the face of the shelter. A Brunton compass reading (azimuth 130°) taken from the circular design through the archway indicated that the design should indeed receive some light at the time of the winter solstice sunrise.

A unique concentration of cupules and bedrock mortars located at the southeastern part of Burro Flats was predicted to be a summer solstice observatory (Figure 3). A large boulder containing a row of cupules (Figure 3C),

Figure 3. Overall view of Burro Flats summer solstice sunrise area.

- A - isolated bedrock mortar
- B - "Bear Paw" mortar configuration
- C - line of cupules
- D - large cupule boulder
- E - summer solstice sunrise notch



oriented 80° azimuth, pointed at a large natural notch atop a sandstone cliff (Figure 3E) on the near horizon (approximately 30 meters) with an elevation of 25°. These two features appeared to be aligned with the summer solstice sunrise.

Adding to the complexity of this area is a pattern of cupules ground into a boulder (Figure 3D) three meters east and an isolated bedrock mortar with a small cupule pattern (Figure 3A) about five meters south. At the base of boulder C, in the sandstone bedrock, is a series of five mortars, graduated in size (Figure 3B) and resembling the toes and pad of a bear's paw. It is possible that these mortars were used for ritual activities associated with the Summer Solstice Ceremony.

At LAN-357, the main pictograph panel is oriented west towards a conspicuous sandstone formation known as Stony Point (LAN-89), and the hills separating the Simi and San Fernando Valleys (the area of *Kasi'wey*, the "pass"). The jagged horizon seemed well suited for both winter and summer solstice sunset alignments. Positioned on top of the shelter that houses the main rock art panel is a single bedrock mortar (Map 5). From this point compass readings were taken for both solstice sunsets. Taking into account the elevation of the horizon, it appeared that a winter solstice sunset would occur on line with the summit of Stony Point and a summer solstice sunset in

line with a prominent peak on the horizon. Looking to the northeast and southeast from this same mortar, LAn-209 can also be seen, appearing as an isolated sandstone outcrop to the northeast and LAn-21, although presently somewhat obscured by a stand of Eucalyptus trees to the southeast.

Again, according to initial compass readings, LAn-209 was believed to be on a summer solstice sunrise alignment to the LAn-357 main panel (azimuth $64^{\circ}31'$, altitude $4^{\circ}30'$), while LAn-21 appeared to be on a winter solstice sunrise alignment with the main panel (azimuth 126° , altitude 1°). It was predicted that LAn-209 served as a horizon marker, to denote the point of solstitial sunrise, whereas LAn-21 was predicted to be symbolically aligned to the winter solstice sunrise from LAn-357.

The Bell Canyon complex, specifically *Huwam* and Castle Peak (*Tswaya tsuqe*le), although lacking any rock art, also offered a potential astronomical alignment. It was predicted that from the northern component of *Huwam*, a winter solstice sunset alignment with Castle Peak would occur. Initial compass readings further strengthened this predicted alignment. It was further thought that the northern component of *Huwam* was the location of the large public Winter Solstice Ceremony and a ritual viewing spot for the winter solstice sunset.

ASTRONOMICAL PREDICTIONS

The following predictions were based on the nature of the sites, their hypothesized ceremonial relationships, and the results obtained from initial Brunton compass readings. It should be noted here that no predictions were made for the equinoctial alignments, although both Burro Flats and Bell Canyon were monitored during the equinoxes.

BURRO FLATS

1. A winter solstice sunrise light affect would occur on a concentric circle motif, believed to represent the sun or perhaps the Chumash universe, located in the west end of the main panel.
2. The sun at the summer solstice sunrise would appear behind and be framed within a conspicuous natural notch located on a sheer cliff face in alignment with a series of mortars believed to be a ritual "bear-paw" pattern, at the southeast end of the site.

LAN-357 AND OUTLYING SITES: STONY POINT (LAN-89), LAN-209 AND LAN-21

1. The main panel and the top of Stony Point are on a winter solstice sunset alignment.
2. The main panel and a prominent unnamed peak to the northwest are on a summer solstice alignment.
3. The main panel and the LAN-209 petroglyphs are on a summer solstice sunrise alignment, with the LAN-209 petroglyphs serving as a horizon marker, although not conspicuous geographical features.
4. The main panel and LAN-21 are on a winter solstice sunrise alignment, perhaps representing a

ritual or symbolic alignment for the Mourning Ceremony.

HUWAM (LAN-413) AND CASTLE PEAK
(LAN-511 - TSWAYA TSUQELE)

1. A winter solstice sunset alignment exists between the top of Castle Peak and the northern component of *Huwam*, perhaps signifying a public viewing point during the *Kakunupmawa* Ceremony (Winter Solstice Ceremony).

METHODOLOGY

The field methodology employed during this investigation was similar to that outlined by Thom (1967:1-25) and Hawkins (1973:285-307). The methodology essentially entailed three phases of fieldwork: (1) initial Brunton compass readings, (2) site mapping and petroglyph tracing, and (3) field observations.

Prior to site visitation, a USGS topographic map and protractor were used to preliminarily estimate the accuracy of projected site alignments (direct observation alignments). This method was used for both LAN-357 and Bell Canyon, since more than one site was postulated to be in solstitial alignment. Relative estimates of site alignments were obtained in this manner by employing a table of solstitial rise and set positions calculated in terms of astronomical declinations for a specific latitude (site latitude). These tables are available from a number of sources, one of which is *The American Ephemeris and*

Nautical Almanac (1967-1976) which lists celestial rise and set positions calculated in astronomical declinations for 0° horizons (astronomical horizons). The declinations are then converted into azimuth readings—degrees, minutes and seconds from True North. North latitude calculations were obtained for each site from a USGS Quadrangle map. Further accuracy for such projected alignments is achieved by calculating the metric distance and elevation difference between two points (sites, features) believed to be in astronomical alignment, since substantial elevation differences can significantly affect alignments calculated for a level of 0° horizon (Seymour and Edberg 1979:67).

Upon completion of this preliminary alignment estimation, the sites were visited with these projected alignments in mind, knowing in advance that such a visit might be fruitful. Further calculations were then made using a Brunton compass and tripod. This setup proved to be quite useful for initial azimuth readings, since the compass is equipped with a fairly accurate clinometer for obtaining horizon altitude readings. Its light weight enabled easy transport to the sites during initial investigations, and yet allowed for fairly accurate predictions of solstitial alignments. It was during these initial visits that likely observation points (backsights) were selected. All compass readings were obtained using a True North

declination of 15.5° .

Phase II of the fieldwork entailed the accurate mapping of the rock art complexes (Burro Flats, Map 4 and LAn-357, Map 5), as well as obtaining precise horizon profiles (altitude readings and projected alignments) and azimuth readings for the predicted solstitial alignments. Horizon profiles were made using a survey transit, and entailed plotting the altitude readings for a given horizon at 2° intervals or whenever key elevation differences were noted. The end product was a 20° section of the horizon, spanning 10° north and south of the predicted solstitial point.

The mapping of the rock art features (pictographs and petroglyphs) within the LAn-357 and Burro Flats complexes was accomplished using a Beam and Arc alidade, plane table, metric tape (50 meters), stadia rod, and the assistance of David Menke (astronomer from California State University, Northridge) and Richard Balough (astronomer from Antelope Valley College). Due to the distances between rock art panels and site datum points, walki-talkis were employed. Both maps were tied to the specific azimuth of Polaris (the difference between the azimuth of Polaris and True North, declination 15.5° , was minus 1° , or 14.5° declination). Polaris was felt to be a more accurate indicator for solstitial calculations than a True North declination.

Investigating the possibility that certain cupule and mortar concentrations may have astronomical significance, potentially depicting constellations, asterisms or celestial phenomenon, pliofilm (clear plastic) tracings (oriented to True North) were obtained for all petroglyph features. All cupule locations were mapped in and keyed to the tracings using field loci designations. Photographs (35 mm.) were taken of all petroglyph and pictograph features. The photographic roll and exposure numbers were also keyed to the maps. The pictographs (housed in small shelters, fissures or overhangs) were oriented by compass as to their directional exposure (the actual direction which can be seen from a given rock art feature).

The Burro Flats rock art complex had additional astronomical mapping techniques applied, which were undertaken subsequent to the mapping procedures described above. With the aid of Dr. E. Krupp, Director of the Griffith Observatory, and the use of a theodolite, the Burro Flats site map was tied into the exact declination of the sun (Greenwich mean time) on the 20th of December, 1980. In this manner an even more precise calculation of astronomical north was achieved. It is hoped that with such precision, further alignment projections (stellar, lunar and solar) can be calculated using a computer program, similar to that developed by Aveni (1972:531-540).

In addition, the cliff face housing the conspicuous notch, which was projected to be in alignment with a concentration of mortars ("bear paw" configuration), was precisely profiled by Dr. Krupp, with the use of theodolite. The shelter which houses the main pictograph panel, was accurately measured using a tape and transit which entailed length, width, depth and ceiling profile measurements, with the intent of accurately recording the relationship of the rock art motifs to the ceiling archway.

The final, and unquestionably most significant phase of the fieldwork, was the actual on-site observation of the projected solstitial alignments. There is, of course, no better means to substantiate predicted alignments, than by directly observing the event. This is especially important when an indirect "light effect" is predicted to occur on a specific rock art motif or panel. All predicted alignments were personally monitored during the solstices and equinoxes of 1979 and 1980. Since the sun's position at the time of the solstices does not change significantly within one week before and after the solstice (e.g., in four days a difference of 3'5" of arc) (Williamson et al. 1977:34), all sites could be monitored at a given solstitial period. In the case of LAn-209 summer solstice monitorings, two stadia rods were positioned, one at each of the petroglyphs (cupule concentrations), so they could clearly be seen from the main panel

at LAn-357.

It should be mentioned here, that during the course of this fieldwork, new mathematical computer programs were developed which would greatly aid in the calculation of direct astronomical alignments. A simple and highly useful mathematical program was developed by two astronomers from the California State University, Northridge Observatory (Seymour and Edberg 1979:64-70). This program involved two mathematical equations (algebraic expressions derived from spherical trigonometry). One is used with horizon differences of 7° or less, and the other is used on horizon differences greater than 7° (Seymour and Edberg 1979:64-65). Such a program, which can be calculated directly in the field, would have been of great assistance during the course of this research; however, in the end, there is no greater instrument to confirm a predicted alignment than the human eye.

Chapter 6

RESULTS AND INTERPRETATIONS

INTRODUCTION

The following discussion on the results of the field observations will be presented according to site, event, and form of observation, or whether a direct or indirect alignment was noted.

4-LAn-357

The summer solstice monitoring took place on June 21 and 22, 1979, whereas the winter solstice observations occurred on December 20, 1978, December 19, 1979 and again on December 21 and 27, 1980. Only direct observations were made, all of which were monitored from the single bedrock mortar situated atop the main panel's sandstone outcrop (Map 5) (latitude 34°16'30" N, longitude 118°36'00" W).

Direct Observation

Winter Solstice

From a single small bedrock mortar (16 cm x 9 cm) situated on top of the large sandstone outcrop that houses the main pictograph panel, the winter solstice sun was

observed setting behind Stony Point (LAn-89) (azimuth $240^{\circ}30'$, altitude $5^{\circ}30'$). Stony Point, located approximately 1,000 meters to the southwest of LAn-357, has two prominent sandstone "pillars" or boulders situated on top. The sunset occurred at 1607 PST with the last gleam occurring at 1621 PST on December 21, 1980. The sun was observed setting behind the southernmost pillar atop Stony Point (Figure 4). The last gleam appeared in the gap or notch between the two pillars and served to obscure the southernmost pillar.

On December 27, 1980, one week after the actual solstice, a slight change was observed. Although the sun still appeared to set behind the southernmost pillar, the last gleam appears to have occurred further north in the notch, since a reverse effect was observed. Instead of the first or southernmost pillar being visually lost within the afterglow, it was the northernmost pillar that was almost totally obscured by the last gleam.

The projected winter solstice sunrise alignment with LAn-21 was monitored on December 19, 1979. The sun was seen rising approximately on line with the Walker Cairn locations (azimuth 126° , altitude 1°). The time of actual sunrise was at 0647 PST; however, the initial sunrise was obscured by a stand of Eucalyptus trees. At the point the sun was in fact visible (0649 PST), it appeared to be on a fairly accurate alignment with the location of

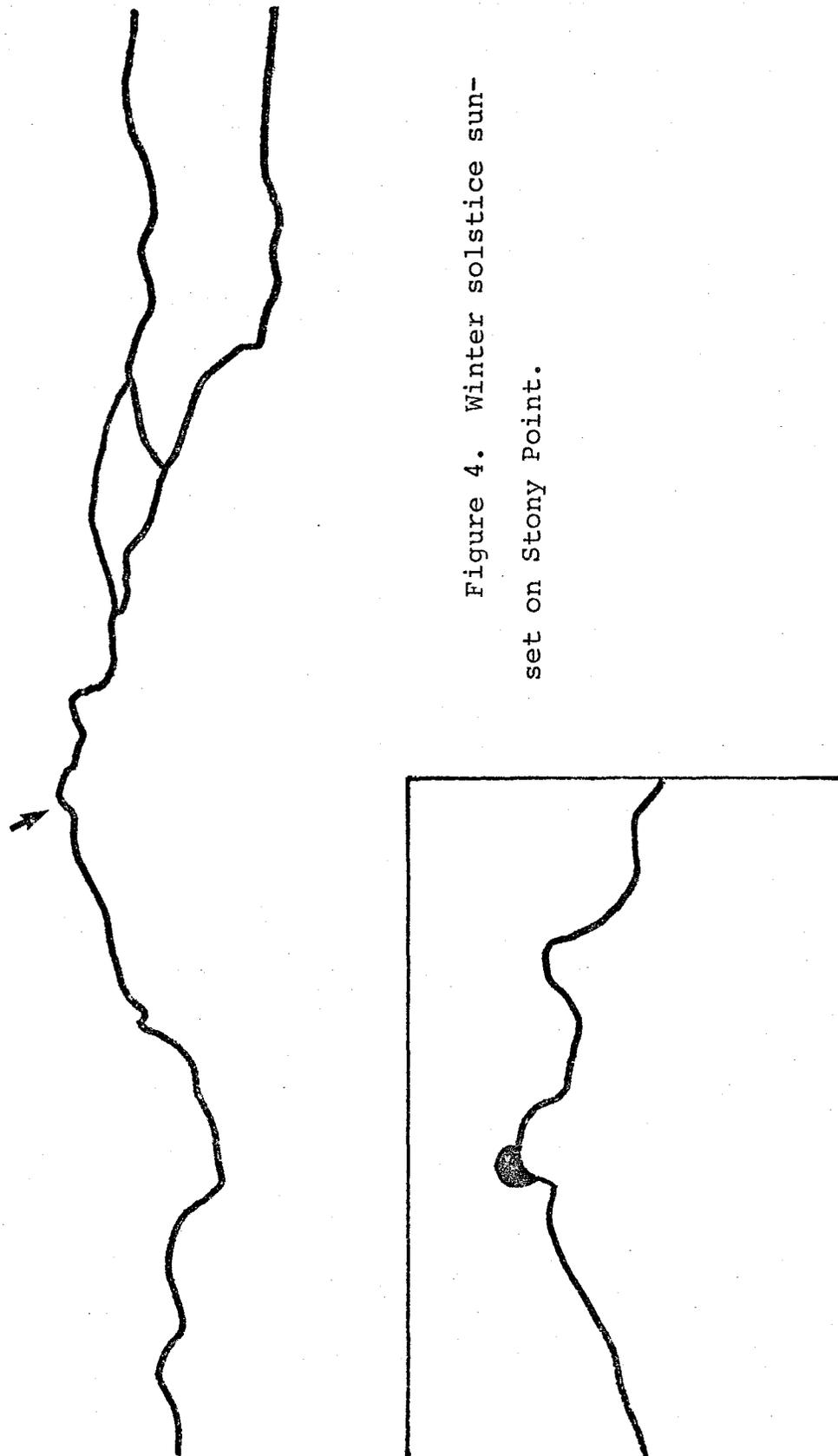


Figure 4. Winter solstice sun-
set on Stony Point.

Walker's Cairn Loci A and B (cf. Fowzer 1978:Fig. 1). The sun rose on the northern side of a large pass (Los Angeles River course) which separates the Verdugo and Santa Monica Mountains (Griffith Park hills).

Summer Solstice

The predicted summer solstice sunrise alignment between the LAn-209 petroglyph shelters (azimuth $64^{\circ}30'$, altitude $4^{\circ}30'$) and the main panel was monitored on June 21, 1979. The sun was observed rising just north of the cupule locations (azimuth 62° , altitude 4°) and hence was not on a "true alignment," if the cupule loci were to serve as an accurate horizon marker.

The summer solstice sunset was monitored on June 22, 1979. From the main panel, the sun's orb went down behind a prominent unnamed peak located about 5.6 km northwest of LAn-357 (Figure 5). This peak is a conspicuous pinnacle located just north of Rocky Peak on a ridge system which runs from the Santa Susana Pass, northward. There was no prediction made for this alignment.

No indirect light effects or shadow effects were observed on the main panel during the solstitial sunsets; however, the main panel is presently obscured by a stand of trees. This possibility will be further discussed in the Interpretation Section.

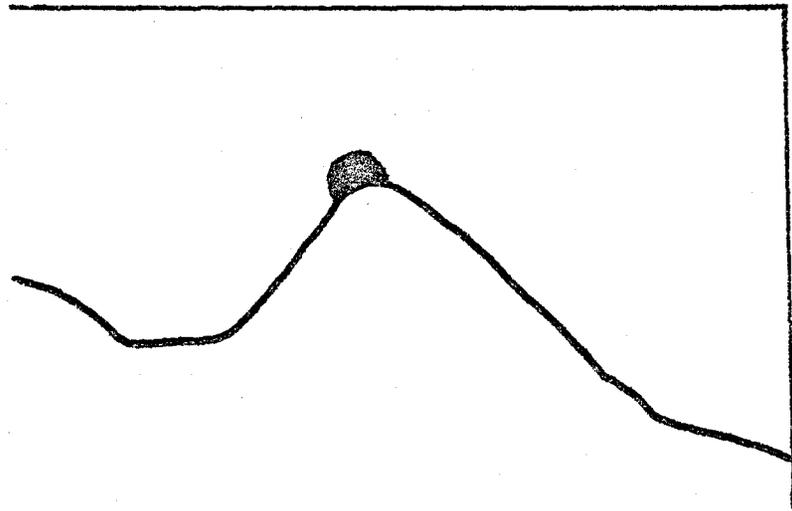


Figure 5. Summer solstice sunset on prominent unnamed peak.

BELL CANYON: LAn-413 AND LAn-511

The winter solstice monitoring took place on December 19, 1978, with the summer solstice monitoring occurring on June 21, 1978 (latitude $34^{\circ}12'10''$ N, longitude $118^{\circ}39'28''$ W).

Direct ObservationWinter Solstice

On December 19, 1980, from a viewing point situated in the northern component of *Huwam* (LAn-413), the sun was observed setting behind the western side of the Castle Peak (LAn-511 - *Tswaya tsuqele*) pinnacle (Figure 6) at approximately 1600 PST (azimuth 230° , altitude 15°). A slight light effect accompanied the sunset, with the sun's gleam penetrating through some of the many natural cavernous openings situated within the sandstone conglomerate outcrop on top of the peak. Castle Peak is located approximately 100 meters southwest of LAn-413.

Summer Solstice

On June 21, 1978, the summer solstice sunrise was monitored from the top of Castle Peak. The sun rose on the east valley horizon (azimuth 065° , altitude 4°), and at initial sunrise was momentarily framed within a "natural window" (large fissure) situated in the sandstone conglomerate outcrop. This alignment was not predicted to occur.

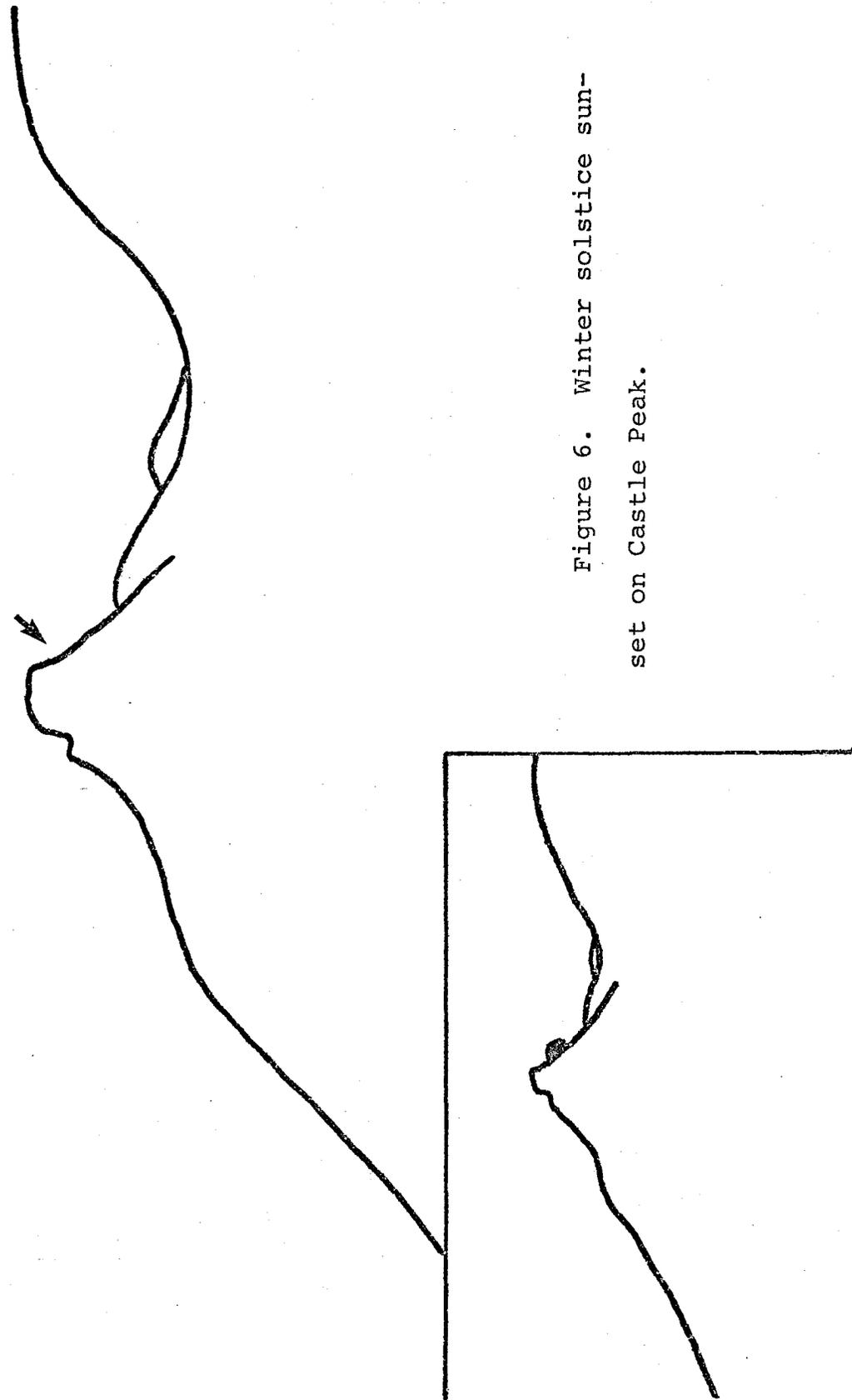


Figure 6. Winter solstice sun-
set on Castle Peak.

It should be noted that from the top of Castle Peak, a panoramic horizon is in view, with a well undulated horizon to the east (Verdugo Mountains) as well as to the north (Santa Susana Mountains). The fall equinox sunrise, winter solstice sunrise and set, and the summer solstice sunset were also monitored from Castle Peak on June 21, 1978, September 20, 1978 and December 21, 1978, all of which correspond well to conspicuous points along the horizon. However, no alignments of obvious significance were observed, hence they warrant no further discussion.

BURRO FLATS

The summer solstice was monitored June 23, 1979, and again on June 21, 1980. The winter solstice was monitored on December 22, 1979 and again on December 13, 20, and 26, 1980. Since for Burro Flats there is evidence for both direct and indirect observations, they will be discussed separately (latitude $34^{\circ}13'30''$ N, longitude $118^{\circ}42'37''$ W).

Direct Observation

Summer Solstice

On the morning of June 23, 1979, an alignment with the summer solstice sunrise occurred (Figure 7), but not as predicted. From the isolated bedrock mortar and cupule concentration (Figure 3A) at 0758 PST, the sun's gleam was observed filling the notch on the horizon

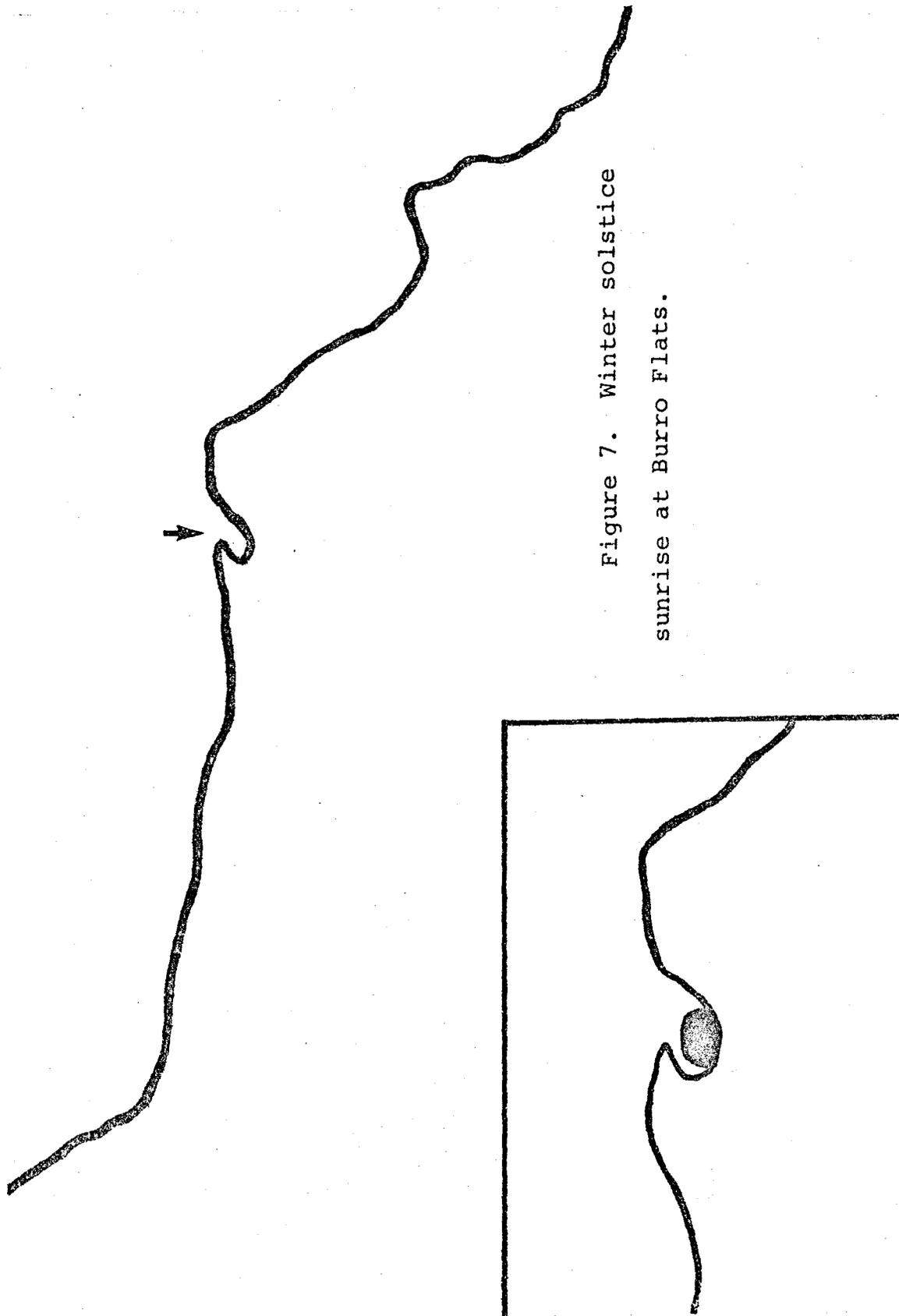


Figure 7. Winter solstice
sunrise at Burro Flats.

(Figure 3E), and by 0800 the disc itself began to appear. At 0804 the sun's disc was fully framed within this notch and by 0805 had moved above it.

The predicted alignment between the "bear paw" configuration of five bedrock mortars (Figure 3B), the linear cupule pattern (Figure 3C) and the notch (Figure 3E) did not occur. The sun's disc appeared on line with the linear cupule arrangement and "bear paw" mortar pattern, but not with the center of the notch. Although only a little more than four meters from the isolated mortar and cupules (Figure 3A), the close proximity of the linear cupules to the notch on the horizon was enough to throw the alignment off.

It is important to note that no direct solstice alignments were observed for either the summer solstice sunset, winter solstice sunrise, or winter solstice sunset, from any monitored location within the site.

Indirect Observation

Winter Solstice

As observed from the main pictograph panel at Burro Flats on December 22, 1979 and December 20, 1980, the winter solstice sun rose at azimuth 130° over a sandstone ridge (elevation 4°) at approximately 0700 PST. Sunlight first bathed the outside surface of the shelter overhang, while the interior remained in shadow. At 0736.37 PST, a

small triangular dagger of light penetrated through the natural archway and struck the concentric circle design at the west end of the shelter (Plate 1, Figure 2). This was as predicted.

The following is the light dagger sequence spanning a total of twelve minutes:

At 0736.37 a triangular beam of light penetrates the interior of the main panel, and strikes the concentric circle motif, with the apex of the triangle touching the first ring out from the center (Plate 1). The apex of the triangle is clearly and dramatically pointing towards the center of the concentric circles.

At 0737 it begins to expand downward and starts to take the shape of the archway (as the sun rises more light penetrates through the arch), however, the apex of the initial triangle remains touching the first ring out from the center. This apex (pointer) then begins drawing back across the concentric circle.

At 0741 the tip of the light pointer is touching the second ring from the center.

At 0741 the tip of the light pointer is touching the third ring from the center.

By 0748.39, the tip of the pointer is touching the outside ring of the concentric circle motif.

By 0749, the dagger effect was lost, as the light expanded outward from the concentric circles and moved downward to the base of the panel, where it remained throughout the day. As the day progressed, the expanded and flattened pointer of light moved along the base of the panel, which appears to have been prepared by abraiding. Once the light reached the base of the panel, only two pictograph designs and a series of cup shaped depressions (cupules) located along this prepared background remained illuminated.

Plate 1. "Light dagger effect" on main rock art panel of Burro Flats during the winter solstice sunrise. This photograph was taken at 7:38 a.m., December 20, 1980. Photograph courtesy of Richard Wessel.



Another set of concentric circles, located in the east portion of the shelter, was monitored at the winter solstice sunset, but the results were negative. A small circle of light penetrated to the inside surface of the notch or archway but never touched the pictograph panel at the time of sunset.

An indirect light effect was also anticipated for a south facing overhang which contains a sun symbol and an anthropomorphic figure, located south of the main panel (Map 4, Panel 1). The winter solstice sunrise did cast a light effect across this panel, however a distinct effect on these symbols was not noted.

Summer Solstice

At the time of the summer solstice sunrise, a shadow was cast from the large boulder containing the line of cupules (Figure 3C) down onto the "bear paw" mortar configuration located .4 meters from its base. This shadow bisected one of the peripheral mortars, connecting it with the large central mortar (see Figure 3B). This shadow effect lasted approximately eleven minutes, when it then began to recede from the central mortar, finally disappearing by 0830 PST.

The spring equinox of 1979 (March 21) was monitored with no direct or indirect alignments observed.

INTERPRETATIONS

Without telescopes or calibrated measuring instruments, prehistoric astronomers had to use the horizon to determine the progress of astronomical cycles. Two things were needed: a place to stand and a place to look (Krupp 1977: 55).

LAn-357

Both the winter solstice sunset on Stony Point and the summer solstice sunset on an unnamed peak to the northwest appear to exhibit a more marked alignment when viewed from the isolated bedrock mortar on top of the main panel. Although both alignments might hold in a general way from any point on the sandstone outcrop, it is believed that the isolated bedrock mortar location represents the most accurate monitoring position. In both instances, an edge of the sun goes down in line with an edge of a prominent geographical feature. An edge to edge alignment of this kind makes it easier to detect the sun's movement, particularly with the extreme glare occurring during sunset.

Isolated bedrock mortars may have served as "fixed point monitoring stations" (Romani et al. n.d.). The *'alchuklash* (astronomer-priests) may have prepared and/or made their offerings in bedrock mortars at the exact location of solar observation. It is important to note that the bedrock mortar in this case is situated in the northern extreme of the shelter top, on a small ledge at the

edge of the outcrop. A much wider location is more towards the center of the shelter top, yet from such a position a distinct edge to edge relationship is far more obscured by glare.

It would appear in the case of Stony Point, that the winter solstice sunset was somewhat accurate, perhaps a week before the solstitial event. The two prominent pillars on top of Stony Point may have served as a more accurate foresight, with the movement of the sun detected more by the glare cast on each pillar, than the true position of the disc. Such an effect was noted during the observation of this event during the 1980 solstitial episode. On the 21st of December, the glare was obscuring the view of the southern pillar, whereas a week later the northern pillar was less visible with the southern more pronounced.

The pillars on top of Stony Point represent a 2.5° arc, from the beginning of the south pillar to the termination of the northern pillar. Using Williamson et al.'s (1977:34) figures for the sun's movement at the time of the solstices (3'5" movement at four days after the actual solstice), a no greater than 6' movement was projected in a period of seven days after the solstice. Hardly a noticeable movement along the horizon, and yet perhaps significant enough to create visual differences with the glare cast on the pillars at last gleam.

It seems that with an accuracy of no greater than a week and perhaps less, the winter solstice alignment on Stony Point would have served a more ritual and less calendrical purpose. The close proximity of Stony Point to the suspected monitoring position (main panel), approximately 1,000 meters, is too close for precise observations which can detect within days, or the day, of the actual solstice. Greater accuracy can certainly be achieved when greater distances are involved, with the sun's movement (seen in minutes and seconds of arc) more noticeable on a distant foresight (Krupp 1980).

The summer solstice sunset, having a greater distance (5.6 km) may have enabled more precise observations. Using the isolated mortar as a viewing position, and perhaps erecting poles in line with the mountain peak as accurate foresights, a more precise determination of the sun's position could have been made. Krupp (1977:55) fully discusses the potential use of poles or sticks for precise calculations of solar position at the time of the solstice. Such a method, involving a far distant foresight could enable precise observations to the day of the solstice (Krupp 1977:55). It would not appear as though such precision could have been achieved in this alignment, however an accuracy of less than a week (days) may well have been possible. Both Stony Point and the prominent unnamed peak were surveyed for evidence of a horizon

marker (rock art, rock alignments, or evidence of signaling fires) with negative results; however, in the case of Stony Point rock art reportedly had existed at one time.

It is truly unfortunate that in the case of Stony Point, the rock art has been totally destroyed, whereas with LAn-357 only remnants of a once elaborate panel remain. An important set of data for interpreting the significance of the winter solstice and summer solstice sunset alignments is thus lacking. In order to truly understand the significance of these alignments, a link with the symbols in the main rock art panel is of paramount importance. Without such an understanding, the question of coincidental, intended, or even recognized alignment remains unresolved. There presently exists no indications as to whether astronomical motifs were represented in the main panel, or even more importantly, a symbolic recreation of the solstitial event on the horizon. In order to convincingly establish an importance to these alignments, such rock art connections are surely needed.

There are two possible astronomical rock art interpretations which can be postulated at present. One concerns a petroglyph (cupule) concentration situated at the south base of the main panel (forming a pattern of three cupules in a line). This pattern could symbolically portray the constellation of Aquila or Orion's Belt. Neither constellation appears to be exactly represented here in

terms of magnitude ordering, if the depth and diameter of cupules were intended to denote differences in stellar magnitude. However, there still exists the possibility that a depiction of one or the other constellation was intended. If so, the most likely constellation depicted here would be Aquila, since it has a ritual connection with the winter solstice (Hudson and Underhay 1978:122) and has a heliachal rise and set near the time of the winter solstice. A similar depiction (three aligned cupules) is present at the Burro Flats main panel; this depiction may also be a symbolic representation of the Belt of Orion or perhaps Aquila.

The other possible astronomical representation concerns the faded remnants of a pictograph motif situated on the main panel. Larson (1980) has posited an interesting interpretation, suggesting that this design, which displays the appearance of two "humps" with a disc above them (Sandburg et al. 1978:Fig. 5), may in fact represent the two pillars (humps) of Stony Point with the sun (disc) setting behind them. An alignment with Stony Point can be viewed from within the overhang, and hence may have been portrayed in rock art. Although, such a depiction is possible, further analysis of this panel, perhaps using infra-red photography, is needed to draw any valid conclusions. It is of further interest to note an apparent similarity with two linear (pole-like) painted motifs on

the LAn-357 panel (Sanburg et al. 1978:Fig. 5) with two depicted (overpainted) on the Burro Flats Main Panel (Figure 2). As will be further discussed, these poles may have a symbolic relationship with the winter solstice, as feather poles or possibly *ko-too-mut* poles (Edberg 1980: 20-25).

Since the LAn-357 main panel is presently obscured by a tall stand of trees, there is no way of determining if an indirect observation (i.e., light effect) could have been made. A light effect on the main panel pictographs is certainly a possibility, but with the combined factor of trees and a rapidly deteriorating pictograph panel, it may never be known.

Although a scientific verification of the importance for both the winter solstice sunset and summer solstice sunset alignments observed at LAn-357 is lacking, it does not seem inappropriate to suggest a ritual or sacred significance for these alignments, especially Stony Point. The alignments could be considered "non-coincidental" in the sense that the site location (occupying an area of natural sandstone outcrops) may have been selected for ceremonial reasons, perhaps on the basis of these solstitial alignments. There are of course a number of reasons which would have made a village settlement at this location beneficial with a prime factor being the availability of a perennial water source (spring), however

the direct selection of this site for sacred astronomical alignments cannot be discounted.

The presence of a sulfur spring—often considered as sacred and medicinal—coupled with the extensive presence of rock art, clearly establishes a sacred/ceremonial value to this site. The sanctity and magical power of rock art strongly implies that this is not a village of commoners or a more secular assortment of individuals, but rather a highly prestigious village occupied by high status individuals, i.e., religious elites. This ceremonial/religious significance may be owing in part to a sacred winter solstice alignment with Stony Point.

Some archaeological information does exist which could be used to further argue the significance for the Stony Point winter solstice alignment: (1) it appears that the major emphasis of the rock art was facing towards the west end of the site, (2) according to Day (1973:6), the west end of the site appears to have been occupied later than the eastern portion, (3) a large fire-burned soil area is present on the east base of Stony Point, and was possibly used as a large signal fire or ritual bonfire and (4) the cemetery was located in the west portion of the site.

The summer solstice sunrise alignment with the LAN-209 petroglyphs did not occur as expected. The sunrise was in fact 2° north of the predicted mark (azimuth

64°30'), hence ruling out the likelihood that these cupules were placed as "horizon markers." The cupules are undoubtedly ritually linked to the LAn-357 rock art complex, but their significance remains unknown. The tracing of these cupules are presently undergoing analysis. The sandstone outcrop housing these shelters has been thoroughly investigated and although flakes, cores and a soapstone bowl fragment were noted along this ridge, no further petroglyphs were observed at or near the actual point of sunrise. In addition, no evidence of signal fires or man-made rock alignments were found.

The winter solstice sunrise alignment between LAn-21 (Mourning Ceremony site) and the LAn-357 main panel, if not coincidental, would be of a more purely ritual/cosmological intent. The ceremonial nature of both sites suggests a non-coincidental significance to this alignment. According to the ethnographic literature, the winter solstice was associated with death, and with many rituals performed during the *Kakunupmawa* involving death symbolism (Hudson and Underhay 1978:61-62). Moreover, the Milky Way was symbolic of the "ghosts road to the land of the dead" (*Shimilaqsha*) during the late fall and winter, and was oriented more east to west, with Cassiopeia (*Wit*) the entrance to this road directly overhead.

It appears probable that the Chumash, like the Luiseno, considered at least the winter season Milky Way to be a ghosts' road into the next

(Upper?) world, and that the Chumash believed that each branch led to two separate locations within the land where spirits and their *wot* or captain resided (Hudson and Underhay 1978:116-117).

As Hudson and Underhay (1978:98) have further pointed out, the possibility exists that the Mourning Ceremony may have at times coincided with the winter solstice. In view of this information, we must consider the possibility that the LAN-21 mortuary site may have been intentionally positioned in a "sacred" winter solstice sunrise alignment with LAN-357, the probable host village. A further possibility may exist, which if proven, would confirm the alignment as intentional. Fowzer (1978:4) in his attempt to reconstruct the orientations of the LAN-21 mortuary cairns, pointed out that the long axis of both cairn Locus A and B appear to have been aligned (azimuth 155°) to each other, and more importantly, this cairn alignment is oriented to the center (main panel area) of LAN-357. This suggests a sacred (spoke-like) winter solstice sunrise alignment between a host village and Mourning Ceremony complex. Indeed this possibility warrants further research considerations.

Although there is difficulty in validly ascribing LAN-21 to the Late Period (A.D. 1100 -- Historic), it was undoubtedly contemporaneous with at least a portion of the LAN-357 time span of occupation, perhaps with the late Middle and early Late period components.

BELL CANYON

The winter solstice sunset on *Tswaya tsuqe*le, as seen from the northern component of *Huwam*, suggests a possible ritual significance to this alignment. Ethnohistoric and archaeological information (cf. Chapter 4) suggests that a ceremonial relationship existed between *Huwam* (a Chumash and Gabrieliño village) and *Tswaya tsuqe*le ("the feather banner is waving") an ethnohistoric mountain shrine. Ethnographic accounts clearly connect this type of shrine with the *Kakunupmawa* Ceremony, eluding to a ceremonial significance for *Huwam* as a host village or location for the large "public" Winter Solstice Ceremony. A ceremonial importance for *Huwam* is further supported by ethnohistoric and archaeological sets of data indicating strong links with the coast—specifically *Humaliwu*—and an artifactual assemblage suggestive of functional-economic aspects appearing somewhat atypical of village sites.

The high percentage of marine resources (30%) in comparison to the total ecofactual material obtained from the excavation, is higher than expected for an inland village nearly 25 miles from the coast. Trade is certainly a plausible explanation for the high occurrence of marine resources at *Huwam*; however, in light of the ethnohistoric information, ceremonial interaction with the coast seems a more likely explanation. If *Huwam* was the location of the *Kakunupmawa*, we could expect the participation/attendance

of coastal villages within the *Humaliwu* political/religious province. These villages, as ethnohistorically indicated, would be required to bring offerings to the host village, such as money (beads), food resources, as well as perhaps manufactured goods. The obvious food resources to have been brought in are shellfish and fish, both storable. Furthermore, the presence of shellfish correlates well with the optimal season for shellfish consumption along the Chumash coast—late fall and winter.

In totality, the artifactual assemblage as discussed in Chapter 4, had an inordinately low frequency of core tools, flake tools, flake waste and bone awls for a village site. Villages are typically associated with a distinct maintenance tool assemblage characteristic of daily necessities. Yet, it appears that such maintenance activities were of minor importance at *Huwam*. This data suggests that perhaps the low occurrence of such expected items was a by-product of a particular socioeconomic emphasis. If, for instance, *Huwam* was a provincial ceremonial center, the village may have been comprised of a number of "non-producing" religious elites, subsisting from substantial offerings of storable resources.

Of notable importance, are the differences perceived between the south and north components of *Huwam* (Map 3). The south component had a distinctly different midden characteristic, a much more organic (greasy) habitation

midden accompanied with a disproportionately low frequency of shell, an absence of coarse grain soapstone, and a high proportion of core tools and bone awls. In comparison, the north component, almost totally lacked any maintenance items, with the exception of tarring pebbles, and had a high frequency of soapstone bowl fragments, ground stone, shellfish and shell beads. It was hypothesized during the excavation that the north component was the location of the ceremonial gathering. The winter solstice sunset alignment lends further support to this possibility. The point at which the winter solstice sunset on *Tswaya tsuqele* can be seen, is near the northwestern portion of the north component, situated slightly upslope to the north. It is hypothesized that this location was the ritual public viewing point for the solstitial event; moreover it may have been the location for the erection of the sacred *siliyik* enclosure. It then seems that the southern component served as a location for more limited domestic activities, whereas the north component was the location of more religious/ritually oriented endeavors.

The summer solstice sunrise alignment within the "natural window" (fissure) situated on top of *Tswaya tsuqele*, although impressive, lacks sufficient credibility. A number of problems exist in regards to this alignment and its cultural significance in this instance. The sunrise, though nicely framed within this "window," also

casts a beam of light on a large sandstone conglomerate formation situated behind it. This would seem to have been a significant, noteworthy effect, and yet there was no attempt to mark the location where this beam touched. There is also the question regarding the significance of a summer solstice sunrise alignment with a winter solstice shrine. Although it can be argued that the monitoring of this event has ritual significance with the winter solstice (the sun begins to move south again), the lack of any cultural modification of this "window" or "potential heelstone" raises serious doubts. Furthermore, the window is approximately 3° in width, framing a $\frac{1}{2}^\circ$ solar disc, a highly inaccurate means of monitoring.

BURRO FLATS

The alignments observed at this site represent a unique combination of both direct and indirect alignments. They are the most visually impressive alignments yet observed, and with the well preserved rock art present at the site, afforded a greater potential for interpretation.

The summer solstice sunrise resulted in both a direct and indirect alignment with mortars and cupules located in the south end of the site (Figure 3). The direct alignment of the sunrise with a conspicuous notch (azimuth 80° , altitude 26.5') seen from an isolated bedrock mortar associated with a small cupule pattern, and also in line

with a large boulder with cupules, was both visually dramatic and somewhat accurate. This alignment could only be seen from the one location; a movement of a meter on either side of this specific position totally altered this alignment.

This direct alignment further supports the contention that certain isolated bedrock mortars served as "fixed monitoring points." Similar to the direct alignments seen at LAN-357, this alignment, although accurate to a week or more based on monitorings a week before and after the actual solstice, is hardly precise. However, since at the time of the solstice, the sun appears to stand still for a period of three or four days (Hudson, Lee and Hedges 1979:51), this alignment may have been accurate enough, within three to four days, to predict the time of the actual solstitial episode by noting the first appearance in the notch as a marker to begin counting the number of days to the solstice. Lacking true precision, it would seem that the significance of this alignment is more ritual rather than calendrical, i.e., specifically functioning as an exact solar observatory. However, in the case of the Burro Flats summer solstice sunrise, there is a cupule locus located between the bedrock mortar and the natural notch, with only one large cupule falling exactly in line (Figure 3D). If a gnomon were placed upright in this cupule, it might further increase the accuracy of the

alignment.

Also, during the summer solstice sunrise, a shadow was cast across several of the mortars in the "bear paw" configuration (Figure 3B). This may be coincidental as no other shadow effects or alignments were observed during solstice or equinox periods to cast designed shadow effects. Possibly during the solstice, offerings were made in the mortars in a specific sequence, ending in a ceremonial event.

In addition to bedrock mortars possibly being used as fixed viewing stations for direct observation, they may have also served in other ritual contexts. The Burro Flats "paw-like" configuration of five mortars described above (Figure 3B), seems to illustrate this possibility. The close spacing, plus the graduated sizes of the four mortars forming the semi-circle, as well as the overall paw-like configuration, including the fifth mortar, suggests that communal processing of acorns was not likely in this particular locus.

It is also possible that the "paw-like" design actually represents a bear paw. It is known that bear paws have five toes, but in the famous Chumash "bear-track" petroglyph of the Cuyama region (cf. Grant 1965:Fig. 81), the largest paws are depicted with from four to six toes. The paw-like configuration at Burro Flats is in a general alignment with the summer solstice sunrise, although not

exactly in line with the notch. Hudson and Underhay (1978:136) have suggested that the Belt stars of Orion constitute the Chumash Bear constellation, a possible marker for the months of July and August. This would place the sun quite near Orion's Belt during late June and July and might account for the alignment occurring slightly off the direct summer solstice sunrise. It is even possible that the paw-like configuration is aligned with the first appearance of Orion's Belt, as the three stars heliacally rise before dawn during the summer solstice period or shortly thereafter.

The Burro Flats winter solstice sunrise "light dagger effect" is certainly one of the most spectacular finds (Plate 1). That this alignment is not simply a coincidence, but has astronomical significance, is considerably strengthened by the fact that, in at least two other cases, one at La Rumorosa, Baja California (Hudson, Lee and Hedges 1979:51) and the other at Fajada Butte, New Mexico (Frazier 1979:56-57), astronomical alignments involving light daggers have been demonstrated. The precision of the Burro Flats alignment is not known; however, based on observations a week before and after the solstice, it has an accuracy of at least seven days. Moreover, the concentric circles may have served as a further means of precision, by enabling an accurate increment of the sun's movement during the duration of days the dagger

effect occurred. For instance, the point of the dagger struck the second ring of the circle at the initial instance it occurred. If its position changed in a certain number of days, it may well have served to signify the passing of the solstice.

This indirect winter solstice sunrise effect on the main panel concentric circles poses interesting questions as to the ritual implications of the various rock art motifs painted on this panel. Again, with the apparent accuracy of no greater than one week, and perhaps less, it does not appear as though the Burro Flats complex functioned as a true (precise) solar observatory, but rather demonstrates a potential relationship to astronomically based ceremonies. The following will be an interpretation of the various motifs depicted at the main panel, in reference to the indicated winter solstice (astronomical) significance of the main panel.

Main Panel Rock Art Interpretation

The predicted and later documented dagger of light on the far left set of concentric circles at the time of the winter solstice sunrise (Plate 1) has stimulated additional questions regarding the general theme reflected in the pictograph panel. It is now felt that much of the symbolism in this panel involves depictions of mythological characters, or events that relate to worldly events or

desired results of spiritual power evoked during the winter solstice, or possibly beginning at the time of the fall *Hutash* ceremony as an inter-related series of activities (refer to Figure 2).

Perhaps the most significant characteristic of the panel is that it is framed by two sets of concentric circles, one located near each side of the panel, with a smaller set of concentric circles positioned lower and slightly off center. The overall visual effect is of symmetry and balance, qualities that form an integral part of the Chumash world view.

For the Chumash, the great forces of nature are in a constant state of balanced opposition to one another, with none possessing an ultimate superiority that might irrevocably alter the proper condition of dynamic equilibrium that should normally prevail in the universe. . . . Among the Chumash, the emphasis is . . . on balanced oppositions between contrasting forces, categories and states of being (Blackburn 1975: 72-73).

All three sets of concentric circles share similar attributes, yet they can be contrasted. The three opposing sets that frame the panel are of equal diameter (25 x 28 cm ellipses), but do not contain the same number of rings (the one on the left contains five white rings, whereas the one to the right has six alternating red and white rings). The left and central concentric circle motifs are both framed by opposing figures with rake hands and feet that appear to be holding the outermost circle of

each set. The smaller (central) set is surrounded by a circle of white dots.

Originally it was predicted that the winter solstice sunlight would touch all three sets of concentric circles as the day progressed. Yet only the far left motif was reached by sunlight, which rested on the middle ring, then gradually progressed downward.

The concentric circle motif and light dagger effect may reflect the ritual efforts of the *'alchuklash* (astronomer-priest) to "pull back the sun" when it reached its southernmost extent at the time of the winter solstice (Hudson and Underhay 1978:62). The Chumash word for December means "month when the sun's brilliance begins" (Blackburn 1975:102). Also, the Chumash word *Kakunupmawa* refers to the rebirth of the sun (Hudson and Underhay 1978:51). The concentric circle motif seems to have been placed deliberately to receive the first rays of the sun emanating from the east, the "birthplace of the sun." Thus the rock art may have functioned dynamically in a ritual celebrating the annual rebirth of the sun (Schupp-Wessel 1980). This metaphorical rebirth of the sun may have signified that the balance of the universe was restored for another year (Hudson et al. 1977:61).

People with ritual knowledge could use their power to foresee the future and attempt to influence supernatural beings, who were considered neither purely good nor evil

(Blackburn 1975:68). However, life was still uncertain because of the predictable responses of these beings (Blackburn 1975:69). Such uncertainty is present in the mythological *peon* game played annually at the time of the winter solstice by two opposing teams, Sun and *Slo'w* versus Sky Coyote and Morning Star (Blackburn 1975:31, 68, 72). Astronomer-priests used their power to predict the results of this game and to influence the outcome if they felt it would be detrimental to the inhabitants of the Middle World (Hudson and Underhay 1978:33).

Thus the two rake-hand figures positioned on opposite sides of the concentric circle motif may symbolize opposing forces of power. Sunlight falls on this motif from the east, which is the birthplace of Sun, then expands outward and downward from the first ring out from the center, eventually moving horizontally along the base of the panel. This may represent the successful rebirth of the sun and the more benevolent forces in nature.

However, on the west side of the concentric circle motif, opposite the light beam, a red centipede motif has been painted over one rake-hand figure. Centipedes are listed by John P. Harrington as one of the *Chinigchinich* avenger animals—those that cause pain (Hudson 1979:359). Since some of the avengers are associated with the cardinal directions, west may be the direction of centipede. Centipede may therefore symbolize a year of

impoverishment for the inhabitants of the Middle World.

An alternate interpretation is that this motif may symbolize the sun. The two rake-hand figures could depict two shamans metaphorically holding the sun during the solstice (Hudson and Underhay 1978:71). If this shamanistic magic were successful, Sun would return on his path to the north.

As previously mentioned, the sun's light progresses down and then follows along a smooth, ground surface just below the painted area, which extends to the easternmost part of the rock shelter. From photographs taken of this event, only a few motifs at the lower left are touched by the light. Most of the pictographs in the panel are just out of the sun's reach, as it moves along the ground path at the base of the panel. Perhaps this area was intentionally smoothed to mirror the celestial pathway along which Sun journeys west toward his home in the sky. After reaching his westernmost limit, he then travels "around far to the south" (Blackburn 1975:93). Although no definite sun symbols appear in this panel that can be compared with those that appear on sunsticks (Hudson and Underhay 1978:93), both the light dagger effect and smoothed pathway may represent abstract acts performed by this important diety, as would be expected during a solstitial event.

Three pictographs near the right side of the main

panel at Burro Flats (Figure 2) seem to represent not only several interrelated themes, but also a Chumash myth (Blackburn 1975:Narrative 30). Briefly this myth tells about a group of boys who spent their days trying to climb a pole. Centipede was always the best climber. The boys were angered by this and complained to Coyote, who bewitched the pole and made it grow taller as Centipede climbed it. During his ascent, Centipede encountered strong winds and excessive heat before finally reaching the "door to the sky." When he went through this door into the Upper World, he was attacked by giant mosquitoes and was reduced to bare bones. Coyote felt remorse and went after Centipede to rescue and resurrect him. He found *Holhol* (condor) and convinced *Holhol* to lend him his clothes and sticks to locate *Slo'w*, the eagle, so that he and Centipede could return to Middle World on the back of *Slo'w*. During the descent, the wing of *Slo'w* hit the pole, causing Coyote to fall to earth, where he was dashed to pieces. Centipede leaped to the pole and safely descended, then collected the bones of Coyote and rearticulated them, after which Coyote returned to life.

The elements in this portion of the rock art panel include: (1) a red centipede, (2) a red, black and white figure that appears to be part bird and part man, possibly representing *Slo'w*, the eagle, and/or Morning Star, and (3) a smaller red and black figure, also with

human and bird-like attributes, which may represent *Holhol*, the condor, and/or Mars, but shown without his wings or sticks. The colors used for both "eagle" and "condor" are the same as those discussed by Hudson and Underhay (1978:96). The centipede is depicted on the eagle, as when in the myth he was returned to Middle World by *Slo'w*.

Located just to the left of the "eagle" and "condor" figures are two white, vertical chain-like motifs that look like poles extending to the sky. Near the bottom of the "poles," and positioned between them, is a figure that may represent Coyote beginning to ascend the poles to the Upper World to rescue Centipede, who has been killed and only his bones left. Centipede may be represented near the top of the poles, also between them, by the red outline of a centipede with a white interior.

Immediately below the centipede (between the two poles) is a white figure with large raked feet. This figure may represent Coyote after he has borrowed the power-laden paraphernalia of *Holhol*, consisting of his clothes and "two beautiful, well made sticks." It is possible that the rather faint white lines extending out from the two stick-like elements may represent the power of Condor's sticks. The red and white concentric circles to the right of the poles may symbolize Centipede's ascent to the Upper World, passing through alternating elements

of wind and heat (the white and red circles symbolizing wind and heat, respectively, and the solid center representing the "door into the sky"). The concentration of red and white dots to the right of the eagle may represent Coyote after he was dashed to pieces when he fell from *Slo'w* during the descent of Middle World.

Various symbolic themes can be extrapolated from the interrelationship of these pictograph motifs with the winter solstice ceremonies, possibly beginning with the fall *Hutash* activities. Some of the attributes and functions ascribed to Eagle and Condor, as discussed by Hudson and Underhay (1978:80-96), are listed below:

Eagle

1. Possibly "*Wot-of-the-Land-of-the-Dead*."
2. Identification with Venus as Evening Star.
3. Character imitated in a ceremonial dance.
4. Possible sacrificial victim prior to the winter solstice ceremony.
5. Use of feathers to decorate poles during the winter solstice ceremony and other paraphernalia.
6. Possible contact with supernatural beings to foresee the future.
7. Possible association with mourning ceremonies.

Condor (who is not as well documented in the ethnographic records)

1. Clothes and sticks having supernatural powers that allow travel to great distances quickly and the ability to locate missing beings or objects.

2. Identification with Mars (by color and "rapid-loop" movement in sky).
3. Character imitated in dance of *Holhol*.
4. Possible sacrificial victim.
5. Use of feathers to decorate poles used during winter solstice ceremonies, and other ritual paraphernalia.
6. Possible contact or locator of supernatural beings such as *Slo'w*.
7. Possible association with mourning ceremonies.

Several of these attributes, or very similar ones, are also found among the Fernandño.

Although *Slo'w*, the golden eagle, often ate people and is probably "Wot-of-the-Land-of-the-Dead," he is also "Wot-who-knew-what-is-to-be" (Hudson and Underhay 1978: 89). Thus, during the winter solstice, the ability of *Slo'w* to foretell the future would have been particularly important.

The narrative seems to draw a more benevolent portrait of *Slo'w*, in that after several appeals he brought both Coyote and Centipede back to Middle World after Coyote resurrected Centipede from the dead. It might be that this portion of the pictograph panel was painted with the hope that the results of the annual *peon* game played in the sky during the winter solstice period might be favorably affected by appealing to the more benevolent side of *Slo'w*. This, particularly, may explain the presence of a centipede on the "eagle" motif, as

represented in the myth.

A further connection with the winter solstice can be posited based on the red line and circle motif projecting upward from the left pole motif. This projection looks very similar to the drawing made of the feathered poles erected on New Year's Day on top of San Cayetano Mountain [sic] for the winter solstice (Blackburn 1963b:145).

These poles are described as being wrapped with bunches of feather down, which could account for the unusual chain of half circles that make up both poles in the panel (Robert Edberg 1979).

Furthermore, Hudson and Underhay (1978:94) have suggested the use of Condor's power in locating *Slo'w* for Mourning Ceremonies when Venus as Evening Star is invisible during three-year intervals, which seems to coincide with the timing of these ceremonies. The two circular motifs located just above each of the two poles may represent comets. They could therefore symbolize death by portraying souls on route to *Shimilaqsha*, the Land-of-the-Dead (Lee 1977:9-10). The two bird-like figures (eagle and condor) depicted with human qualities may be shamans in dance paraphernalia impersonating and communicating the power of these two dieties, symbolizing the integration of belief and action. Thus, the portrayal of all these elements suggest the significance of myth, shamanistic power, and ceremonies such as the Mourning and Winter Solstice

Ceremonies.

A further ramification of the portrayal of this myth in rock art may be conceived of as a theme involving initiation rites for certain shamans who have acquired the power to travel to the Upper World to communicate with sky dieties. The theme and representation of this myth are well summarized by Blackburn (1975:88):

The initiatory "death" at the hands of the older shaman, the ascent of a pole to the sky world (an ordeal involving conflicts with supernatural beings and the reduction of the initiate to bare bones), the initiate's rescue by his sponsor, their ultimate return to earth, and the new shaman's resurrection of the sponsor—all of these elements in "Coyote and Centipede" are standard and virtually universal shamanistic themes. . . . It is also clear from a comparison of narratives in different sections of the collection that the various magical devices utilized by protagonists were an essential feature of actual shamanistic practice. There is abundant ethnographic confirmation for the shamanistic use of such items as the down-covered string . . . , the flute . . . , the charmstone . . . , drugs . . . , and *'atiswin* . . . , while revival of the dead . . . and ability to travel great distances rapidly . . . are again characteristics universally attributed to shamans. Finally, it might be mentioned in passing that pole-climbing was an integral element of many of the rituals associated with the Kuksu cults of central California . . . and was also a part of the Luiseno Notush ceremony. . . .

Conti (1980) was the first to recognize that the delicate "flower-like" motifs that appear repeatedly in the Burro Flats Main Panel, are actually line drawings or tracings of the hands of a small child (or children). She has speculated that this handprint motif may be associated

with initiation rites of children into the 'antap cult. It is important to note that all of the handprints are clustered in three areas in the panel: (1) below and near the concentric circle motif that received the winter solstice sunrise "light dagger" effect, (2) the similar concentric circle motif near the center of the panel, and (3) between and around the vertical pole motifs discussed above. The elements present in the myth suggest that they might be paintings connected with initiation rites of shamans, and/or others into the 'antap cult.

Thus it can be postulated on the basis of the myths, the rock art panel, and the archaeoastronomical data that this pictograph panel represents important beliefs and activities that relate to shamanism and winter solstice ceremonies.

DISCUSSION

The results and interpretations derived from this study represent the culmination of a two year research program which, at best, can serve the purpose of an extensive pilot study. Far more research is needed to attain a truly accurate understanding of Chumash and Gabrieliño astronomy as represented in the west San Fernando Valley, and more importantly, the ceremonial/social implications of this astronomical knowledge.

Although the solstitial rise and set positions do

change over time, in relation to the change in the earth's equator to the ecliptic, this change would represent only one-half degree, or one solar disc in 4,000 years (Schulz 1970:188). The solar alignments observed at the sites within this present study, can be confidently placed in the late Middle Period (A.D. 400-A.D. 1100) at the earliest and for the most part are representative of the Late Period (A.D. 1100-A.D. 1542) and into the Historic Period. These alignments would not represent an age of greater than 2,000 years B.P. at the earliest, and hence it can validly be ruled out that any major shifts of solstitial positions occurred within the study area.

As presented in the previous interpretative discussion, the astronomical relationships noted thus far, imply a more ritual or less calendrical emphasis. Lacking, is any solid evidence of a truly precise solar/astronomical observatory within the current study area. Such evidence of precise observations—to the day of the solstice—may in fact never be found owing to the nature of this type of observation. Krupp (1977:55) has noted that all that is needed for more accurate or precise observations is a place to stand and a sufficiently distant and conspicuous foresight to look at. Using a series of sticks as backsights and perhaps posts as foresights, a prehistoric astronomer could reasonably predict the day of the solstice. This type of observation would not necessarily

leave any material trace in the archaeological record.

Some interesting observational methods and cultural relationships are implied from this research. Bedrock mortars may play a very important role in sites with potential astronomical significance. In some cases, they could represent archaeological evidence for fixed monitoring points in direct observation for solar alignments. In other cases, such as the "bear-paw" configuration at Burro Flats, the mortars might provide archaeological data on fixed monitoring points in direct observation of stellar alignments, although this has not been tested in any known cases.

There is an interesting difference between the two site complexes. For instance, alignments have been documented for the winter solstice sunrise and the summer solstice sunrise at the Burro Flats complex; however, only the winter and summer solstice sunset alignments have been documented for the LAN-357 site complex located 7.4 miles to the northeast. Recently, the former location of the Medea Creek village (now covered by development) near Agoura, was monitored for solstitial alignments. Conspicuous horizon markers were noted for both the winter and summer solstice sunset events, while no prominent features marked the sunrises. This may be a pattern where some site complexes monitored only sunrises while others observed sunsets. If this is true, it is not known,

other than to suggest, that it may have to do with Chumash social organization.

The distinct possibility exists that certain ceremonial sites or village locations were chosen on the basis of direct astronomical alignments with sacred peaks or shrines. Moreover, provincial winter solstice ceremonial sites—such as perhaps *Huwam*—may be directly associated and perhaps aligned with "sacred winter solstice shrines." The west end of the San Fernando Valley, with its major rock art centers, associated villages and mountain shrines—specifically the winter solstice shrine known as *Tswaya tsuqele*—may have functioned as an interrelated ceremonial center for the *Humaliwu* province; at least proto-historically and/or historically.

The specific ceremonial functions of these sites, and their interrelationship, at this point can only be conjectured. In the case of Bell Canyon and Burro Flats, there is a significant geographic relationship, with their locations being situated along the lower and upper Bell Creek drainage, respectively, as well as a winter solstice ceremonial association. Both Bell Canyon and Burro Flats may well have served significant roles in the annual Winter Solstice Ceremony, with perhaps Burro Flats functioning as a more private 'antap (secret) location for the performance of rituals commemorating *Kakunupmawa*, the Sun, while Bell Canyon served as the public gathering site for

the winter solstice festival.

The west San Fernando Valley, with its inordinately high density of rock art, marks a territorial border between the Ventureño Chumash and Fernandeno-Gabrielino, and hence is similar to other rock art localities within Chumash territory, such as Mutau Flats, the Carrizo Plains, the Santa Barbara interior/Hurricane Deck region, and Vasquez Rocks, suggesting that areas of ceremonial intensity, i.e., ceremonial centers, were located near "tribal," provincial, dialectal and cultural borderlands.

For instance, Mutau Flats is located near the Emigdiano, Cuyama and Ventureño dialectal boundaries. The Carrizo Plains marked the cultural boundary between the Cuyama Chumash and Yokuts. The Santa Barbara interior/Hurricane Deck region is located near the Ynezeño and Barbareño dialectal boundary, and Vasquez Rocks is situated near the Tataviam and Ventureño Chumash cultural boundary.

These rock art locations may well represent formalized ceremonial centers, similar to that suggested for the west San Fernando Valley, and were specifically located near such boundaries to integrate the different provincial, dialectal and cultural groups within the *'antap* political/religious structure, as well as integrating the various villages within a given province.

Moreover, winter solstice shrines, also functioning

as depositories-of-the-things-of-the-dead, served as cultural locations for the annual Winter Solstice Ceremony. Each province—coastal and interior—most likely possessed at least one winter solstice shrine/bead depository within its religious/political jurisdiction. These shrines, as in the case of *Tswaya tsuqe*le and San Cayateño, represent conspicuous mountain peaks, and were likely located adjacent to, or near, a village which served as the host for the large public gatherings.

Temporal evidence obtained from *Tswaya tsuqe*le suggests a late date for this type of ceremonial intensification, possibly post A.D. 1500, and tentatively seems to correlate with other dates obtained from mountain shrine/bead depositories (Steven Horne 1978). This date could mark the first emergence of a formalized 'antap religious cult, as known historically, and perhaps marks a period of elaboration of astronomically based religious practices, the emphasis being on ritual commemoration of solstitial events with the most important being the winter solstice.

This research further suggests a link between rock art and astronomically based ritualism such as the ritual observance of solstitial events. Further, it has revealed an interesting pattern of two large rock art complexes, suggesting similarities which might be found elsewhere. Both complexes exhibit an unquestionably more elaborate rock shelter, pictograph panel (main panel) implying a

central importance. Moreover, both sites similarly consist of numerous petroglyph and pictograph loci situated within areas of midden. At LAN-357 there appears to be a distinct structuring from east to west, with the majority of the rock art situated in the western portion, along with the probable location of the cemetery. At Burro Flats this pattern is not evident, with the exception of three large earth ovens, or possible crematories, found directly west of the main panel. Such an internal arrangement of rock art sites may well reflect a cosmological significance with west (*wotoko*) having a sacred relationship with *Shimilaqsha*, "Land-of-the-Dead," and east, the "birth place of the sun."

The main panel at Burro Flats appears representative of a theme or themes involving the winter solstice. Although an interpretation for the whole panel is lacking, and the interpretations posed for certain symbols discussed in this text are certainly conjectural, there does appear to be a well integrated balance and symmetry of symbol arrangement—framed by two concentric circles of exactly equal dimensions—strongly implying an integration of themes. The results of this study suggest that a winter solstice representation is present, and it is further argued that it serves as a ritual or cosmological bond between what may seemingly be a depiction of various myths, stories and themes. Such an interpretation

involving the concept of a central theme, is similar to interpretations posed by Lee (1977) and Schupp-Wessel (1980).

It should be mentioned here that I, as well as others (Lee and Horne 1978) have hypothesized a possible relationship with cupules and star charts. This study has attempted to test such a hypothesis through an ambitious program of tracing all cupule loci at both rock art complexes. Although some possibilities of stellar depictions have come to light, valid conclusions await completion of the analysis and hence have not been presented in this text.

Another possibility has been suggested through this study, and this is the potential "purposeful" ritual winter solstice alignment of Mourning Ceremony sites with host villages. The possibility of such sacred (symbolic) orientations with cairns possibly situated to physically mark this alignment warrant future research considerations. Along this same line, it would appear that substantive information exists which suggests that burials may also have been symbolically aligned with solstitial rises and sets (King 1969:36; Toren 1980).

These alignments may be socially significant, with certain alignments, such as for instance, the winter and summer solstice sunsets, commemorative of moiety, clan, or lineage membership, or perhaps certain offices—or

specific functions—held within the 'antap cult. They may also, as Schulz (1970:192) has suggested, mark the season of death, or conversely, the season of birth.

Future research within the study area should entail a more in-depth archaeoastronomical investigation of Burro Flats and LAn-357, requiring the precise mapping, using a theodolite, of all potential solar, lunar and stellar rise and set points along the horizon, which could be accomplished with an accurate 360° horizon map. The plio-film tracings of the cupule patterns obtained during the course of this study should be transferred to small 3" x 5" cards and examined at the Griffith Park Planetarium for potential stellar/constellation depictions.

More work is needed to derive the astronomical significance of various symbols/motifs found on the Burro Flats main panel, as well as delving into the interpretations of symbols/motifs as representational of major themes involving Chumash mythology. Much of this will entail a more accurate comparative analysis of Chumash rock art and a better understanding of Chumash mythology.

Furthermore, the archaeological collections obtained from both LAn-357 and Burro Flats should be analyzed in order to better ascertain their chronological placement, ceremonial nature, similarities and differences as interpreted by the artifactual and ecofactual assemblages, and their internal structuring of activities and ritual loci.

Lastly, further ethnographic and ethnohistoric research is needed to determine the cultural significance of the sites in question, their specific placenames—which is lacking in some cases—and their relationship within the *Humaliwu* province. Valuable information might be obtained through a thorough analysis of the San Fernando Mission registers, in reference to their political relationships as detected in the marriage registers (i.e., genealogies). Moreover, there is a distinct possibility that information may be available on the Chumash/Fernandeño *paha* or *wot* who was heading the ceremonies in Bell Canyon in the mid-1800's. It is possible that a Fernandeño mission Indian known as Rogerio Rocha, known to be a religious leader at the San Fernando Mission and a member of the '*antap*', was conducting the winter solstice ceremonial at *Tswaya tsuqele*, and moreover, may partly be responsible for the later rock art at Burro Flats and/or LAN-357. These possibilities should all be further researched.

Chapter 7

THEORETICAL IMPLICATIONS

The preceding chapters have served to demonstrate the potential astronomical significance of certain Chumash-Fernandeño sites within the study area, specifically those having a more ceremonial importance as evidenced archaeologically by the presence of rock art or sacred mountain shrines. We have seen how much sites might serve distinctive ritual functions, and how they may be interrelated as ceremonial or religious centers for specific political provinces. The following chapter is intended to present a brief—cursory—discussion on the broader theoretical implications of Chumash astronomy, and the role of future archaeoastronomical studies in understanding the structure and social significance of Chumash ceremonialism.

Reyman (1977:205-216) has strongly criticized the field of archaeoastronomy for its lack of problem oriented research. In this criticism he has, quite appropriately, used the term "potentially productive" while expounding on the various shortcomings or "lack of success" which he believes marks the current state of archaeoastronomical research.

Baity (1973:390) in addressing the potential

significance of archaeoastronomical research stated:

Archaeoastronomy is a form of information recovery with time-and-space-specific aspects which, when further refined and systematized, may provide not only a new theoretical framework for explicating certain problems of prehistory, but also a method of producing, ordering, analyzing, and expressing data with regards to socio-economic systems of particular cultures.

As emphasized throughout the course of this paper, the significance of investigating and explicating the nature of native California astronomy lies in defining the importance of this astronomical knowledge to the social system. For the Chumash and other hunting and gathering groups as well, astronomy formed the basis of their religious and ceremonial network; hence it is logical to assume that the archaeological manifestations of native astronomy also represent certain physical manifestations of their religious and ceremonial structure as well.

Blackburn (1974:110) in commenting on the importance of ceremonialism in native California stated:

. . . if, as Binford has suggested, the locus of cultural process lies in the dynamic articulation of the subsystems, then ceremonialism may be either an important regulatory mechanism or an important source of cultural change.

Recent functional-ecological approaches to native California ceremonialism have stressed the "resource equalizing" effects of ritual interaction (Vayda 1967: 494-500; Bettinger and King 1971:142-145; Bean 1972:183-184). Although this may certainly be an effect of intensive ceremonialism, it can hardly suffice as a causal

explanation of the processes of culture change. Such an approach is, to draw upon an analogy given by Binford (1980:4-5), about as fruitful as early attempts in the development of medicinal science to cure and prevent diseases through the study of the symptoms themselves.

In view of the importance of ceremonialism throughout native California, and more specifically to the Chumash, who were the most highly stratified cultural group noted by the Spanish, it would seem reasonable to assert that astronomically based ceremonialism may have played a dominant role in the highly stratified, socially and technologically complex culture encountered by Cabrillo in A.D. 1542 (Larson 1980).

In order to significantly analyze the importance of ceremonialism in Chumash culture change, archaeologists must attempt to apply the data to the available ethnohistoric and ethnographic record in an effort to piece together an historical picture. History must, however, be viewed as a dynamic process and not merely as a series of unrelated events.

A Marxist form of structural analysis is the theoretical framework best suited to the task of presenting causal explanations regarding the dynamics of Chumash cultural change. One of the most productive applications of marxist structuralism in an anthropological framework has been presented by Maurice Godelier (1977, 1978).

Godelier, unlike the more traditional marxists, has effectively argued that motivational factors which guide the way people think and act, need not be restricted to purely economic causes, but rather may in specific cases involve as a dominant factor kinship, politics or religion (Godelier 1978:19).

The argument posed is this: the dominant force regulating the Chumash economic system at historic contact was in fact an intensified ceremonial network fostered by the emergence of an astronomically based religious cult known as the *'antap*. This astronomically based structuring of ceremonial gatherings was not determined by local environmental fluctuations, but rather the religious/ceremonial structure required the yearly participation in these large public ceremonies regardless of whether the harvest was abundant or meager.

With ceremonial intensification came an increase in production, since continued participation within this established ceremonial network required large scale food consumption, the payment of dancers and other performers, and offerings of food and shell bead money as tribute for the settlement of debts incurred throughout the year. This increased emphasis on economic productivity involved an intensification of food gathering and storage as well as an increase in the production of various manufactured items. An increase of manufactured commodities is

believed to be directly linked to large scale ceremonialism, since these ceremonies would have provided the greatest opportunity for trade; hence, in essence these specific "large public ceremonial gatherings" would logically have functioned as central market places (Larson 1979; Larson, Romani and Romani 1981).

Increased trading opportunities and the concomitant intensification of manufactured items by craft specialists may have fostered the development of brotherhoods or guilds, which were organized as sodalities or non-kinship based groups of specialists. A guild structure may have historically emerged from a kinship structure where crafts were associated with certain lineages, with the control of quality and production maintained by the lineage heads or elders.

It can be further argued that an increased ceremonial interaction, which was geared towards astronomically based ceremonies, intensified the interaction between the Chumash mainland and channel islands, since the islands possessed many of the means of production (e.g., *Olivella* shells for bead money, soapstone for bowls, frying pans, ornaments and effigies, chipped stone, fish, and large seal colonies). Thus, the *tomol* or plank canoe became indispensable. Political and social ties between the islands and the mainland evolved from the increased interaction made possible by the sea-worthiness of the *tomol*.

The importance of the *tomol* was greatly enhanced by the increased need for storable foods required for the continued functioning of the large scale ceremonial structure. For example, great quantities of fish could be procured efficiently with the use of a *tomol*, and could then be dried and stored. The increased importance of the *tomol*, for island-mainland trade, social interaction, and fishing, led to the prominent position of the canoe owner, as well as other members of the *tomol* brotherhood, and fostered a major change in the social relations of production. For as Larson and Major (1974:11) has noted:

Canoes, . . . are limited as to ownership. . . . Specialists who were fishermen and/or navigators provided the labor force. The owners themselves might be expert navigators but they provided no physical labor in rowing the craft or catching the fish. Many times the owners would not even ride in their canoes. In addition, the canoe owners had total control of distribution of the product obtained by the specialist labor (fishermen, etc.).

Moreover, with the formation of the '*antap* cult we see another major change in the social relations of production, and by A.D. 1500 until the establishment of the mission system, it functioned as the dominant social relations of production.

Although archaeologically we do not presently know the specific date which marks the emergence of the '*antap* cult, nor do we understand its historical antecedents, King (n.d.:149) notes that by the beginning of the Middle

Period (Phase M2b - approximately A.D. 1 to A.D. 400), certain religious regalia, such as deer-bone whistles ('*ichunash*) which were used historically by the '*antap*, first appear in the archaeological record. However, the emergence of ritual specialists and their regalia may have begun as early as Phase M1 (approximately 1100 B.C.-500 B.C.) based on cemetery data (King n.d.:151).

It can be argued, although conjecturally, that an astronomical religious basis has considerable temporal depth for the Chumash, and was quite formalized as early as the Middle Period. It is perhaps at this point in history where the antecedents of the historical Chumash ceremonies and religious structure can first be observed.

What appears to have distinctly occurred during the proto-historic period is the intensification of ceremonialism which was socially orchestrated by the '*antap*. Since all wealthy people, or people of high status, such as chiefs and shamans, were required to join the '*antap* cult (in fact most were initiated as children on the basis of ascribed status) (Blackburn 1975:13), the religious cult or organization in its membership would have in fact subsumed within its influence the village and provincial political structure. Moreover, if as Blackburn (1974:105) has suggested, the influence or authority of the cult cross-cut all craft guilds, they had a pronounced potential for regulating the quality and quantity of

commodities being manufactured, as well as having, in the instance of the *tomol* guild, a direct influence on the trade and distribution of finished products.

We therefore have a dominant mode of production based on large scale ceremonial participation of direct producers linked together by a supra-kinship based religious group—many of whom were non-producers—which cross-cut lineages on a village, provincial and federation level.

Archaeologically, we see a transformation of astronomically based ceremonies by at least A.D. 1500 with the use of mountain shrines as places of tribute for offerings of beads, seeds, and other items, at the time of the Winter Solstice Ceremony. This date is based on the earliest date obtained from *Tsways tsuqe*, as well as an apparent collaboration of dates obtained from other mountain shrines (Horne 1978); thus it would appear that the '*antap* cult became formalized, to that which was recorded historically by the Spanish, by at least A.D. 1500.

The '*antap* cult, as an organization of religious elites, was responsible for providing the service of maintaining the balance of the universe (Hudson and Underhay 1978:27-43). These religious functionaries made themselves indispensable by restricting all ritual behavior and the sacred language of the *silyik* council, to initiated members only; hence only cult members could in fact communicate with the spiritual or mystical world of

the sky people. The need or desire for religious intermediaries by the general populace would enable some level of religious control, as Godelier explains:

We can therefore understand why, when circumstances permitted, certain men, certain groups came to personify supernatural powers which were supposed to control the conditions for the reproduction of the universe and society. Such men or groups have appeared to be above the common run of mortals, near to gods; they have narrowed the distance, which from the beginning of time, has separated man from the gods. Taken from this point of view, it becomes clear how, in many societies where there are hereditary chiefs who use no physical violence over their dependents—such as the Trobriand Islanders, studied by Malinowski—the form which the chief's power takes and the ideological justification for such power comes from the fact that they control first and foremost the great fertility rites of the Land and Sea and that they appear to be the necessary intermediaries between clans, ancestors and gods. To stand apart from men and dominate them, to approach the gods and command obedience, are perhaps only two simultaneous aspects of the same process—a road and direction leading to class societies and the state. On this road stand the great figures of Assur, god-king of his city, and the Inca Shinti, son of the Sun, who ruled over Tahuantinsuyu, "the empire of the four quarters" (1978:9-10).

The *'antap* were directly responsible for the planning of ceremonies, and the ceremonies themselves were perceived as a religious/social necessity if the balance of the universe was to be maintained. It is lastly argued that the dominant mode of production for the historic Chumash, was in fact a ceremonial-religious mode, in which the *'antap* cult or an earlier religious precursor regulated or controlled the forces of production through religious/ceremonial intensification.

In closing, it has been argued that ceremonialism formed the basis of Chumash production and market exchange at the time of historic contact. The nucleus of this ceremonial interaction was the commemoration of important astronomical events. Contrary to functional ecological models, it has been argued that the prime factors for the ceremonial intensification were internal, and were fashioned by a highly structured and influential religious/political order historically known as the 'antap. Since the ceremonies were astronomically based, further archaeo-astronomical research, in conjunction with ethnohistoric data, may aid in establishing a temporal and spatial understanding of Chumash ceremonialism in an effort to reconstruct the ceremonial/religious structure recorded by the Spanish, as well as the historical antecedents leading to this development.

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APPENDIX

GLOSSARY OF FOREIGN WORDS

(Chumash, Gabrieliño, Yokuts, Spanish)

- '*Alahtin* - (Chumash) "moon" (Hudson and Underhay 1978:149).
- '*Alakiwohoch* - (Chumash) "'shooting star' or 'falling star'" (Hudson and Underhay 1978:149).
- '*Alapayashup* - (Chumash) "Upper World" (also '*Alapay* and '*Mishupashup*) (Hudson and Underhay 1978:149, 152).
- '*Alaqlapsh* - (Chumash) "a bard, one who composed sacred songs and dances; a type of shaman or priest, perhaps a *shan* official in the '*antap* cult; took part in naming children and making predictions about the future" (Hudson and Underhay 1978:149).
- '*Alchuklash* - (Chumash) "astrologer and astronomer, smoke doctor; a type of shaman or priest, perhaps one of the '*antap* 'Twelve'; also named children, made predictions about the future, and cured man or weather" (Hudson and Underhay 1978:149-150).
- '*Altip'atishwi* - (Chumash) "'master of herbs and keeper of poisons,' title of a special '*antap* officer who performs specific duties at ceremonies such as the Winter Solstice" (Hudson et al. 1977:110).
- '*An ciyam loqayi'*/*alahwiw* - (Chumash) "September; 'month when those that are dry come down'; a time of uncertainty; preparations for storage of food and firewood for winter are made" (Hudson and Underhay 1978:128).
- '*An hushunuma qa qunup'*/*mawa* - (Chumash) "December; 'month when the sun's brilliance begins'; a time of uncertainty?; Transition from ecstatic conditions to those involving life" (Hudson and Underhay 1978:128).
- '*An sp'*/*atata* - (Chumash) "June; 'month when things are divided in half'; a time to go out in different directions (collecting wild foods?)" (Hudson and Underhay 1978:128).
- '*Antap* - (Chumash) "(1) initiated members or shamans-priests of the ritual cult which served the *siliyik*; (2) the sacred plain in the Cuddy Valley which represented the center of the Middle World; (3) a ravine used by the cult to enter the sacred dance-area in

Ventura" (Hudson and Underhay 1978:150).

Chapet - (Yokuts) "the Indian Doctor's magic tray" (Latta 1977:601).

Chinigchinich - (Gabrieliño) "a religious cult which seems to have begun as a 'mission period nativistic movement that developed among the Gabrieliño' and spread south" (Hudson and Blackburn 1978:247).

Cojo - (Spanish) "'lame man'; a bay and canyon just east of Point Concepción; there was a Chumash rancheria there called *Shisholop*" (Hudson et al. 1977:119).

'*Elyewu'n* - (Chumash) "swordfish" (Hudson et al. 1977:111).

Gremio - (Spanish) "guild, brotherhood" (Blackburn 1974:105).

Helo - (Chumash) "name for the stone disc which topped the sunstick, said to symbolize the sun" (Hudson and Underhay 1978:150).

Hesiq'momoy - (Chumash) "'month of' as in the names of the twelve months (e.g., *Hesiq'/momoy momoy*, January, 'Month of *Datura*')" (Hudson and Underhay 1978:150).

Hipuk - (Chumash) "'elbow' in Malibu dialect of Ventureño; village in Triunfo Canyon, inland from Malibu" (Applegate 1975a:29) (part of the *Humaliwu* province) (King 1969:40).

Holhol - (Chumash) "a supernatural being in the Upper World, identified with the condor or with a condor impersonator, and perhaps symbolic of Mars" (Hudson and Underhay 1978:151).

Huhuna - (Yokuts) "eagle dancer who performed during the Mourning Ceremony" (Gayton 1948:127).

Humaliwu - (Chumash) "'The Surf Sounds Loudly'; a village at what is now Malibu" (Hudson and Underhay 1978:28).

Humqaq' - (Chumash) "'The Raven Comes'; a shrine near Point Conception" (Hudson and Underhay 1978:151).

Hutash - (Chumash) "(1) the planet Earth, the land; (2) Venus as the Evening Star, in ritual usage; (3) fruit of the Coffeeberry (*Rhamnus californica*)" (Hudson and Underhay 1978:151).

- Huwam* - (Chumash) meaning unknown, "village at El Escorpion at west end of the San Fernando Valley" (Applegate 1975a:30). Identified as archaeological site LAN-413 (Tartaglia and Romani 1978a:197).
- 'Ichunash* - (Chumash) "sacred deer-bone whistles used by the 'antap" (Hudson and Underhay 1978:151).
- 'iqt 'i quq* - (Chumash) "'a piece of news without any foundation'; a comet" (Hudson and Underhay 1978:151).
- 'Itiashup* - (Chumash) "Middle World" (Hudson and Underhay 1978:151).
- 'Iwayik'iz* - (Chumash) "'Mystery'; a shrine located near Pitas Point, west of Ventura" (Hudson and Underhay 1978:151).
- 'Iwihinmu* - (Chumash) "(?); a name given to the constellation of the Pleiades, perhaps representing supernatural beings described as girls, maidens, or wives" (Hudson and Underhay 1978:151).
- Jucjauybit* - (Gabrieliño) "name for the village of *Huwam* (LAN-413)" (Edberg 1980:5).
- Kakunupmawa* - (Chumash) "'the radiance of the child born on the winter solstice'; ritual name for the sun" (Hudson and Underhay 1978:151).
- Kas'elew* - (Chumash) "'the tongue'; (1) rock in Piru, (2) Canyon west of Malibu, (3) place at west end of San Fernando Valley" (Applegate 1975a:32).
- Kashkunpeke* - (Chumash) "(?); a placename for a shrine located someplace in the Santa Ynez Valley" (Hudson and Underhay 1978:151).
- Kasi'wey* - (Chumash/Ventureño) "'the pass'; pass between the Simi and San Fernando Valleys" (Applegate 1975a:32).
- Kaspat kaslo'w* - (Chumash/Ventureño) "'nest of the eagle'; mountain west of San Fernando Valley" (Applegate 1975a:33).
- Kwaiyin* - (Chumash) "'wise man; appreciated'; the title of the *wot* of the *siliyik*" (Hudson and Underhay 1978:152). "Also used as a man's name" (Hudson et al. 1977:111).

- Malahshishinish* - (Chumash) "'She Who Thunders'; supernatural being in the Upper World known as Scorpion Woman, associated perhaps with stars in the constellations of Cygnus and Lyra" (Hudson and Underhay 1978:152).
- Masiq loka 'iyilike* - (Chumash) "'Three Steady Persons in Their Place'; a name given to Orion's Belt; we suggest that these persons may have been bear shamans or perhaps bears" (Hudson and Underhay 1978:152).
- Masiqtskumu* - (Chumash) "'Twelve'; a name given to the Chumash lunar year" (Hudson and Underhay 1978:152).
- Mech* - (Chumash) "A seven-star constellation resembling the Little Dipper and located in the southern skies when *Canis majoris* and *Leporis* are visible" (Hudson and Underhay 1978:152).
- Mikiw* - (Chumash) "'On the Other Side'; a village located at Dos Pueblos, west of Santa Barbara: (Hudson and Underhay 1978:152).
- Minawan* - (Chumash) "The cardinal direction south" (Hudson and Underhay 1978:152).
- Miwalaqsh* - (Chumash) "'to divide, to separate in the middle', as in (1) north, the cardinal direction; (2) the sunstick used in the Winter and Summer Solstice ceremonies; (3) the name given to the star Polaris" (Hudson and Underhay 1978:152).
- Momonga* - (Gabrieliño) "name of a Gabrieliño/Chumash village located in the west end of the San Fernando Valley" (Edberg 1980:5).
- Momoy* - (Chumash) "'*Datura*'; a supernatural being in the Upper World identified with *Datura* or Jimsonweed, and perhaps the moon" (Hudson and Underhay 1978:152).
- Muwu* - (Chumash) "'Beach'; a village located at the mouth of Mugu Lagoon" (Hudson and Underhay 1978:153). Also a federation capital (Hudson and Underhay 1978:28).
- Nahpa'aw* - (Chumash) "(?); a mesa west of the mouth of the Ventura River where a feather pole was erected during the Winter Solstice Ceremony" (Hudson et al. 1977:115).
- Nunashish* - (Chumash) "powerful supernatural beings, most of whom occupied the Lower World, considered

generally malevolent and dangerous toward man and often described as deformed" (Hudson and Underhay 1978:153).

'*Okshposhinash* - (Chumash) "another name for Polaris; see also *Miwalaqsh*" (Hudson and Underhay 1978:153).

Paha - (Chumash) "assistant chief and ceremonial leader" (Hudson and Underhay 1978:153).

Paqwot - (Chumash) "'big chief'; a title given to the political ruler of the 'Island Province'" (Hudson and Underhay 1978:153).

Peon - (Spanish) "a guessing game involving small objects hidden in the hands. Chumash: '*alewsa*'" (Hudson et al. 1977:118).

Pé - (Chumash) "a game played with six half walnut shells, which are rolled like dice and scored by flat sides landing up. The total score (odd or even) after three rolls determines the winner. This is the usual method for choosing any political officers" (Hudson et al. 1977:112).

Ponoya - (Chumash) "a supernatural being identified in myths as a female cousin of Sun and sister of *Shapiqenwash*; perhaps identified with stars in Gemeni" (Hudson and Underhay 1978:153).

S'amsupel - (Chumash) "a conference probably held in October or November to plan the *Kakunupmawa* festival; attended by the '*antap*, *paha* and visiting captains" (Hudson et al. 1977:112).

S'apiksi - (Chumash) "see *Masap awsi* (Hudson and Underhay 1978:153)" - "'House of the Sun'; a placename for a cave with a sun painting, probably located at Montgomery Potrero" (Hudson and Underhay 1978:152).

S'ap wí or *S'apwa* - (Chumash/Ventureño) "'house of the deer'; village on Conejo Creek, near Thousand Oaks" (Applegate 1975a:39). Part of the *Humaliwu* province (King 1969:40).

Shan - (Chumash) "the minor '*antap* officials of the *siliyík*, whose duties included visiting various rancherias in the province to check on the sick and to assist in the naming of children" (Hudson and Underhay 1978:153).

Shapiqenwash - (Chumash) "see *Ponoya*" (Hudson and Underhay 1978:153).

Shawil - (Chumash) "shrine" (Hudson and Underhay 1978:153).

Shihuch - (Chumash) "'big fire'; the Ventureño Mourning Ceremony which was held every three, four, or five years to honor those who had died during that time" (Hudson and Underhay 1978:153).

Shimilaqsha - (Chumash) "'Land-of-the-Dead'; the place where the souls of the dead resided, perhaps identified with Altair and other stars within Aquila" (Hudson and Underhay 1978:153).

Shisholop - (Chumash) "'Port'; a village near Ventura; also the name of another village located near Point Conception" (Hudson and Underhay 1978:153).

Shnilemun - (Chumash) "Sky Coyote, a supernatural being in the Upper World, considered the father of mankind and perhaps identified with the star Polaris" (Hudson and Underhay 1978:154).

Shuyapish - (Chumash) "Milky Way" (also *Suyapo'osh*) (Hudson and Underhay 1978:154).

Siliyik - (Chumash) "'the whole world'; (1) a governmental body or organization, like our Congress; (2) a council of ritual officers, created by the *kwaiyin* and the *'antap*; (3) the ceremonial enclosure central to public rituals; (4) a name given to a special language spoken among the *'antap*" (Hudson and Underhay 1978:154).

Simo'mo - (Chumash) "'The Salt Patch'; a village just inland from modern Point Mugu" (Hudson and Underhay 1978:154).

Slo'w - (Chumash) "'Golden Eagle'; (1) in Chumash myths, the captain or *wot* among the Sky People in the Upper World; (2) a term applied to a leader of a group; (3) a being possibly associated with Venus as the Evening Star" (Hudson and Underhay 1978:154).

Sok-so-uh - (Yokuts) "a supernatural being (perhaps a bear or a coyote) depicted in rock art as holding the sun in its mouth" (Hudson, Lee and Hedges 1979:51).

Spon kakunupmawa - (Chumash) "'Sun Pole'; the feathered pole erected at the time of the winter solstice" (Hudson and Underhay 1978:154).

- Sqapuni* -- (Chumash) "March; 'month of spring'; a time of uncertainty; spring leaves come out, but not all equally strong or healthy. Some are weak and sickly" (Hudson and Underhay 1978:128).
- Sup* -- (Chumash) "see *Chupu*" (Hudson and Underhay 1978:154)
-- "world" (Hudson and Underhay 1978:150).
- Syuh̄tun* -- (Chumash) "'It Forks'; a village located near what is now the Santa Barbara harbor" (Hudson and Underhay 1978:154).
- Ta'lopop* -- (Chumash) "Village on Las Virgines Creek, inland from Malibu" (Applegate 1975a:43). Also a part of the *Humaliwu* province (Hudson and Underhay 1978:28).
- T̄il̄inawit* -- "'Principal'; captain or *wot* of the village of 'Upop near Point Conception, who lived prior to Cabrillo; the federation *wot* whose calendar began in March, and whose territory extended northward from the Dos Pueblos area" (Hudson et al. 1977:11).
- Toloache* -- (Spanish) "*Datura meteloides*, Jimsonweed, from which a hallucinatory drink was made. Imbibed to aid one in locating lost objects as well as to foresee the future. A person using prayer, rituals, offerings, and sacred talismans could invoke the aid of his dream helper, and could acquire powers from visions while in a state of coma" (Hudson et al. 1977:118).
- Tomol* -- (Chumash) "a frameless plank canoe made of driftwood, used in the Santa Barbara Channel for fishing and trade" (Hudson and Underhay 1978:154).
- Tongva* -- (Gabrieliño) Shoshonean name for the Gabrieliño Indians (Forbes 1966:137).
- Toshololo* -- (Chumash) "a shrine on top of Frazier Mountain" (Hudson and Underhay 1978:154).
- Tototngna* -- (Gabrieliño) "Gabrieliño village known as 'The Place of the Stones;" (Johnston 1972:11) probably located in the Upper Santa Clara Valley area (Edberg 1981).
- Tripne* -- (Yokuts) "supernatural or magic" (Latta 1977:650).

- Tsaqwítáá kakunupmawa* - (Chumash) "refers to the *paha* of the Winter Solstice Ceremony; 'shadow, or image of *Kakunupmawa*" (Hudson et al. 1977:57).
- Tswaya tsuqe*le - (Chumash) "'The Banner is Waving' or 'The feathered banner is waving'; a shrine located on top of a mountain at the west end of the San Fernando Valley" (Hudson and Underhay 1978:154; Applegate 1974:198). Identified as archaeological site LAn-511 (Tartaglia and Romani 1978a:198).
- Tujungá* - (Gabrieliño) "village located in the northeast end of the San Fernando Valley" (Ruby 1966:95).
- '*Ulop* - (Chumash) "the cardinal direction east" (Hudson and Underhay 1978:154).
- '*Ulop ka wotoko* - (Chumash) "a ritual term for the 'equator of light' spanning the sky from east to west" (Hudson and Underhay 1978:154).
- '*Upop* - (Chumash) "'Shelter'; a village located near Point Conception" (Hudson and Underhay 1978:154).
- Waha'as* - (Ventureño) "'ominous' (?); San Cayetano Mountain, northeast of Santa Paula" (Applegate 1975a:45).
- Winatum* - (Yokuts) "a group of Yokuts which occupied the territory from the west side of the Sacramento River north to the Trinity River, San Joaquin Valley" (Latta 1977:263).
- Wit* - (Chumash) "'Land-of-the-Widows'; in mythology, the place which the soul first reaches during its journey to the Land-of-the-Dead, perhaps identified with Cassiopeia" (Hudson and Underhay 1978:154-155).
- Wot* - (Chumash) "chief; the captain or headman of a village, town or province" (Hudson and Underhay 1978:155).
- Wotoko* - (Chumash) "the cardinal direction west" (Hudson and Underhay 1978:155).
- Wukehumne* - (Yokuts) "group of Yokuts which occupied the territory east of the Kaweah River and north of Rattlesnake Creek, San Joaquin Valley (Latta 1977:175).
- Xexo* - (Chumash) "a province identified by Cabrillo, perhaps equivalent to the village of *Shisholop*,

located near Point Conception" (Hudson and Underhay 1978:155).

Xucu -- (Chumash) "another province identified by Cabrillo, perhaps equivalent to *Shuku*, a village near Rincon Point" (Hudson and Underhay 1978:155).

Xuta's -- (Chumash) "coffeeberry; earth; chia (?)" (Blackburn 1975:344).

Yávar -- (Gabrieliño) "a religious cult perhaps homologous to the Chumash '*antap* cult; also refers to sacred enclosure" (Hudson and Blackburn 1978:238).